

**Assessment of the Psychosocial Challenges Faced by Women Living with HIV During
the Perinatal Period in Ibadan, Oyo State**

**Abisola LAWALE
LCU/PG/002234**

**Being an MPH Thesis Submitted to the Department of Public Health, Faculty of Basic
Medical and Health Sciences, Lead City University, Ibadan, Oyo State, Nigeria**

**In Partial Fulfilment of the Requirements for the Award of Master of Public Health
Degree (MPH)**

Do Not Copy, Lead City University, Nigeria

Certification

This is to certify that Abisola A. Lawale, with matriculation number LCU/PG/002234, carried out this research work titled -Assessment of Psychosocial Challenges Faced by Women Living with HIV During the Perinatal Period in Ibadan, Oyo State in the Department of Public health, Faculty of Basic Medical and Health Sciences, Lead City University, Ibadan for the award of Master degree in Public Health (MPH) and this has not been previously submitted.

Dr. Folahanmi Akinsolu
Supervisor

Date

Dr. Tubosun Olowolafe
Head of Department

Date

Do Not Copy, Lead City University, Nigeria

Dedication

This work is dedicated to the Almighty God.

Do Not Copy, Lead City University, Nigeria

Acknowledgement

My gratitude goes to all the staff and clients of the Adeoyo Maternity Teaching Hospital, State Hospital, St. Mary Catholic Hospital, Eleta, and Saint Annes Anglican Hospital, Molete for their involvement in the execution of this research work.

I would also like to appreciate to my supervisor, Dr Folahanmi Akinsolu, as well as the Head of Department, Dr. Tubosun Olowolafe , for providing guidance from the inception of this study till its completion. I also wish to appreciate my colleagues and friends: Adewole Ifeoluwa, Bankole Samuel, Abdul-Rasheed Aziz, Adegbite Zainab, Adeoye Eniola, and Mrs Afiniki Bulus-Ejoga. for their inestimable support in making this research a reality.

Finally, I would like to specially thank my mother, Mrs Adesola Lawale and my brother Ayomide Lawale for their love and unrelenting support.

Although the above-mentioned institutions and persons have assisted in the process of this research work, I alone stand responsible for the errors, if any, found in the work

Abstract

This study explored the psychosocial challenges experienced by WLWH during their pregnancy and the postpartum period. The study was carried out with a mixed-method explanatory sequential approach. For the first phase, 402 WLWH were recruited from ART clinics in Ibadan, Oyo state. The Edinburgh Postnatal Depression Scale (EPDS) and the Perceived Stress Scale (PSS-10) were administered along with a sociodemographic questionnaire. For the second phase of the study, key informant interviews were conducted with 17 participants that were purposively selected. All the interviews were recorded, transcribed and analysed using a thematic approach. The interviews explored experiences during pregnancy and the postpartum period and how their HIV status influenced their thoughts and feelings towards pregnancy. The results revealed that the prevalence of both depression and perceived stress among HIV-positive women was 60.9% and 78%, respectively. In the multivariate analysis, it was discovered that having a positive partner, earning a monthly income of less than 20,000 naira, having a planned pregnancy, having a gestational age above 14 weeks, and having problems in a previous pregnancy were significantly associated with depression and perceived stress. Findings from the interviews revealed that WLWH experienced strong emotions of distress and fear surrounding maternal and child health. For the women, the diagnosis of HIV coincided with pregnancy and transformed pregnancy from excitement to anxiety. Coping strategies included acceptance of self and HIV status, coping through support from partners, family, and friends and coping through HIV-related healthcare delivery and system supports. The findings from this study emphasize the need for psychosocial care for pregnant women living with HIV to successfully engage them in ART for prevention of mother-to-child transmission (PMTCT) care and to support their well-being.

Keywords: HIV, women, psychosocial health, perinatal depression, stress

WordCount:273

Do Not Copy, Lead City University, Lagos

Table of Contents

Content	Page
Certification	ii
Dedication	iii
Acknowledgement	iv
Abstract	v
Table of Contents	vi
List of Tables	xii
List of Figures	xiv
List of Acronyms	xv
Chapter One: Introduction	1
1.1 Background to the Study	1
1.2 Statement of the Problem	3
1.3 Justification of the Study	4
1.4 Aim and Objectives of the Study	4
1.5 Research Questions	5
1.6 Significance of the Study	5
1.7 Scope of the Study	6
1.8 Limitation of the Study	6
1.9 Operational Definition of Terms	6

Endnotes	7
Chapter Two: Literature Review	10
2.1 Conceptual Review	10
2.1.1 Overview of HIV	10
2.1.1.1 History and Background of AIDS and HIV	11
2.1.2 Epidemiology of HIV/AIDS	11
2.1.2.1 HIV in Nigeria	13
2.1.3 HIV and Women	15
2.1.3.1 Prevalence of HIV in Women	17
2.1.3.2 Factors that Increase Women's Vulnerability to HIV in Africa	18
2.1.4 HIV and Pregnancy	23
2.1.4.1 Vertical Transmission	24
2.1.4.2 Anti-retroviral Drug Therapy	25
2.1.4.3 Interventions and Birth Options	26
2.1.5 Psychosocial and Emotional Experiences Among PLWH	27
2.1.5.1 Psychosocial factors in HIV Infection	27
2.1.5.2 Psychological Effects of HIV	28
2.1.6 Stress-Related Psychological Conditions and HIV	29
2.1.7 Overview of Depressive Disorders	29
2.1.7.1 Global Burden of Depressive Disorders	31

2.1.7.2	Causes of Depressive Disorders	31
2.1.7.3	Treatment of Depressive Disorders	32
2.1.8	Depression Disorder and HIV	32
2.1.9	Perinatal Depression	33
2.1.9.1	Risk Factors of PND	34
2.1.9.2	Health Consequences to the Mother and Offspring	34
2.1.10	Depression in HIV-Infected Pregnant Women	35
2.1.11	Factors Associated with Depressive Disorders in WLWH	36
2.1.12	Psychological Stress in WLWH	37
2.2	Theoretical Framework	38
2.2.1	Social Support Theory	38
2.2.2	Stress and Coping Theory	39
2.2.3	Diathesis-Stress Model	40
2.2.4	Biopsychosocial Model of Health	41
2.2.5	Intersectionality Theory	41
2.2.6	Health Belief Model	42
2.3	Review of Empirical Studies	42
2.3.1	Studies on Antenatal Depression in WLWH	42
2.3.2	Studies on Postnatal Depression in WLWH	44
2.3.3	Studies on Perceived Stress in WLWH	44

2.3.4	Studies on the Psychosocial Experiences of WLWH	45
2.4	Conceptual Framework	46
2.4	Summary of Gaps in Literature Reviewed	48
	Endnotes	49
	Chapter Three: Methodology	60
3.1	Research Design	60
3.2	Population of the Study	60
3.3	Sampling and Sampling Techniques	61
3.4	Description of the Research Instrument	63
3.5	Reliability and validity of the Perceived Stress Scale	64
3.6	Reliability and validity of the Edinburgh Postnatal Depression Scale (EPDS)	65
3.7	Data Collection Procedures	65
3.8	Method of Data Analysis	67
3.9	Ethical Considerations	68
	Endnotes	70
	Chapter Four: Results and Discussion of Findings	71
4.1	Demographic Data Analysis	71
4.2	Presentation of Data	77
4.2.1	Research Question One	77
4.2.1.1	Depression Among Women Living with HIV During the Perinatal Period	77

4.2.1.2	Perceived Stress Among Women Living with HIV During the Perinatal Period	79
4.2.1.3	Depression and Perceived Stress Among Women Living with HIV During the Perinatal Period	81
4.2.2	Research Question Two	82
4.2.2.1	Factors Associated with Perinatal Depression	82
4.2.2.2	Factors Associated with Perceived Stress	88
4.2.2.3	Factors Associated with Perinatal Depression and Perceived Stress	92
4.2.3	Research Question Three	98
4.2.3.1	Participants' Characteristics	99
4.2.3.2	Psychological Experiences and Challenges During the Perinatal Period	100
4.2.3.2.1	Unexpected Diagnosis	100
4.2.3.2.2	Disclosure of HIV Diagnosis	104
4.2.3.2.3	Emotional Distress	108
4.2.3.2.4	Isolation	110
4.2.3.3	Coping Strategies	112
4.2.3.3.1	Acceptance of Self and HIV Diagnosis	112
4.2.3.3.2	Social Support from Partners, Family and Friends	113
4.2.3.3.3	Support from Healthcare Delivery System	114
4.3	Discussion of Findings	116
	Endnotes	123

Chapter Five: Conclusion	126
5.1 Summary of Findings	126
5.2 Conclusion	128
5.3 Recommendations	128
5.4 Contributions to Knowledge	130
5.5 Suggested Areas for Future Research	131
Bibliography	132
Appendices	150
Bio-data	164
The University Compliance Certification	167

Do Not Copy, Lead City University, Nigeria

List of Tables

Table	Title	Page
4.1	Sociodemographic Characteristics of Study Sample	73
4.2	Clinical, Behavioural and Obstetric Characteristics of Study Sample	75
4.3	Relationship and Support-Related Characteristics of Study Sample	76
4.4	Prevalence of Depressive Symptoms According to EPDS	78
4.5	Prevalence of Depression	79
4.6	Prevalence of Indicators of Perceived Stress According to PSS-10	80
4.7	Prevalence of Perceived Stress	81
4.8	Prevalence of the Co-occurrence of Depression and Stress	82
4.9	Sociodemographic Variables and Depression	83
4.10	Clinical, Behavioural and Obstetric Characteristics and Depression	84
4.11	Relationship and Support-Related Characteristics and Depression	85
4.12	Perceived Stress and Depression	86
4.13	Predictors of Perinatal Depression	87
4.14	Sociodemographic Variables and Perceived Stress	88
4.15	Clinical, Behavioural and Obstetric Characteristics and Perceived Stress	89
4.16	Relationship and Support-Related Characteristics and Perceived Stress	90
4.17	Predictors of Perceived Stress	91
4.18	Socio-Demographic Variables and Co-occurrence of Depression and Perceived Stress	93
4.19	Clinical, Behavioural and Obstetric Characteristics and Co-occurrence of Depression and Perceived Stress	94
4.20	Relationship and Support-Related Characteristics and Co-Occurrence of Depression and Perceived Stress	95
4.21	Predictors of Depression and Perceived Stress	97
4.22	Key interview themes and Sample Questions	98

Table	Title	Page
4.23	Demographic Data for Interview Participants	99
4.24	Main Themes and Sub-Themes for Psychological Experiences and Challenges	100
4.25	Main Themes and Sub-Themes for Coping Strategies	112

Do Not Copy, Lead City University, Nigeria

List of Figure

Figure	Title	Page
2.1	Study Framework	47

Do Not Copy, Lead City University, Nigeria

List of Acronyms

Abbreviation	Meaning
AIDS	Acquired Immunodeficiency syndrome
ART	Antiretroviral Therapy
ARVs	Antiretroviral Drugs
EPDS	Edinburgh Postpartum Depression Scale
MTCT	Mother-to-Child Transmission
PLWH	People Living With HIV
PMTCT	Prevention of MTCT
PND	Perinatal Depression
PSS-10	Perceived Stress Scale
SCT	Social Cognitive Theory
SSA	Sub-Saharan Africa
STD	Sexually transmitted Infections
UNAIDS	Joint United Nations Programme on AIDS
WLWH	Women living with HIV

Do Not Copy, Lead City University, Nigeria

Chapter One

Introduction

1.1 Background to the Study

For decades, the human immunodeficiency virus (HIV) has been described to be a severe public health issue, with an estimated 38 million individuals infected globally¹. In Sub-Saharan Africa (SSA), it is the leading cause of morbidity and mortality, accounting for 71% of the global population of people living with HIV (PLWH)^{2,3}. Women in the SSA region are

disproportionately affected by the illness compared to men, with women accounting for 58% of the PLWH population¹. Studies have shown that women are at a considerably higher physical and social risk for contracting the HIV infection in comparison to men⁴.

Nigeria, the most populous country in Africa, has 1.9 million PLWH, making Nigeria the third most burdened by HIV¹. The prevalence rate of HIV was 1.4%, and it was the highest among the female adult population, at 1.6%⁵. HIV has been identified as among the leading causes of maternal mortality in Nigeria, with the prevalence of HIV among pregnant women in Nigeria being estimated to be over 26.4%, and this is higher than in most other sub-Saharan African countries^{6,7}.

Studies have shown that women living with HIV (WLWH), especially in low and middle-income countries (LMICs), experience significant psychological issues, such as depression, stress, anxiety, and anxiety, as a result of their HIV diagnosis^{8,9}. Among WLWH, depression is the most prevalent mental illness. Their compliance with care and therapy may suffer as a result, which could lead to treatment failure¹⁰.

During the prenatal and postpartum periods, many women experience major changes in their psychological well-being, social interactions, and physical function that have a profound

impact on their life^{11,12}. The period of pregnancy and postpartum is one of the most vulnerable times for the emergence of depression in women². The prevalence of depressive symptoms among pregnant women ranges from 11.4% to 40.0%, according to studies, which is higher than that of women generally^{13,14}. Pregnant women frequently experience stress as well. Women's brains change structurally, psychologically, and behaviourally throughout pregnancy as they prepare for their new role as mothers¹⁵. These changes, however, make pregnant women more prone to stress, which raises the likelihood of developing prenatal depression symptoms^{16,17}.

Pregnancy can be a period of increased psychological susceptibility for WLWH due to a variety of environmental variables, disclosure concerns, and HIV-related stigma¹⁸. Studies conducted in North America, as well as low and middle-income countries, have found that pregnant and postpartum WLWH suffer from a high prevalence of depression²¹. Depression can make it more difficult for them to follow their care and treatment plans. This makes it more likely that the virus will multiply and change quickly, leading to treatment failure and increased vertical HIV transmission¹⁹.

As a result, there are concerns that psychological issues such as depression and stress may have adverse effects on obstetric and neonatal outcomes, the treatment of HIV during pregnancy or postpartum, and the risk of mother-to-child transmission (MTCT). Because psychological and social factors influence the ability to live with HIV, an in-depth understanding of the specific psychosocial challenges, particularly the presence of depressive symptoms during pregnancy, encountered by women living with HIV, is essential for designing effective support programs and interventions.

1.2 Statement of the Problem

Although the developments in antiretroviral treatment (ART) have significantly reduced living with HIV to a causal relationship between disease and treatment, this circumstance allows WLWH to be more susceptible to a variety of stressors that can occur over a time. All of these stressors pose potential hazards to a person's psychological well-being and quality of life²⁰. Mental health-related variables could potentially compromise the efficacy of ART and negatively impact the quality of life and mental health of women²¹.

For WLWH, pregnancy may be a time of increased psychological vulnerability²². In addition to the usual strains of new motherhood, WLWH also has to deal with stressors related to their health, the potential infectious statuses of their infants, and taking care of their newborns' particular needs, like providing prophylactic antiretroviral medication²³.

Psychological distress in WLWH women merits attention, given that numerous studies have associated high psychological distress with the amount of caregiving that mothers provide for their infants and the rate of mother-to-child transmission (MTCT) of HIV^{24,25}. Depression is one of the most prevalent pregnancy-related distress problems, and it has been linked to the mother's physical and emotional well-being, as well as a variety of negative behavioural and emotional outcomes for the child²⁹. Depression has been associated with poor HIV viral suppression, increased mortality, accelerated disease progression and increased risk of ART non-adherence²³.

Although studies have shown that WLWH is affected by high rates of depression, limited knowledge is available regarding depression and its associated factors during the perinatal period²⁶. This study argues that illnesses like depression pose a risk to the general well-being of WLWH both during and after pregnancy. However, very little is known about the perinatal depression experiences of WLWH in Nigeria.

1.3 Justification of the Study

Due to the complications of pregnancy while living with HIV, WLWH is more susceptible to stress during the perinatal period²⁶. There is a need to better understand what it is like for WLWH to live with and cope with life stressors like depression. To promote the treatment and management of psychological distress in the target population, empirical evidence on psychological experiences and their social determinants must be assessed.

Furthermore, there are few mixed methods research in Nigeria that combine qualitative and quantitative methodologies to analyse the psychological problems of WLWH. The strengths of the two methodologies are preserved, and the weaknesses are mitigated in mixed-method research, resulting in more relevant and trustworthy evidence. In light of this, an investigation of the psychosocial challenges experienced by women living with HIV (WLWH) during pregnancy and the postpartum period was conducted in Ibadan, Oyo State, using a mixed-method approach. To integrate mental healthcare with HIV care and enhance the well-being of WLWH and their children, a thorough understanding of the psychological experiences of WLWH throughout their perinatal period must be is necessary.

1.4 Aim and Objectives of the Study

This study explored the psychosocial challenges experienced by women living with HIV (WLWH) during pregnancy and the postpartum period in Ibadan, Oyo State.

The objectives of this study are to:

- i. determine the prevalence of depression and prevalence of stress among women living with HIV during the perinatal period in Ibadan, Oyo State.
- ii. identify the factors associated with depression and perceived among women with HIV during the perinatal period in Ibadan, Oyo State.

- iii. identify the psychosocial challenges during the perinatal period among women living with HIV in Ibadan, Oyo State.
- iv. explore perceptions of how to cope with the challenges during the perinatal period among women living with HIV in Ibadan, Oyo State.

1.5 Research Questions

To achieve the purpose of this study, the following questions were investigated and answered:

1. What are the levels of depression and perceived stress among women living with HIV during the perinatal period in Ibadan, Oyo State?
2. What are the factors associated with depression and perceived stress among women living with HIV during the perinatal period in Ibadan, Oyo State?
3. What are the psychosocial experiences and perceived coping measures of women living with HIV during the perinatal period in Ibadan, Oyo State?

1.6 Significance of the Study

The significance of this study is to provide a better understanding of the personal experiences of women living with HIV and to identify those factors related to how they cope with the emotional and social aspects of this disease. Mental health is not systematically integrated into HIV care. This could be because the focus has been on the symptomatic management of HIV and AIDS. This unmet need for mental healthcare poses a threat to WLWH and their quality of life.

Exploring the psychosocial experiences in a representative sample is significant for providing further data and informing a wider intervention against psychological distress. The nature of

this study makes a unique contribution to research as it focuses on the psychological experiences of perinatal depression and stress and how they relate to social factors in the lives of WLWH.

1.6 Scope of the Study

The study included HIV-infected pregnant women and early mothers receiving antiretroviral therapy in healthcare centres located in Ibadan.

1.7 Limitation of the Study

This study was limited by the presence of language barrier during the process of data collection.

1.8 Operational Definition of Terms

- **Psychosocial Challenges:** These are difficulties arising from the interaction of psychological characteristics and personal and environmental factors. This study focuses on perinatal depression and stress.
- **Human Immunodeficiency Virus, or HIV,** is the virus that causes AIDS in human beings. It kills an important blood cell: the CD4 T lymphocyte, or -T cell. T cells can be thought of as the quarterbacks of the immune system. As they die off, the body becomes more and more vulnerable to disease. Germs take this opportunity to invade the body. The diseases they cause are called opportunistic infections. For this study, human subjects who are infected with HIV will be termed -women living with HIV (WLWH).
- **Perinatal Period:** This refers to the period from one year before and up to 18 to 24 months after the birth of the child or the conclusion of a pregnancy.
- **Women:** For this study, a woman was defined as an adult female over the age of 18 years that is living with HIV.

Endnotes

1. UNAIDS, *'Global HIV & AIDS Statistics — Fact Sheet'*. 2021.
2. H. Kim, G. Musuka, Z. Mukandavire, A. Branscum, & D. Cuadros, *When distance matters: Mapping HIV health care underserved communities in Sub-Saharan Africa*. **PLOS Global Public Health**, 1(11), 2021, e0000013.
3. P. Gona, C. Gona, S. Ballout, S. Rao, R. Kimokoti, C. Mapoma, & A. Mokdad, *Burden and changes in HIV/AIDS morbidity and mortality in Southern Africa Development Community Countries, 1990–2017*, **BMC Public Health**, 20(1), 2020, 867.
4. S. Karim & C. Baxter, *HIV incidence rates in adolescent girls and young women in sub-Saharan Africa*. **The Lancet Global Health**, 7(11), 2019, e1470-e1471.
5. Revised National HIV and AIDS Strategic Framework 2019-2021 – NACA Nigeria.
6. I. Agu; C. Mbachu; C. Okeke; I. Eze; C. Agu; U. Ezenwaka; N. Ezumah & O. Onwujekwe, *Misconceptions about transmission, symptoms and prevention of HIV/AIDS among adolescents in Ebonyi State, South-East Nigeria*. **BMC Research Notes**, 13(1), 2020, Article 1.
7. B. Banigbe; C. Audet; P. Okonkwo; O. Arije; E. Bassi; K. Clouse; M. Simmons; M. Aliyu; K. A. Freedberg, & A. A Ahonkhai. *Effect of PEPFAR funding policy change on HIV service delivery in a large HIV care and treatment network in Nigeria*, **PLOS ONE**, 14(9), 2019, e0221809.
8. S. Qin; Y. Tan; B. Lu; Y. Cheng, & Y. Nong. *Survey and analysis for impact factors of psychological distress in HIV-Infected pregnant women who continue pregnancy*, **The Journal of Maternal-Fetal & Neonatal Medicine**, 32(19), 2019, 3160–3167.
9. N. Fauk, L. Mwanri, K. Hawke, L. Mohammadi, & P. Ward, *The impact of HIV on women living with HIV and their families in low-and middle-income countries: A systematic review*. **MedRxiv**, 2022, 2022–04.
10. Q. Zhu; D. Huang; J. Lv; P. Guan & X. Bai, *Prevalence of perinatal depression among HIV-positive women: A systematic review and meta-analysis*. **BMC Psychiatry**, 19(1), 2019, 330.
11. I. Ogueji. *Experiences and predictors of psychological distress in pregnant women living with HIV*. **British Journal of Health Psychology**, 26(3), 2021, 882–901.
12. A. Blount; C. Adams; A. Anderson-Berry; C. Hanson; K. Schneider; & G. Pendyala, *Biopsychosocial factors during the perinatal period: Risks, preventative factors, and implications for healthcare professionals*. **International Journal of Environmental Research and Public Health**. 18(15), 2021, 8206.
13. T. Myo, S. Hong, B. Thepthien, & N. Hongkraitert, *Prevalence and factors associated with postpartum depression in primary healthcare centres in Yangon, Myanmar*, **The Malaysian Journal of Medical Sciences: MJMS**, 28(4), 2021, 71.

14. A. Nisar; J. Yin; A. Waqas; X. Bai, D. Wang, A. Rahman, & X. Li, *Prevalence of perinatal depression and its determinants in Mainland China: A systematic review and meta- analysis*. **Journal of Affective Disorders**, 277, 2020, 1022–1037.
15. E. Cárdenas, A. Kujawa, & K. Humphreys, *Neurobiological changes during the peripartum period: Implications for health and behavior*. **Social Cognitive and Affective Neuroscience**, 15(10), 2020, 1097–1110.
16. P Kim, *How stress can influence brain adaptations to motherhood*. **Frontiers in Neuroendocrinology**, 60, 2021, 100875.
17. S. Çankaya, *The effect of psychosocial risk factors on postpartum depression in antenatal period: A prospective study*, **Archives of Psychiatric Nursing**, 34(3), 2020, 176-183.
18. E. Waldron, I. Burnett-Zeigler, V. Wee, Y. Ng, L. Koenig, A. Pederson & E. Miller, *Mental health in women living with HIV: the unique and unmet needs*, **Journal of the International Association of Providers of AIDS Care (JIAPAC)**, 20, 2021, 2325958220985665.
19. A. Yousuf; S. Mohd Arifin; R. Musa & M. Md. Isa, *Depression and HIV disease progression: A mini-review*. **Clinical Practice and Epidemiology in Mental Health : CP & EMH**, 15(1), 2019, 153–159
20. E. A. Basha, B. T. Derseh, Y. G. E. Haile, & G. Tafere, *Factors affecting psychological distress among people living with HIV/AIDS at selected hospitals of North Shewa Zone, Amhara Region, Ethiopia*, **AIDS Research and Treatment**, 2019, 8329483.
21. C. Ddamulira; N. Nsereko; E. Akankwasa; M. Musoke & F. P. Kiyingi, *Philosophical perspectives on community based non-communicable disease services and the quality of life of people living with HIV in Uganda*. **Journal of Environmental Science and Public Health**, 4(4), 2020, 409–430.
22. J. Hoare, T. Sevenoaks, B. Mtukushe, T. Williams, S. Heany & N. Phillips, *Global systematic review of common mental health disorders in adults living with HIV*, **Current HIV/AIDS Reports**, 2021, 1–12
23. E. M. Waldron, E. S. Miller, V. Wee, A. Statton, J. T. Moskowitz & I. Burnett-Zeigler, *Stress, coping and the acceptability of mindfulness skills among pregnant and parenting women living with HIV in the United States: A focus group study*, **Health & Social Care in the Community**, 2022.
24. I. C. Agu; C. O. Mbachu; C. Okeke; I. Eze; C. Agu; U. Ezenwaka; N. Ezumah & O. Onwujekwe, *Misconceptions about transmission, symptoms and prevention of HIV/AIDS among adolescents in Ebonyi state, South-east Nigeria*. **BMC Research Notes**, 13(1), 2020, Article 1.
25. S. Qin; Y. Tan; B. Lu; Y. Cheng & Y. Nong, *Survey and analysis for impact factors of psychological distress in HIV-infected pregnant women who continue pregnancy*, **The Journal of Maternal-Fetal & Neonatal Medicine**, 32(19), 2019, 3160–3167.

- ²⁶. E. Tuthill, A. Maltby, B. Odhiambo, E. Akama, J. Pellowski, C. Cohen, S. Weiser, & A. Conroy, —*I found out I was pregnant, and I started feeling stressed*||: *A longitudinal qualitative perspective of mental health experiences among perinatal women living with HIV, AIDS and Behavior*, 25(12), 2021, 4154–4168.

Do Not Copy, Lead City University, Nigeria

Chapter Two

Literature Review

This section includes an overview of HIV/AIDS infection and the scope of the problem, as well as disease epidemiology on a global, regional, and country level. This section also goes into great detail about the different psychological difficulties that women with HIV/AIDS encounter outside of and during the perinatal period, as well as the effects such difficulties have on them. Factors linked to psychosocial challenges in women living with HIV/AIDS (WLWH) that have been identified in previous studies are also reviewed. In addition to this, the conceptual framework that explains the factors that predispose WLWH to experience psychosocial challenges is reviewed.

2.1 Conceptual Review

2.1.1 Overview of HIV

The Human Immunodeficiency Virus, more commonly referred to as HIV, is a virus that attacks the immune system. It is contagious and spreads through body fluids. Humans have a cell system (called T4 cells) that helps fight off any illness that enters the body. But once inside the body, HIV multiplies quickly, eventually attacking and incapacitating a huge number of cells. As a result, the white blood cells become depleted and lose their ability to effectively fight off disease. Damage to the immune system creates an environment in which infections can flourish and take control of the body. Opportunistic infections, which also include tuberculosis and the malignancy Kaposi's sarcoma, are referred to as these kinds of illnesses¹. Acquired Immune Deficiency Syndrome (AIDS) emerges when the human body contracts an infection and these diseases go untreated.

2.1.1.1 History and Background of HIV and AIDS

The first instance of AIDS was reported in 1981 when increasing numbers of young homosexual men succumbed to unusual opportunistic infections and rare malignancies, and the virus (HIV) was identified by Luc Montagnier in 1983¹. Robert Gallo claimed to have isolated the virus as well, and it soon became clear that the two discoveries were identical². The virus was previously known by several names before being dubbed Human Immunodeficiency Virus or Human Immune Deficiency Virus in 1986³. After the virus was isolated, researchers were able to create an antibody test in 1985, which made it possible to screen individuals for antibodies that were specific to the virus. The HIV antibody test is precise and sensitive, but it only tells whether or not a person has been exposed to the virus⁴.

False positive and false negative results were reported, especially in the early years of HIV testing; however, with the development of confirmatory viral load testing, these types of findings are now extremely uncommon⁵. Testing for HIV does not determine the existence of HIV; rather, it determines the presence of HIV antibodies, which are the immunological response of the body when it is exposed to the virus. The antibody test is unable to determine if the infection is still present or the level of immune function. Further medical research is needed to look at the course of HIV illness and the virus's consequent impairment of immune function.

2.1.2 Epidemiology of HIV/AIDS

As the struggle against HIV and AIDS continues, over 75,7 million individuals have become infected, and 3.27 million have died from AIDS-related illnesses in the past four decades. The global burden of HIV/AIDS was 37.7 million cases in 2020, corresponding to 0.5% of the world's population, with a prevalence rate of 476 cases per 100,000⁶. The global HIV prevalence peaked in 2005, declined for five years, and has been on the rise again since 2010

(possibly due to increased survival with ART). Currently, prevalence is on the rise in South Africa, Portugal, Brazil, Mexico, Peru, Spain, Germany, and the United States, among other nations. In these nations, both the gross and age-adjusted rates are increasing, showing that this is much above the normal increase due to population growth. Portugal distinguishes out with a fast-increasing prevalence rate, from 86 to 370 per 100,000 (respectively from 1990 to 2019)⁷.

The cell-killing virus can also remain dormant inside the body for extended periods before erupting in a lethal infection flare-up⁸. The number of new HIV infections fell by 41% from 2010 to 2015 as the worldwide HIV epidemic improved. Infections have decreased by 28 % in Eastern and Southern Africa, 16% in the Caribbean, and 13 % in Western and Central Africa, according to recent data. Outside of sub-Saharan Africa, there has been an upsurge in HIV infections despite the global drop in infections. Initially, Sub-Saharan Africa contributed a larger rate of infection to the worldwide trend; however, previously low-prevalence regions are now experiencing a rise in infection. Eastern Europe and Asia (29%) and the Middle East and North Africa (14%) are the primary regions now seeing such growth (10%). Pakistan saw a 56% growth among adults at the national level, followed by Nigeria (8%)⁹. Recently, UNAIDS prioritized efforts to eliminate HIV/AIDS in 28 countries that accounted for 75% of all new infections worldwide in 2018. Current preventative measures have focused on these nations with a high prevalence of HIV, including Nigeria, with the expectation that the spread of infection can be stopped by the end of 2020 and eradicated by 2030¹⁰. Completing this objective would imply winning the global campaign against HIV/AIDS. Little is understood regarding the rise and collapse of epidemics within and between countries worldwide.

2.1.2.1 HIV in Nigeria

With 1.9 million people living with HIV (PLWH) between the ages of 15 and 49, Nigeria ranks third in terms of HIV burden. A significant component in the spread of HIV is ignorance of how it is transmitted⁹. The degree of knowledge is a key indicator of several unfavourable characteristics regarding PLWH. Poor understanding of HIV/AIDS is linked to societal stigma and unfavourable views toward PLWH, according to other studies¹⁰.

Recent years have seen an increase in HIV knowledge, awareness, and testing among the general Nigerian populace. This increase is likely attributable to joint efforts made by the government and corporate entities to prevent HIV in response to the country's stated goal of HIV control, as outlined in the National HIV/AIDS Strategic Plan¹¹. These initiatives are related to the 95-95-95 plan, which aims to end the HIV pandemic by 2030 while also promoting healthy lives and well-being for all ages, a key component of the Sustainable Development Goals (SDGs)¹².

In Nigeria, the history of HIV/AIDS dates back to 1985, when the first case was diagnosed and reported in Lagos, Nigeria. The fight against the disease commenced with HIV sentinel surveillance, conducted in 1991/1992, 1993/1994, 1995/1996, 1999, 2001, 2003, 2005, 2008, 2010 and 2012. The results of the sentinel survey revealed a progressive increase among adults from 1.8% in 1991, through 4.5% in 1995, to a peak at 5.8% in 2001. Subsequently, the trend reversed, with its prevalence falling to 5.0% in 2003 and 4.4% in 2005¹³. Its prevalence rose again to 4.6% in 2008 before falling to 3.0% in 2015 and declined further to 1.5% in 2019⁶.

HIV prevalence in Nigeria varied by region in 2018, with the following percentages: 3.1% in the South-South, 1.9% in the Southeast, 0.6% in the Southwest, and 1.1% in the North Central. Prevalence was highest in Akwa Ibom, followed by Benue, Rivers, and Taraba in the

whole state population (2.7%)¹⁴. Adult women have an infection rate of 1.9%, while men have a rate of 1.1%. 80% of HIV infections in Nigeria are caused by unprotected heterosexual intercourse. Moreover, 67% of the adult population were aware of their status, 53% of people were receiving treatment, and 80% had viral suppression by the year 2018⁶.

In the past, the health sector in Nigeria was responsible for HIV/AIDS prevention and treatment, and the country's ability to fight the disease was heavily reliant on financial support from international donors. More recently, the government has started collaborating with donor groups to offer free ARV medications to AIDS patients, including the President's Emergency Plan for AIDS Relief (PEPFAR) and the AIDS Prevention Initiative in Nigeria (APIN). Pregnant women and people living with AIDS have more access to HIV testing and counselling, as well as antiretroviral medicines, as a result of their efforts¹⁵. In addition, Family Life and HIV/AIDS Education (FLHE) has been incorporated into the school curriculum with a complete list of themes on HIV, AIDS, and family life that are geared toward young people. The Presidential Comprehensive Response, the National Health Policy, and HIV/AIDS strategic preventive plans are just a few of the HIV/AIDS response policies that have been implemented to boost the HIV/AIDS intervention program. In addition, an anti-stigma and anti-discrimination statute were enacted into law in 2014 in order to protect the rights of individuals who are currently living with HIV¹¹. The implementation of these measures may have contributed to the great success seen in the national, regional, and state-level decreases in HIV infection rates.

National regulations restricting the actions of males who have sex with men and commercial sex workers endanger HIV prevention¹⁶. Criminalization, stigmatization, and prejudice arising from society frequently prevent individuals from submitting to a test, exposing their status, or receiving treatment.

2.1.3 Women and HIV

Infections among young women and girls account for a disproportionately high number of new cases of AIDS and the human immunodeficiency virus (HIV), with women making up more than half of those affected globally⁶. Due to biological vulnerabilities, low socioeconomic level, the predominance of male sexual behaviour, and epidemiological variables, the risk of HIV infection among women are growing¹⁷. Women are inherently more vulnerable to contracting HIV than males, and men transfer the virus to them more frequently than women do. HIV can spread from males to women more easily than it can from women to men because of the vagina's size and lining¹⁸. As a result, women are twice as likely as men to contract HIV through unprotected sexual contact¹⁹. The majority of sexually transmitted diseases (STDs) affect more women than males because they possess a larger mucosal surface which can be exposed to pathogens during sexual contact. This is even more prominent in young women whose vaginal tracts are not yet fully matured²⁰. Moreover, semen carries a greater volume and concentration of virus than vaginal or cervical secretions²¹. Frequently, women have limited influence or control over decisions regarding their partners' sexual behaviour, such as condom use and safer sex, and over access to knowledge on primary prevention; women are also susceptible to coercive sex, such as spousal and non-spousal rape, as well as sexual abuse within and without the family²². This sexual subordination of women makes it challenging for them to protect themselves from sexually transmitted illnesses (STIs), including HIV infection²³.

Menstruation and co-infection with other sexually transmitted diseases and infections, which are more prevalent in women, are additional physiological factors that raise women's susceptibility to HIV infection²⁴. This is exacerbated by culturally sanctioned behaviours such as dry sex and intergenerational sex²⁵. In addition, it is more challenging to discover STDs in women than in men, and they frequently go untreated, resulting in persistent

infections and long-term problems. This high prevalence of sexually transmitted diseases among women is associated with a rise in infertility, cervical cancer, and HIV infection. Other factors that contribute to greater infection rates among women include high unemployment rates, gender inequality, migration, and a lack of education, all of which are associated with poverty and disempowering women²¹.

Because of the social and environmental conditions that poverty creates, HIV can spread more easily. Other issues include the inability to afford treatment or prophylactic measures like condoms. The majority of unemployed women are more concerned with their urgent survival needs than with obtaining condoms or contraception²⁶. It has been claimed that women lack the social authority required to make appropriate sexual decisions; as a result, they frequently rely on men to make those decisions for them²⁷. Therefore, in the majority of pairings, men decide whether a condom will be used. Additionally, cultural norms and behaviours reinforce and exacerbate women's powerlessness in the face of the pandemic²⁸.

HIV and AIDS have predominantly put women in danger because, in addition to being viewed as carriers of the virus, they are also assigned a subservient position in society, thus reducing their stature in a world that already shows contempt towards them²⁹. Additionally, it has been found that gendered symptoms of the disease in women, such as persistent vaginal thrush and genital ulcers, are frequently misdiagnosed as signs of treatable sexually transmitted diseases, contributing to women's vulnerability. This resulted in a number of undetected AIDS-related fatalities among women and has grave implications for how the virus and its manifestations are perceived within the medical and social realms²⁶. In addition to highlighting the gendered character of medical training and the inherent prejudices against women when it comes to STDs, HIV, and other sexually associated issues, these trends indicate unequal access to medical care for women who are HIV-positive³⁰.

The higher physiological risk encountered by African women is complicated by the HIV risk they tolerate as a result of subordination, discrimination, and inequality. In most of Africa, sexually transmitted diseases still have a stigma because they are believed to affect women and are sexually transmitted. The widely held belief that women are inherently dirty sexual beings who transmit sexually transmitted diseases is supported by instances across the continent. There is no doubt that such myths contribute to women's bias in the face of the epidemic. Most importantly, such ideas have had a harmful impact on women's health in most African communities. The women assume that they are virus carriers as a result of the pervasive negativity surrounding women's health and thus embrace the idea that they are intended to get the virus.

2.1.3.1 Prevalence of HIV in Women

The UNIADS estimates that girls and women make up more than half of the 37.7 million people living with HIV⁶. It has been suggested that the increasing feminization of the HIV pandemic may also be the result of connected sociocultural and economic variables that make women more mentally and socially vulnerable. Together with laws and institutions that do not meet women's needs, gender-based violence and gender inequality may have a significant influence in deterring young women from protecting themselves against HIV and getting treatment¹⁷.

Antiretroviral therapy (ART) and other services which aid HIV prevention are widely available in regions such as Oceania and Europe, which have low HIV prevalence among women. Pregnant women are typically tested for HIV on a regular basis, and if positive, are recommended to start antiretroviral therapy (ART) as soon as possible and receive advice on behaviour adjustment.

60% of individuals infected with HIV in SSA are female, and 75% of those 15–24 years old. Women are not permitted to seek medical care, make sexual decisions (e.g., condom use), or express their sexual sentiments since their wishes and needs (including their health needs) are deemed unimportant²⁶. Cohort studies and clinical trials show that the steady prevalence opposes high incidence rates of HIV in women. This is contrary to assertions that the prevalence of HIV in women is stabilizing or declining in some SSA countries, such as Southern Africa³¹.

With 110,000 new HIV infections among women between the ages of 15 and 49, Nigeria has the second-highest rate in the world. Studies on prevalence have also revealed that more women than men are affected by the HIV/AIDS epidemic in Nigeria¹³. The well-being of women is harmed by some cultural traditions that are widely revered in Nigerian society, such as child marriage, levirate marriage, and polygamy, which all promote the spread of HIV. As a result of more women getting infected with the disease, there is also an increase in paediatric HIV which results from mother-to-child-transmission (MTCT)³².

2.1.3.2 Factors that Increase Women's Vulnerability to HIV in Africa

Biological Risk Factors

Physiologically, women are more prone to contracting HIV than men. Women are more susceptible to tissue injury during sexual activity due to their larger mucosal surface area, which can be exposed to pathogens as well as infection causing fluids for extended periods of time. Due to cervical ectopy, which increases target cell exposure to trauma and infections in the vagina, young women are at an increased risk²⁰.

According to reports, hormones such as progesterone contribute to a woman's inherent susceptibility to HIV infection. Observational research indicates that progesterone-containing injectable contraception depot medroxyprogesterone acetate (DMPA) may increase the risk

of HIV infection in women³³. However, there are contradictory studies that have not identified this risk³⁴. Injectable contraception is one of the most widely used contraceptive methods in sub-Saharan Africa. On the basis of contradictory evidence regarding the role of DMPA in HIV acquisition, the World Health Organization (WHO) issued a statement recommending that women on hormonal injectable progestin contraception be counselled to use condoms in addition to other methods of pregnancy prevention to prevent HIV acquisition³⁵.

High levels of oestrogen and progesterone during pregnancy or from exogenous sources may result in anatomical changes to the vaginal mucosa or immunological changes, such as an increase in mucosal lymphoid aggregates or hormone-induced overexpression of HIV co-receptors. Elevated levels of oestrogen are also associated with cervical ectopy in young women, which increases their risk of HIV infection³⁶. According to the research, seven to ten days after ovulation in the women's menstrual cycle is a period of susceptibility during which the likelihood of viral infectivity in the female reproductive tract increases. This is due to the fact that sexual hormones suppress the innate, humoral, and cell-mediated immune systems. This overlaps the upregulation of HIV co-receptors and the recruitment of potentially infective cells in the upper and lower female reproductive tracts³⁷.

Socioeconomic Vulnerabilities

The amount of money spent on social services has been significantly impacted in the majority of SSA countries by the region's last two decades of weak economic growth. African communities have become even more impoverished as unemployment rates have risen and social services like healthcare and education have shrunk. Reduced access to social services, healthcare, and education affects women's ability to avoid HIV.

Another factor contributing to HIV transmission among women is poverty²⁹. Having a lower socioeconomic class has been linked to earlier sexual experience, unlikely use of condoms, a

higher risk that the first sex act is not consenting, and a higher likelihood of having engaged in transactional sex or sexual coercion³⁸.

Sexual transactions for money are frequent in SSA. Female sex workers are 13.5 times more likely to be HIV-positive than other women globally³⁹. It is estimated that sex work is responsible for 15% of HIV cases among adult females. When compared to the projected 106,000 deaths globally linked to female sex work, SSA has the largest percentage of deaths attributable to female sex work, with an estimated 98,000 HIV-related deaths attributable to female sex work⁴⁰.

Behavioural Vulnerabilities

The effectiveness of behavioural change in lowering HIV infection is well established. These include safe sexual practices such as use of condoms, having a single partner or reducing the number of partners, abstinence or delaying sexual debut as well as voluntary counselling and testing. However, for many women, abstinence is not an option. Early sexual experience is linked to risky sexual behaviours later on, including having several partners and less usage of condoms and contraceptives³⁸. Studies conducted in Africa revealed a link between early sexual activity and the prevalence of HIV⁴¹. Strong HIV vectors in the community are concurrent partnerships. In Africa, having multiple partners for sexual activity at once is common. Unprotected anal sex increases a person's susceptibility to HIV infection by 13 times more than oral sex. The fragility of the rectal mucosa is mostly to blame for this⁴².

Alcohol abuse in a large portion of Africa is characterized by sporadic, strong drinking episodes, which generally take the form of weekend binges. These drinking habits may each have different effects on one's capacity for condom negotiation, sexual decision-making, and appropriate condom use. Studies have revealed that women with heavy episodic drinking

patterns are more likely to experience sexual assault, use condoms incorrectly and inconsistently, and contract an STD, including HIV⁴³.

Structural Vulnerabilities

Women are vulnerable because of a variety of structural issues, such as migration, stigma related to accessing medical care, gender inequity, and gender-based violence (GBV). Gender inequality is created and maintained by social standards that require men and women to act in culturally acceptable ways⁴⁴. A lower level of education among women, fewer public roles for women, a lack of family, social, and legal support for women, and a lack of economic power for women are all consequences of hierarchical gender roles, which also include notions of male sexual entitlement, the low social value and power of women, and ideas of manhood linked to the control of women.⁴⁵ Due to institutionalized economic inequities that keep money, land, and other resources out of women's reach, they are more financially dependent on men, more likely to engage in transactional sex, less likely to be able to negotiate safe sex or condom use with partners, and more vulnerable to violence⁴⁶.

Gender norms encourage men to engage in multiple sexual relationships at once, whilst women are expected to be monogamous and understanding of their partners' actions. Sexual negotiation or refusal by a woman may result in infidelity suspicions and intimate partner violence, which is frequently accepted in these settings⁴⁷. Women who are sexually subordinated face heightened risks to their reproductive health, such as maternal mortality, unsafe abortion, coercive sex and rape, STIs, and HIV⁴⁸. Violence against women is a widespread problem that has been linked to STIs like HIV. In some countries, more than 50% of women have claimed to have experienced physical violence from a partner they have an intimate relationship with⁴⁹. Having experienced sexual violence, one is also more likely to engage in drug and alcohol misuse, have multiple sexual partners, exchange sex for drugs and

money, and use less contraception⁵⁰. Women who are younger, poorer, and less educated are more likely to experience intimate partner abuse⁵¹.

People seeking HIV testing and treatment have been significantly influenced by stigma and fear of disclosing their status⁵². Because they are typically expected to uphold the moral traditions of their communities, women experience the worst HIV stigma and discrimination because being diagnosed with HIV is an indication that they have failed in this regard⁵³. HIV-positive women experience stigma, discrimination, and other human rights violations from their families, their communities, legal and social organizations, healthcare facilities, and the workplace.

In healthcare settings, information about HIV prevention and treatment, sexual and reproductive health, and family planning is frequently withheld or delivered improperly. In addition to being denied care WLWH have also been denied treatments, been treated harshly and judgmentally, and not given informed consent⁵⁴. Women are generally hesitant to get tested for HIV due to stigma, and they lack the power to execute HIV prevention⁵⁵.

Regardless of the prevalence of HIV at the origin or destination, migratory populations generally have higher rates of HIV infection than non-mobile ones. Mobility might encourage risky sexual behaviour, and migrants' social networking frequently provides opportunities for sexual networking. Women are becoming more mobile and frequent travellers for financial reasons. They are frequently forced to labour in menial jobs including domestic work, commercial sex, and informal trade because of their lack of education. A study that compared migrant and non-migrant women in South Africa discovered that migrant women were older, more likely to be married, have several sexual partners, and less likely to use condoms. Migrant women had a 1.60 times greater chance of contracting HIV than non-migrant women⁵⁶.

Urbanization has also contributed to the rapid HIV spread. Urban HIV prevalence in sub-Saharan Africa is higher than rural prevalence⁵⁷. New metropolitan cultures that set fewer restrictions on sexual behaviour and marriage replace ancient village practices as a result of urbanization. Additionally, societal problems like drug abuse, which encourages high-risk behaviour, are linked to the loss of culture and social networks. Political unrest and warfare are common in Africa, and they have an impact on the risk of HIV/AIDS by upsetting regular social and risk networks, escalating poverty and social unrest, and weakening or destroying medical infrastructure⁵⁸. War and civil disturbance typically result in widespread population displacement, damage social cohesion and relationships, and promote promiscuity and commercial sex⁵⁹. It can also force people to move from areas with low HIV prevalence to areas with high HIV prevalence. Women who have been forcibly relocated or are in transit as a result of war or violence are more likely to report receiving goods or payment in return for sexual services.

2.1.4 HIV and Pregnancy

Women of reproductive age comprise more than half of all people living with HIV infection worldwide and it is estimated that more than 1.5 million women with HIV will give birth annually⁶⁰. Whether HIV-infected or not, the immune system of pregnant women is inhibited, with diminished cell-mediated immunity. There is concern that pregnancy could speed up HIV progression and so increase the likelihood of MTCT because of these usual changes in a pregnant woman's body.

In affluent countries, the presence of HIV has little impact on the challenges or results of pregnancy because to the greater accessibility of healthcare. HIV in pregnancy is a well-known pregnancy problem in low-resource settings, requiring referral to tertiary hospitals for

improved therapy. Researchers have reported that HIV-positive women may have an increased risk of obstetric difficulties and bad neonatal outcomes.

HIV can impact obstetric difficulties and bad outcomes in a variety of ways. Due to their general ill health and compromised immune systems, women who are HIV-positive may be more susceptible to chorioamnionitis, a uterine infection that results in membrane rupture, preterm birth, low birth weight, and puerperal sepsis, increasing the risk of MTCT. Other diseases such as genital-tract infections, sexually transmitted infections, urinary-tract infections, and bacterial pneumonia are more prevalent among HIV-positive women. HIV-positive women have a higher incidence of ectopic pregnancy, probably due to concomitant STDs.

Additionally, women who are HIV-positive may experience obstetric challenges that are worsened by a lack of access to adequate healthcare because of stigma related to HIV.

Additionally, HIV is known to increase the risk of maternal death, and women who are HIV positive may experience additional complications following surgery. According to some estimates, pregnant women who test positive for HIV have an eight-fold greater risk of maternal death. Approximately 34% of maternal fatalities in SSA are attributed to HIV⁶¹.

Determining the impact of HIV is challenging since other factors, such as drug use and ART, may also contribute to pregnancy issues and poor outcomes.

2.1.4.1 Vertical Transmission

The term -vertical transmissionll refers to the process by which the HIV virus is passed from an infected childbearing woman to her fetus or infant during pregnancy; labor; at birth; or postnatally through breastfeeding. Vertical transmission can occur at any time during a

woman's pregnancy. Out of the estimate 37.5 million people living with HIV as of the year 2020, 1.7 million of them were children⁶.

More than ninety percent of these newly diagnosed cases of HIV were found in young people residing in sub-Saharan African countries. There is a significant amount of heterogeneity between nations, although the total incidence of newly acquired infections in children has decreased by 24% since 2009 in the region as a whole⁶².

It is essential for the prevention of HIV transmission from mother to child that pregnant women consent to HIV testing and are found to be HIV positive. Testing pregnant women for the HIV virus is based on this initiative, which aims to prevent vertical transmission of the infection.

2.1.4.2 Anti-retroviral Drug Therapy

Antiretroviral medication, also known as Highly Active Ante Retroviral Therapy (HAART) or combination therapy or triple therapy, has had a significant influence on reducing the progression of HIV disease and has also had an impact on the management of pregnant women who are HIV positive. This pharmacological therapy is a combination of three antiviral HIV drugs from at least two different classes. It works by preventing the virus from replicating in the blood and reducing viral load to levels that are undetectable. This medication therapy has had a significant impact not just on treatment, but also on the justification and motivation for antenatal HIV testing. HIV testing, followed by medication therapy, is an effective technique for minimizing the risk of infection in infants⁶³.

A woman's ability to take her medication as prescribed is an absolute necessity for the treatment to be effective; yet, some women will have trouble doing so, particularly if the HIV

diagnosis and her medication are kept a secret⁶⁴. It may be difficult for mothers to retain their desire for anonymity if they give their infants antiretroviral treatment for the first six weeks of their lives. The most important things to keep in mind are that the viral load and exposure to the new-born should be as low as possible throughout pregnancy in order to limit the risk of vertical transmission, and this should be the end goal of any medication therapy administered during pregnancy.

2.1.4.3 Interventions and Birth Options

HIV positive pregnant women are encouraged to accept additional protective interventions. This included the use of caesarean section delivery as a mode of birth. Many obstetric units now support a short duration, noninterventional vaginal birth, if maternal viral load remains undetectable prior to birth⁶⁵.

2.1.5 Psychosocial and Emotional Experiences Among PLWH

The same negative psychological and social effects that are experienced by people with chronic illnesses are also experienced by HIV-positive people. They include having a terminal illness, dealing with an initial HIV positive diagnosis, developing opportunistic infections, and experiencing sudden changes in physical and neurocognitive functioning⁶⁶. They contend that in addition to social stigma, changes in social roles, decisions regarding disclosure of illness status, adjustments to sexual practices, and uncertainty regarding material and financial resources, there may be other psychosocial difficulties that arise as a result of adjusting to having HIV. As a result of beginning antiretroviral therapy, some psychosocial difficulties may arise, including the occurrence of severe side effects, problems with compliance and adherence, and even the perception of taking chronic medicine⁵⁰.

People with HIV and AIDS have not been extensively characterized in terms of the burden of recent or ongoing traumatic and stressful situations. Studies that looked at recent trauma

among HIV-infected people, however, found relatively high levels of these events. A study of HIV- infected individuals getting medical care, for example, found that 55% of women, 20% percent of heterosexual men reported physical violence by a partner since HIV diagnosis⁶⁷. Early intervention for PLWH would prevent the development of significant psychological disorders as the disease progressed⁶⁶. HIV has a substantial impact on each individual, but it also has an influence on their family, friends, and the larger community. The use of antiretroviral therapy enables PLWH to retain their health and frequently to conduct quite regular lifestyles. Despite an increase in the number of PLWH receiving ART, some people still do not have access to this medication.

People's emotional responses when learning of their diagnosis are comparable to those described by the Kubler Ross stages of grief⁶⁸. They go through a variety of emotions, including dread, sadness over a loss, guilt, denial, rage, anxiety, low self-esteem, despair, suicidal behaviour or ideas, spiritual challenges, socioeconomic problems, and finally hope and equilibrium. Support from close friends and family members and counselling are crucial components of a person's physical and psychological well-being and assist the person in achieving a state of equilibrium and hope where they may embrace life with HIV and AIDS in a positive way⁶⁹.

2.1.5.1 Psychosocial factors in HIV Infection

Any person who is given a positive diagnosis of HIV will experience repercussions as a result of the serious nature of the disease. For any given person, receiving a positive diagnosis might have a wide variety of implications⁷⁰. It is a dangerous condition that can risk one's life. Individuals may exhibit signs of depression and anxiety. It is difficult for HIV-infected individuals to get assistance in times of need due to the widespread stigma surrounding the disease and its route of transmission. Issues of integrity and trust, which lie at the heart of

personal partnerships, are challenged. The results may include relationship loss and even domestic violence⁷¹.

Because sexuality is such a taboo topic in most cultures, it may be difficult for individuals and families to confront the difficulties in an open and honest manner⁷². This can lead to complex bereavement, resentment, distrust, and despair. As a result, most HIV-infected people can be expected to endure psychological anguish. There is little doubt that providing emotional or psychological assistance to all affected people should be part of comprehensive HIV treatment. However, distinguishing between an expected and transitory reaction to adversity and a mental condition requiring additional psychological or psychiatric intervention is essential.

There has been much speculation on the role that mental disorders play in the spread of HIV. It is suggested that people with mental disorders may be more at risk of acquiring the disease as a result of risky sexual behaviour.

2.1.5.2 Psychological Effects of HIV

Frequently, receiving an HIV diagnosis results in the first shock of a positive serology test, panic over the course of the disease, dread of losing family and friends, and worries about disease transmission. In addition to the rise in opportunistic illnesses, these emotional stressors may cause HIV-infected patients to experience sadness or other mental health issues. People with HIV tend to have depressive disorders more frequently than the general population does⁷³.

2.1.6 Stress-Related Psychological Conditions and HIV

When the HIV epidemic first started, it was believed that there wasn't much to give those who contracted the virus. At that time, being seropositive was viewed as a -death sentence⁷⁴. It was evident that HIV-positive individuals were going through a lot of psychological pain.

When antiretroviral therapy (ART) was introduced, those who were seropositive for HIV had hope and optimism for a recovered mental and emotional state⁷⁵. However, there is still little information available on psychological health service use among PLWH. In countries with adequate resources, mental health services have been incorporated into HIV programs for many years due to strong evidence of the connections between mental health and HIV⁶⁶. According to studies conducted in these nations, HIV-positive individuals frequently struggle with depression and anxiety disorders as they come to terms with their diagnosis, consider what a positive HIV test result means, learn to live with a chronic illness that poses a serious risk to their health, anticipate and learn about the disease's progression, and experience the loss of friends and family.

2.1.7 Overview of Depressive Disorders

Depression is a complex condition with clinically diverse symptoms including mood and cognitive function abnormalities⁷⁶. Depressive disorders can be broken down into different categories in accordance with the Diagnostic and Statistical Manual of Mental Disorders V (DSM-V), including major depressive disorder, persistent depressive disorder, premenstrual dysphoric disorder, disruptive mood dysregulation disorder, substance-induced mood disorders, and mood disorders brought on by medical conditions⁷⁷.

The mental illness known as major depressive disorder (MDD) is characterized by symptoms such as losing interest in everyday activities, insomnia, excessive sleeping, weight loss or gain unrelated to dieting or excessive eating, psychomotor difficulties, memory problems, and suicidal thoughts that last for at least two weeks and limit the sufferer's ability to function⁷⁸.

Persistent depressive disorder (PDD), formerly known as dysthymia, lasts at least two years in adults and one year in children. PDD generally grows worse over time, producing

symptoms like functional impairment and suicidal ideation⁷⁹. Premenstrual dysphoric disorder (PMDD) occurs in menstruating women before monthly menstruation and fades immediately after menstruation⁷⁷. Irritability, tension, sadness, and mood swings are some of the more distressing PMDD symptoms, although breast soreness and bloating can also be a problem.

Disruptive mood dysregulation disorder (DMDD) is characterized by irritable conduct or excessive temper outbursts (verbal or behavioural) in children under the age of ten. For over a year, children with DMDD have regularly displayed evident irrational behaviours three or more times each week⁸⁰.

Depression is a mental health problem that can impede a person's capacity to lead a regular life, including the ability to hold down a job, attend school, and do other routine duties. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V)⁷⁷, Individuals are clinically diagnosed with depressive disorders if they exhibit five or more of the following symptoms for at least two weeks: a depressed mood and/or a substantial loss of interest or pleasure in living activities, plus at least four of the following:

- 1) Significant Unintentional Weight Loss or Gain,
- 2) Insomnia or Excessive Sleeping,
- 3) Agitation or Psychomotor Retardation Observed by Others,
- 4) Fatigue or Loss of Energy,
- 5) Feelings Of Worthlessness or Excessive Guilt,
- 6) Decreased Ability to Think or Concentrate,
- 7) Indecisiveness, And
- 8) Recurrent Thoughts of Death.

2.1.7.1 Global Burden of Depressive Disorders

Mental disorders are among the leading causes of the global health-related burden. The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019 showed that the two most disabling mental disorders were depressive and anxiety disorders, both ranked among the top 25 leading causes of burden worldwide in 2019⁸¹. This burden was high across the entire lifespan, for both sexes, and across many locations. Perhaps more importantly, no reduction in the global prevalence or burden was detected for either disorder since 1990, despite compelling evidence of interventions that reduce their impact⁸².

2.1.7.2 Causes of Depressive Disorders

Depressive disorders have a complex etiology that takes into account important biological, social, and psychological factors. The underlying biological causes are thought to be genetic differences and/or chemical imbalances in the body. An imbalance of monoamine neurotransmitters like serotonin and noradrenaline has been hypothesized as a physiological cause of depressive disorder. A decrease in serotonin levels may cause depressive diseases since serotonin is the neurotransmitter that controls the body's mood, sleep, aggression, and sexual behaviour, among other functions. According to the catecholamine hypothesis, a drop in the hormone norepinephrine, an excitatory one, might lead to a depressed state of mind. The catecholamine theory has a fundamental fault in that there are no defined gold standards for quantifying the amount of neurotransmitter in the brain⁸³. Predisposing negative life events such as losing a job, being isolated from family and friends, losing a loved one, ending a relationship or marriage, being laid off, suffering a physical injury, going through traumatic experiences as a child, suffering from illnesses, and having insufficient social support networks are examples of social factors. Psychodynamic, cognitive, and behavioural components are

examples of psychological factors. Unhealthy self-perceptions over time can also lead to depressive diseases.

2.1.7.3 Treatment of Depressive Disorders

Depression is a condition that can be treated. The many stages of depression each have their own unique set of symptoms and treatment choices. The treatment of depressive disorders can be broken down into three distinct categories: acute treatment, continuing treatment, and preventative treatment. The therapy modalities that are utilized are geared specifically for the treatment of persistent depressive disorders. Some examples of such things are talk treatments and pharmaceutical antidepressants. It has been demonstrated that the most effective treatment for the debilitating effects of depressive disorders is optimal adherence to treatment with antidepressant medications and psychotherapies⁸⁴.

2.1.8 Depression Disorder and HIV

Being HIV positive doesn't always or necessarily result in depressive disorders. It may result from psychological stress, neuropsychiatric changes brought on by HIV infection, or psychiatric side effects of ARV medication, and it may fall under the DSM 5 category of substance- or medication-induced depressive disorder, which is classified differently depending on the substance or medication used.

With a prevalence of up to 39% of the population, depression is the most often seen mental health problem among PLWH⁸⁵. The prevalence may be even greater among substance users. Depression symptoms have been linked to risky behaviour, pharmaceutical non-adherence, and decreased survival. Grief, stigmatization, dread of others' reactions, anxiety about the future, changes in identity, as well as psychiatric illnesses, particularly depression, are among the mental health issues experienced by people living with HIV.

2.1.9 Perinatal Depression

The perinatal phase, a crucial stage of pregnancy and the beginning of motherhood, is a vulnerable time for the emergence of mental health conditions such as perinatal depression (PND)⁸⁶. In accordance with the –with peripartum onset specifier for depressive disorders, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines PND as a major depressive episode that occurs during pregnancy [antenatal depression (AND)] or after childbirth [postpartum depression (PPD)] (onset during pregnancy or within 4 weeks after delivery)⁷⁷. PND should not be confused with the so-called –postpartum blues, which are a common state of mood fluctuations, tiredness, tearfulness, irritability, and feelings of anxiety that normally pass 10–14 days following delivery⁸⁶.

In addition to a variety of biological factors which may influence temperament during the early postpartum recovery phase, the accumulation of psychological stressors during the course of the first year after childbirth also contribute to the occurrence of depressive episodes. Depression during the perinatal period can be characterized by low mood, loss of energy and/or interest in everyday activities, sleep issues or changes in appetite/weight, poor attention, feelings of worthlessness, remorse, and/or hopelessness, and suicide ideation. Five or more specific symptoms, including a depressed mood or loss of interest, must be present for at least two weeks in order to diagnose severe depression⁷⁷. According to DSM-5 criteria, depressive episodes that start more than four weeks after delivery are classified as depressive disorders without the peripartum modifier. But in reality, the important risk windows for depression diagnosis and treatment are during pregnancy and for up to a year after delivery⁸⁷.

2.1.9.1 Risk Factors of PND

PND has been associated with a number of risk factors, including social, psychological, biological, and genetic factors⁸⁷. The increased probability of developing AND symptoms has been associated with history of depression, maternal anxiety, low exercise frequency, unexpected pregnancies, intimate partner violence, history of child abuse, lower income, poorer education, smoking, single status, and poor relationship quality⁸⁸.

According to literature review, the strongest two risk factors for PPD are AND and current domestic abuse⁸⁹. A meta-analysis of 56 studies found that the incidence of PPD was 17.7% worldwide, and that higher rates of income inequality, maternal mortality, infant mortality, or women working 40 hours per week were responsible for 73% of the variation in prevalence between nations⁹⁰.

2.1.9.2 Health Consequences to the Mother and Offspring

Both the mother and the child may suffer grave health effects as a result of PND. Preeclampsia, placental abnormalities, spontaneous abortion, delayed foetal development, a greater incidence of preterm and low birth weight, and increased rates of prenatal and postnatal issues have all been associated to AND⁸⁸. PPD can have a detrimental effect on a mother's capacity to adapt to the role of mother, her confidence in caring for her infant, her quality of life and her connections with other people, the emotional, cognitive, and behavioural development of her children, and the father's mental health. Additionally, some pregnant women who are depressed have a higher risk of suicide. According to estimates, suicide may account for up to 20% of maternal mortality. PND can also have an impact on children because they are more likely to experience serious developmental delays. For example, children who have PND may exhibit decreased activity, fewer facial expressions, decreased attentiveness, and physiological changes such as elevated cortisol and decreased dopamine and serotonin levels⁹¹.

2.1.10 Depression in HIV-Infected Pregnant Women

Women experience major bodily, social, and psychological changes during pregnancy and the postpartum period; the presence of HIV adds another level of complication⁹². For WLWH, pregnancy may be a time when they are more emotionally vulnerable because of different social factors, issues with disclosure, and stigma related to HIV⁹³.

Women living with HIV/AIDS are more likely to suffer from depression, and the risk may be enhanced during pregnancy. HIV is a neurotropic virus that can penetrate and survive in the central nervous system at the time of initial infection. As a result, the virus itself may produce symptoms of depression. Notably, depression is associated with decreased CD4 counts, faster immune function decreases, and higher mortality.

In general, depression is one of the most common co-morbidities of HIV infection, is associated with the HIV-infected person's physical health outcomes, and can limit his/her ability to receive HIV/AIDS's treatment. It was also found that depressive symptoms are associated with greater non-adherence to antiretroviral treatment, faster disease progression, and overall lower quality of life. Depressive symptoms negatively impact biomedical outcomes among PLWHs, along with their self-care, and their quality of life. All of these findings show the need to help HIV-infected pregnant women through screening, detecting, treating, and preventing major depression. Early detection and appropriate screening tools improve case findings and encourage early treatment.

2.1.11 Factors Associated with Depressive Disorders In WLWH

Depression and Psychosocial Factors

In some studies, the psychosocial impacts of depression on the progression of the disease and on a person's life expectancy were particularly obvious among HIV-positive individuals who had a history of poor psychosocial experiences connected to their lives. When compared to those without HIV and never experienced depression, PLWH, especially women, have nearly two-fold increased risk of dying from AIDS⁹².

Based on the analysis of the number of CD4 cells and the viral load, it has been determined that the variation in the progression of HIV disease is primarily caused by psychosocial factors such as a lack of hope, a depressed mood, and an inability to cope, regardless of whether or not the medication is being taken⁹⁴.

Beneficial psychosocial components including social support, a coping mechanism, spirituality, and outstanding personal conduct may be helpful for PLWH since they have a positive influence on how those people build their lifestyles and may prevent the disease from progressing to AIDS. In a similar vein, numerous studies lend credence to the idea that the presence of psychosocial variables and depression, regardless of the presence of an opportunistic infection, can have an effect on immunological suppression and the course of disease in persons who are living with HIV.

Depression and Neurohormonal Factors

There is evidence from several peer-reviewed studies that CD4 cell loss and a rise in viral load are mostly caused by hormones linked to stress, anxiety, or depression when antiretroviral therapy is not used. This could hasten the development of AIDS and reduce life expectancy⁹⁵.

In spite of the fact that taking antiretroviral medications as prescribed lowers the risk of depression in PLWH⁹⁶, some treatments may have an impact on the noradrenergic effect and hasten HIV disease progression, whereas beta-blocker medications that inhibit the adrenergic mechanism may slow disease progression⁹⁷.

Depression and Virologic Factors

Lack of antiretroviral medication adherence, alcohol abuse, and other risky behaviors have been highlighted as mediators of the relationship between depression and higher viral loads and poorer HIV disease outcomes⁹⁸.

Among the impacts of HIV on the immune system is a considerable decrease in CD4 count, which renders HIV-positive individuals prone to opportunistic infections⁹⁹. HIV primarily infects CD4 T cells, which represent the majority of infected cell types. As cytokine-producing cells, these cells play a crucial role in the immunological defences against opportunistic infection⁹⁸. Greater average clinical depression has also been associated with a quicker decline in CD4 count⁹⁶. The hormones generated by the adrenaline gland during depression and anxiety had an effect on CD4 count, indicating a link between depression and immunological suppression.

2.1.12 Psychological Stress in WLWH

There is a high prevalence of stress among PLWH. But compared to men, women experience more psychological stress⁹². HIV-specific and non-HIV-specific stresses can affect WLWH. Stressors that are particular to HIV have a direct impact on HIV diagnosis and therapy, but stressors that are not specific to HIV do not. Poverty, stigma, prejudice, unemployment, and violence are examples of common stresses. WLWH's poor physical and psychosocial health as well as the onset of psychiatric issues may be linked to psychological stress¹⁰⁰. Qualitative

research has shown that psychological stress among WLWH can restrict access to and retention in HIV treatment, health-related quality of life, HIV transmission risk, and depression¹⁰¹.

Not all WLWH experience chronic psychological stress or other mental health disorders connected to their HIV status, despite the fact that HIV infection is one of the risk factors for chronic psychological stress among SSA women¹⁰². This highlights the value of resilience and how each person reacts differently to stress related to receiving an HIV diagnosis. In response to tremendous stress, some people might not experience any symptoms at all, while others might get psychiatric problems like post-traumatic stress disorder. Reportedly, personality factors, social support, and coping style contribute to WLWH's ability to adjust to HIV-related stress¹⁰³.

2.2 Theoretical Framework

The perinatal period is a period of considerable physical, mental, and social transformation in women, and these changes can be especially difficult for women living with HIV. During the perinatal period, this population faces psychosocial issues such as stigma, discrimination, social isolation, and the fear of transferring HIV to their child. This theoretical review intends to provide a summary of the theories and literature that have been developed regarding the psychological difficulties faced by women living with HIV throughout the perinatal period.

2.2.1 Social Support Theory

When dealing with difficult life events, such as pregnancy, childbirth, and HIV diagnosis, social support is a vital resource. Individuals' well-being, ability to manage stress, and health outcomes can be improved through social assistance. Theoretically, there are different types of social support, including emotional, instrumental, informational, and appraisal support¹⁰⁴. Empathy, love, and companionship are examples of emotional support, while material and

financial resources are examples of instrumental support. Informational support is the provision of counsel, direction, and data, whereas appraisal support is the receipt of comments and approval of one's actions and attitudes.

According to research, social support is essential for the health of women with HIV infection during the perinatal period¹⁰⁵. Higher levels of social support for women are associated with improved antiretroviral medication adherence, better mental health outcomes, and a lower risk of HIV transmission from mother to child¹⁰⁶. By creating a supportive and free-of-bias environment, disseminating correct information, and directing women to social support services, healthcare professionals can play a crucial role in providing social support to women living with HIV during the postpartum period¹⁰⁷.

2.2.2 Stress and Coping Theory

According to stress and coping theory, people become stressed when they perceive that their resources are insufficient to handle the demands of a particular circumstance¹⁰⁸. People can cope with stress and preserve their psychological well-being by using coping methods such as asking for social support or addressing problems.

The physical and mental challenges of pregnancy and childbirth, the stigma and prejudice associated with HIV, and the fear of transmitting HIV to their unborn child are among the numerous challenges that women living with HIV experience during the perinatal period^{109,110}. Women can manage these challenges and retain their well-being using effective coping mechanisms. Studies have demonstrated that self-care practices, including exercise and meditation, social support, and antiretroviral medication regimens, can enhance the mental health of women with HIV throughout the perinatal period¹⁰⁶.

2.2.3 Diathesis-Stress Model

According to the diathesis-stress model, a person's biological susceptibility (diathesis) and exposure to stressful life events (stress) interact to cause mental health issues¹¹¹. In the case of women with HIV in the perinatal period, their biological susceptibility can include difficulties in dealing with a chronic illness on a physical and mental level, as well as the possibility of vertical transmission of HIV to their unborn child¹¹².

The physical and mental demands of pregnancy and childbirth, as well as societal stigma and prejudice associated with HIV status, can all be stressful in this situation¹¹³.

According to previous research, pregnant women with HIV are more likely to experience stress, anxiety, sadness, and other mental health issues^{112,113}. According to the diathesis-stress model, women with a biological predisposition to mental health issues, such as a family history of mental illness or genetic predispositions, may be more likely to experience these issues as a result of being exposed to stressors associated with prenatal care and HIV. Additionally, the model suggests that social support and coping strategies may act as protective factors that help mitigate the negative effects of stress¹¹¹.

Therefore, identifying those who may be at an elevated risk for mental health problems and informing the development of interventions to lessen these risks can benefit from knowledge of the psychosocial challenges faced by women living with HIV throughout the perinatal period. The diathesis-stress model can offer a framework for comprehending the intricate interactions between biological vulnerabilities and environmental stress in the emergence of mental health issues in this population.

2.2.4 Biopsychosocial Model of Health

The biopsychosocial model of health examines how social, psychological, and biological factors interact and influence health outcomes¹¹⁴. This implies that biological, psychological, and social variables are interrelated and can affect a person's health and well-being.

The biopsychosocial framework emphasises the significance of treating the biological, psychological, and social aspects that influence health outcomes of women living with HIV throughout the perinatal period.

The risk of HIV transmission from mother to child and the health of the mother and child might be influenced by biological parameters, such as HIV viral load and CD4 count. Adherence to antiretroviral therapy and the mother's overall health can be affected by psychological variables, including depression and anxiety. The social support the mother has access to, and her overall quality of life might be impacted by societal variables, including stigma and discrimination.

2.2.5 Intersectionality Theory

According to the intersectionality theory, people have many intersecting social identities, such as race, gender, and socioeconomic class, which influence how they perceive privilege and oppression¹¹⁵. Intersectionality theory emphasises the particular experiences and difficulties experienced by women who hold many marginalised identities in the context of women living with HIV.

For instance, during the perinatal period, women who are black or Latin, low-income, and HIV- positive may experience increased marginalisation and prejudice¹¹⁶. The intersectional issues that affect the lives and well-being of women living with HIV throughout the perinatal period must be acknowledged and addressed by healthcare practitioners.

2.2.6 Health Belief Model

According to the health belief model, an individual's health behaviours are influenced by their beliefs about health and illness as well as their views about their own susceptibility and the benefits and barriers to taking action¹¹⁷. The health belief model emphasises the necessity of recognising and treating the beliefs and perceptions that influence women living with HIV during their postpartum period.

For instance, women who believe that antiretroviral therapy is ineffective or that HIV is a death sentence may be less likely to continue adhering to treatment during the perinatal period¹¹⁸. Providing correct information and dispelling myths about HIV and antiretroviral medication are two ways in which healthcare professionals can combat these views.

2.3 Review of Empirical Studies

2.3.1 Studies on Antenatal Depression in WLWH

A study in Zimbabwe conducted with a total of 198 participants to determine the prevalence of depression in the antenatal period reported a prevalence of 39.4% according to the Edinburgh Postnatal depression scale (EPDS)¹¹⁹. According to the study, factors associated with antenatal depression were intimate partner violence (IPV) and previous history of depression.

An institution-based cross-sectional study conducted among 291 HIV-positive pregnant mothers from Northwest Amhara during the COVID-19 pandemic reported depression levels of 28.7% among its participants¹²⁰. The levels of depression were assessed by using the nine-item Patient's Health Questionnaire (PHQ-9). The study found six variables to be associated with the outcome variable of depression. Among the variables entered in the multivariable logistic regression analysis; the age of the mother, residence, known HIV serostatus during pregnancy, age in the first pregnancy, and COVID-19-related knowledge were independently

associated with the outcome variable of depression. In another cross-sectional study conducted in Tanzania, the prevalence of depression and anxiety among 200 pregnant women living with HIV from antenatal care clinics was determined¹²¹. The study reported that fifty (25.0%) women met screening criteria for possible depression (EPDS ≥ 10). The study also found that depression was associated with relationship status, food insecurity, and HIV shame.

A representative sample size of 368 respondents was employed in a similar study in Ethiopia to determine the prevalence of depression and its association with adherence to ART among HIV-positive pregnant women¹²². Participants were conveniently sampled from 12 health institutions offering ANC services and depression was screened using the Patient Health Questionnaire-9 (PHQ-9). Results from the study showed that out of the total participants, 175 (47.6%) had depression. The study reported that pregnant women with low income were twice as likely to have depression. The results also showed that women with WHO clinical Stage 1 disease were less likely to have depression than women with more advanced disease. There was also a statistically significant association between depression and nonadherence to ART.

In a cross-sectional study that assessed the association between HIV disclosure and depressive symptoms among 1392 pregnant WLWH in the Democratic Republic of Congo (DRC), depressive symptoms were screened with the PHQ-9¹²³. According to the study disclosure of HIV status to one's partner was associated with lower depressive symptoms among women who knew their HIV status before their current pregnancy but not among those who were diagnosed during their current pregnancy. Also, women who reported that their partners were living with HIV had lower PHQ-9 scores compared to women who did not know their partner's status.

2.3.2 Studies on Postnatal Depression in WLWH

In a study in South Africa, the prevalence of postnatal depression (PND) symptoms as well as the clinical and obstetric risk factors among HIV-positive women in health facilities in a rural health district was determined¹²⁴. The Edinburgh Postnatal Depression Scale was used to measure PND from 386 women who had delivered a live infant. The prevalence of PND symptoms was 42.5%. According to the study, the maternal variables associated with PND were level of education, monthly income, and source of income. While the logistic regression analysis yielded significant associations between clinical and obstetric variables of pre-term baby, baby health status, baby hospitalization, and knowing the baby's HIV status, the multivariate analysis reported that none of the clinical and obstetrical risk factors was independently associated with the PND.

Another study in South Africa aimed to identify the levels of perinatal depression among women living with HIV within the country¹²⁵. The study also aimed to examine the association between perinatal depression and infant feeding. The results of the study revealed that almost half of the sample (48.5%) had scores indicative of moderate depression according to the PHQ-9 tool.

2.3.3 Studies on Perceived Stress in WLWH

A study carried out in Niger State, Nigeria, sought to explore the associations between resilience and stress related to HIV among women living with HIV¹⁰³. The study consisted of 768 women living with HIV, that were attending three randomly selected hospitals that provided primary healthcare. The results from the study showed that there were moderate levels of stress as well as a higher level of resilience among women living with HIV. The results revealed that perceived stress had a mean score of 26.93 ± 6.35 .

A longitudinal study carried out in China explored the stressors related to HIV which affect people living with it¹²⁶. The study investigated the factors associated with stress levels as well as the moderating abilities of social support against the negative effects of stress on health. The HIV/AIDS Stress Scale was used to assess stress at baseline and one year after. Results from the study showed that there were significant decreases in stress levels 1 year after diagnosis. Stressors regarding confidentiality, disclosure, emotional distress, fear of infecting others, and excessive attention to physical functions were the most problematic at baseline and 1-year follow-up.

2.3.4 Studies on the Psychosocial Experiences of WLWH

A longitudinal qualitative study was carried out among WLWH in western Kenya with the aim of exploring their mental health trajectories from pregnancy and across the postpartum period¹²⁷. The study was carried out by conducting semi-structure interviews with 30 WLWH at three time points, 28–38 weeks pregnant, 6-weeks postpartum and 5–7 months postpartum. The results of the study revealed that financial insecurity was a central theme. Financial insecurity was attributed to loss of employment, the financial demands of caring for a child and lack of support from partners. Results further revealed that financial strain led to worsening levels of food security and challenges in the engagement of HIV care.

Another study in Ireland explored the experiences of women who were diagnosed with HIV when pregnant or as mothers¹²⁸. The study utilized a narrative approach which focused on storied accounts. Participants were chosen using purposive sampling and 11 in-depth interviews were conducted for the study. The analysis of the narratives of the women revealed that the HIV test result was unanticipated, the dominating response to the diagnosis was fear and seeking ways to prevent vertical transmission and mothers were more troubled about the possible repercussions of the diagnosis for their children.

A study conducted in Lima, Peru aimed to describe the emotional experiences of mothers who had initiated ART during pregnancy or within a few years of childbirth⁵⁴. The study was conducted with 8 women that fulfilled the eligibility criteria. The study utilized an interpretive phenomenological approach. The data analysis revealed themes that covered the emotional experiences of participants after receiving their diagnosis, emotions that were unique to the experiences of being a mother living with HIV, and the emotional responses from the participants with regard to their family and partner relationships. The data specifically highlighted the ability of the participants to seek and provide support that aided their own emotional recovery.

2.4 Conceptual Framework

This study used and modified the structure of a Ugandan study that assessed the prevalence and risk factors for major depressive disorders among people living with HIV/AIDS in the semi-urban Entebbe district¹⁰⁴. The conceptual structure was founded on the Diathesis-Stress Model. The Diathesis-Stress Model provides a comprehensive description of how genetic and biological variables interact with environmental stress to cause disease.

Specifically, the model suggests that stressful life events may increase a person's susceptibility to certain psychological diseases. According to the theory, at-risk people need an abnormally high amount of stress to start showing symptoms of an illness if they have low resilience or are more susceptible to it, and vice versa. This study's conceptual framework found psychosocial factors that predispose HIV-positive women to depression and stress during the perinatal period.

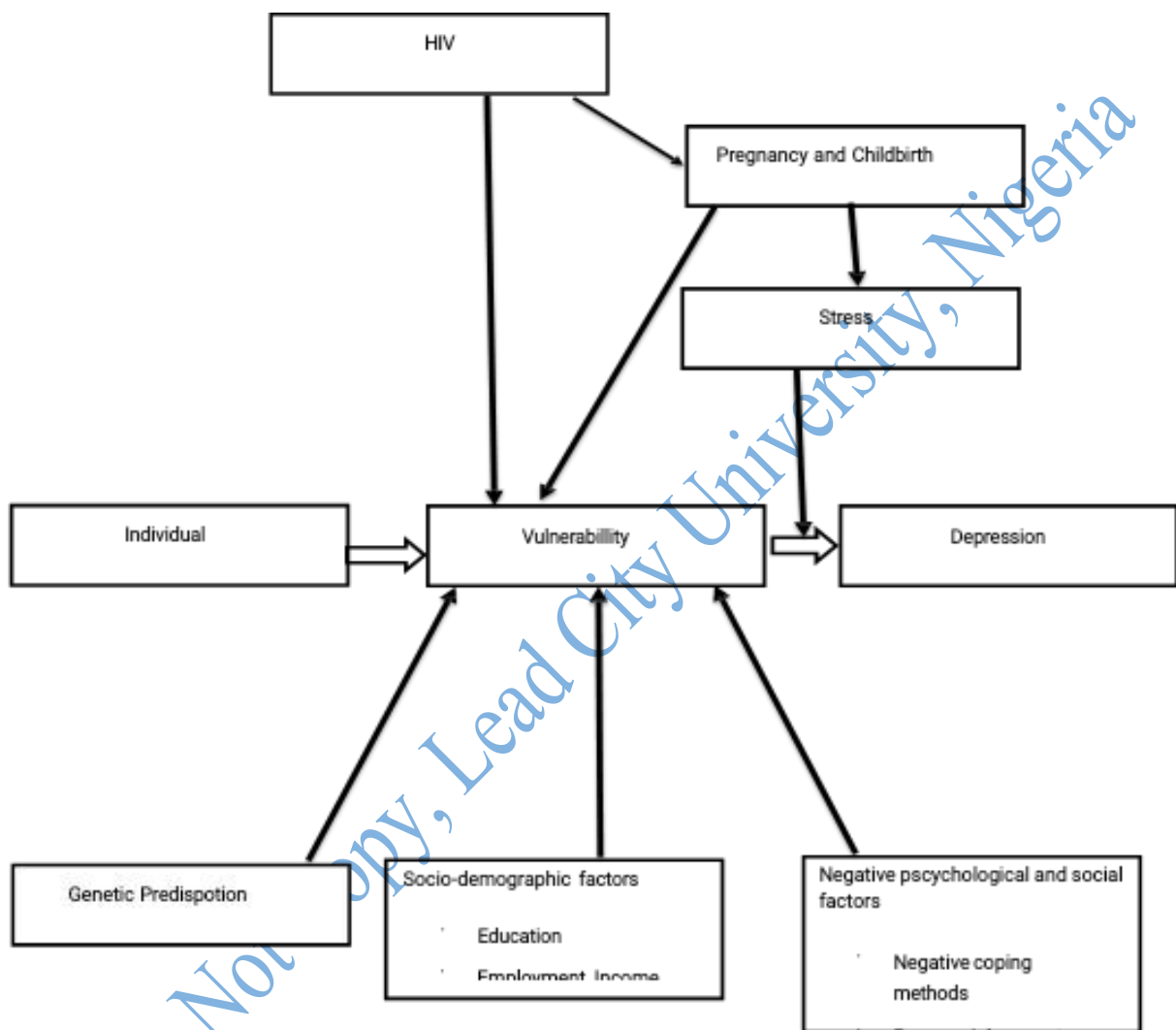


Figure 2.1: Study Framework

Source¹¹⁴

2.4 Summary of Gaps in Literature Reviewed

There is a large gap in the literature regarding the psychological health of HIV-positive pregnant women. While a significant amount of research has been conducted on the clinical aspects of HIV management, antiretroviral therapy, and medical outcomes of HIV during pregnancy, little attention has been paid to the psychological well-being of these women. This is especially true in low- and middle-income countries such as Nigeria where mental health is not prioritised.

Studies have shown that pregnant women living with HIV may face high levels of stigma, contributing to poor mental health outcomes such as depression and anxiety. However, there are few studies on effective strategies for reducing stigma and improving these women's psychological well-being. More research is also required to understand the relationship between HIV, pregnancy, and other social determinants of health in Nigeria. For instance, research is required to better understand how the psychological health of pregnant women living with HIV in Nigeria is impacted by poverty, gender inequality, and access to health care resources.

In low- and middle-income countries like Nigeria, there is a critical need for more research on the psychological health of expectant HIV-positive women, as well as interventions that are especially suited to the cultural and contextual factors that influence the outcomes of mental health in this population.

Endnotes

1. Centers for Disease Control (CDC). *Kaposi's sarcoma and Pneumocystis pneumonia among homosexual men—New York City and California*. **MMWR. Morbidity and Mortality Weekly Report**, 30(25), 1981, 305–308.
2. R. Gallo; S. Salahuddin; M. Popovic; G. Shearer; M. Kaplan; B. Haynes; T. Palker; R. Redfield; J. Oleske, & B. Safai, *Frequent detection and isolation of cytopathic retroviruses (HTLV-III) from patients with AIDS and at risk for AIDS*. **Science (New York, N.Y.)**, 224(4648), 1984, 500–503.
3. J. Costin, *Cytopathic mechanisms of HIV-1*, **Virology Journal**, 4(1), 2007, 1–22.
4. L. Tooley, *Detecting HIV earlier: Advances in HIV testing*. **Prevention**, 2010.
5. E. Daar; C. Pilcher & F. Hecht, *Clinical presentation and diagnosis of primary HIV-1 infection*. **Current Opinion in HIV and AIDS**, 3(1), 2008, 10–15.
6. UNAIDS, *Global HIV & AIDS Statistics — Fact Sheet*. 2021.
7. R. Govender; M. Hashim; M. Khan; H., Mustafa & G. Khan, *Global epidemiology of HIV/AIDS: A resurgence in North America and Europe*. **Journal of Epidemiology and Global Health**, 11(3), 2021, 296–301.
8. L. Cohn; N. Chomont & S. Deeks, *The biology of the HIV-1 latent reservoir and implications for cure strategies*. **Cell Host & Microbe**, 27(4), 2020, 519–530.
9. K. Zakeyo, & M. Nyashanu, *Exploring the potential causes of HIV prevalence among young women in South Africa: A critical literature review*. **International Journal of Human Rights in Healthcare**, 2021.
10. F. Scorgie, N. Khoza, S. Delany-Moretlwe, J. Velloza, Mangxilana, N., Atujuna, M., Chitukuta, M., Matambanadzo, K. V., Hosek, S., & Makhale, L. *Narrative sexual histories and perceptions of HIV risk among young women taking PrEP in southern Africa: Findings from a novel participatory method*. **Social Science & Medicine**, 270, 2021, 113600.
11. C. Odimegwu, J. Akinyemi & O. Alabi, *HIV-Stigma in Nigeria: Review of research studies, policies, and programmes*. **AIDS Research and Treatment**, 2017, 5812650.
12. J. Odugbesan & H. Rjoub, *Evaluating HIV/AIDS prevalence and sustainable development in sub-Saharan Africa: The role of health expenditure*. **African Health Sciences**, 20(2), 2020, 568–578.
13. A. Awofala & O. Ogundele, *HIV epidemiology in Nigeria*. **Saudi Journal of Biological Sciences**, 25(4), 2018. 697–703.
14. Revised National HIV and AIDS Strategic Framework 2019-2021 – NACA Nigeria.

15. B. Banigbe; C. Audet; P. Okonkwo; O. O. Arije; E. Bassi; K. Clouse; M. Simmons; M. Aliyu; K. A. Freedberg, & A. A Ahonkhai. *Effect of PEPFAR funding policy change on HIV service delivery in a large HIV care and treatment network in Nigeria*. **PLOS ONE**, 14(9), 2019, e0221809.
16. G. Eluwa; S. Adebajo; T. Eluwa; O. Ogbanufe; O. Ilesanmi & C. Nzelu, *Rising HIV prevalence among men who have sex with men in Nigeria: A trend analysis*. **BMC Public Health**, 19(1), 2019, 1201.
17. S. Sherwin & B. Parish, *Women, medicine, ethics and the law*, Routledge, 2020.
18. E. Scully. *Sex differences in HIV infection*. **Current HIV/AIDS Reports**, 15(2), 2018, 136–146.
19. I. Ofurum, *Sexual behaviour, needs and concerns regarding sexual and reproductive health among adults living with HIV in Sub-Saharan Africa-A systematic review*. **Journal of Advances in Medicine and Medical Research**, 2021, 113–132.
20. A. Mtshali; S. Ngcapu; A. Mindel; N. Garrett & L. Liebenberg, *HIV susceptibility in women: The roles of genital inflammation, sexually transmitted infections and the genital microbiome*. **Journal of Reproductive Immunology**, 145, 2021, 103291.
21. M. Cohen; O. Council & J. Chen, *Sexually transmitted infections and HIV in the era of antiretroviral treatment and prevention: The biologic basis for epidemiologic synergy*. **Journal of the International AIDS Society**, 22, 2019, e25355.
22. J. Stewart, G. Douglas, T. O'Rourke & C. Gammel, *Promoting safer sex in the context of heterosexual anal intercourse: A scoping review*. **Journal of Clinical Nursing**, 30(15–16), 2021, 2111–2130.
23. A. Wiyeh; R. K. Mome; P. W. Mahasha; E. J. Kongnyuy & C. S. Wiysonge, *Effectiveness of the female condom in preventing HIV and sexually transmitted infections: A systematic review and meta-analysis*. **BMC Public Health**, 20(1), 2020, 1–17.
24. H. Dupont; J. Lam; M. Woods; M. Zahoor & C. Kaushic, *Hormonal influence on HIV-1 transmission in the female genital tract: New insights from systems biology*. **American Journal of Reproductive Immunology**, 80(2), 2018, e13019.
25. D. Ssewanyana; P. N. Mwangala; A. Van Baar; C. R. Newton & A. Abubakar, *Health risk behaviour among adolescents living with HIV in sub-Saharan Africa: A systematic review and meta-analysis*. **BioMed Research International**, 2018.
26. K. Zakeyo & M. Nyashanu, *Exploring the potential causes of HIV prevalence among young women in South Africa: A critical literature review*. **International Journal of Human Rights in Healthcare**. 2021
27. L. Bay-Cheng, *Agency is everywhere, but agency is not enough: A conceptual analysis of young women's sexual agency*. **The Journal of Sex Research**, 56(4–5), 2019, 462–474.

28. N. Fauk; L. Mwanri; K. Hawke; L. Mohammadi & P. R. Ward, *Psychological and social impact of HIV on women living with HIV and their families in low-and middle-income Asian countries: A systematic search and critical review*. **International Journal of Environmental Research and Public Health**, 19(11), 2022, 6668.
29. D. Sahn, *The socioeconomic dimensions of HIV/AIDS in Africa: Challenges, opportunities, and misconceptions*. 2018
30. K. Mayer; A. Agwu & D. Malebranche, *Barriers to the wider use of pre-exposure prophylaxis in the United States: A narrative review*. **Advances in Therapy**, 37(5), 2020, 1778–1811.
31. I. Birdthistle; C. Tanton; A. Tomita; K. de Graaf; S. B. Schaffnit; F. Tanser & E. Slaymaker, *Recent levels and trends in HIV incidence rates among adolescent girls and young women in ten high-prevalence African countries: A systematic review and meta-analysis*. **The Lancet Global Health**, 7(11), 2019, e1521–e1540.
32. C. Goodenough, K. Patel & R. Van Dyke, *Is there a higher risk of mother-to-child transmission of HIV among pregnant women with perinatal HIV infection?* **The Pediatric Infectious Disease Journal**, 37(12), 2018, 1267–1270.
33. J. Deese, S. Pradhan, H. Goetz, & C. Morrison, *Contraceptive use and the risk of sexually transmitted infection: Systematic review and current perspectives*. **Open Access Journal of Contraception**, 9, 2018, 91–112.
34. J. Hapgood, *Is the injectable contraceptive Depo-Medroxyprogesterone Acetate (DMPA-IM) associated with an increased risk for HIV acquisition? The Jury Is Still Out*. **AIDS Research and Human Retroviruses**, 36(5), 2020, 357–366.
35. World Health Organization, *Contraceptive eligibility for women at high risk of HIV: Guidance statement: recommendations on contraceptive methods used by women at high risk of HIV*, 2019.
36. L. Soares; F. L. Braz; A. R. Araujo & M. A. Oliveira, *Association of sexually transmitted diseases with cervical ectopy: A systematic review*. **Sexually Transmitted Diseases**, 46(7), 2019, 452–457.
37. G. Boily-Larouche; J. Lajoie; B. Dufault; K. Omollo; J. Cheruiyot; J. Njoki; M. Kowatsch; M. Kimani; J. Kimani & J. Oyugi, *Characterization of the genital mucosa immune profile to distinguish phases of the menstrual cycle: Implications for HIV susceptibility*. **The Journal of Infectious Diseases**, 219(6), 2019, 856–866.
38. D. Adimora & A. Onwu, *Socio-demographic factors of early sexual debut and depression among adolescents*. **African Health Sciences**, 19(3), 2019, 2634–2644.
39. Z. Jorjoran Shushtari; S. Hosseini; H. Sajjadi; Y. Salimi; A. Shahesmaeili & T. Snijders, *HIV risk perception and sexual behaviors among female sex workers in Tehran, Iran*. **Medical Journal of the Islamic Republic of Iran**, 33, 2019, 101.

40. S. Billong; G. Nguéfack-Tsague; J. Fokam; F. Emmanuel; S. Isac; R. Fodjo; M. Ngoufack; S. Kwedi; L. Moukam & T. Tchétmi, *Mapping and size estimates of female sex workers in Cameroon: Toward informed policy for design and implementation in the national HIV program*. **PloS One**, 14(2), 2019, e0212315.
41. F. Shayo & M. Kalomo, *Prevalence and correlates of sexual intercourse among sexually active in-school adolescents: An analysis of five sub-Saharan African countries for the adolescent's sexual health policy implications*. **BMC Public Health**, 19(1), 2019, 1285
42. A. Kabapy; H. Shatat & E. Abd El-Wahab, *Attributes of HIV infection over decades (1982– 2018): A systematic review and meta-analysis*. **Transboundary and Emerging Diseases**, 67(6), 2020, 2372–2388.
43. W. George, *Alcohol and sexual health behavior:—What we know and how we know it*, **The Journal of Sex Research**, 56(4–5), 2019, 409–424.
44. M. Sajadipour; S. Rezaei; S. F. Irandoost; M. Ghaumzadeh; M. Salmani nadushan; M. Gholami; Y. Salimi & Z. Jorjoran Shushtari, *What explains gender inequality in HIV infection among high-risk people? A Blinder-Oaxaca decomposition*. **Archives of Public Health**, 80(1), 2022, 2.
45. Y. Sikweyiya; A. A. Addo-Lartey; D. O. Alangea; P. Dako-Gyeke; E. D. Chirw; D. Coker-Appiah; R. M. Adanu & R. Jewkes, *Patriarchy and gender-inequitable attitudes as drivers of intimate partner violence against women in the central region of Ghana*. **BMC Public Health**, 20(1), 2020, 682.
46. K. McMillan; H. Worth & P. Rawstone, *Usage of the terms prostitution, sex work, transactional sex, and survival sex: Their utility in HIV prevention research*. **Archives of Sexual Behavior**, 47(5), 2018, 1517–1527.
47. J. Nalukwago; R. Crutzen; B. van den Borne; P. M. Bukuluki; L. Bufumbo; H. M. Burke, S. Field, A. Zikusooka, A. A. Fiedler & J. Alaii, *Gender norms associated with adolescent sexual behaviours in Uganda*. **International Social Science Journal**, 69(231), 2019, 35–48.
48. R. Ramtohul, *Women's sexual and reproductive rights in contemporary Africa*, **In Expanding Perspectives on Human Rights in Africa**, Routledge, 2019, (pp. 251–267).
49. L. Bacchus; M. Ranganathan; C. Watts & K. Devries, *Recent intimate partner violence against women and health: A systematic review and meta-analysis of cohort studies*. **BMJ Open**, 8(7), 2018, e019995.
50. T. Ogundare; S. Ghebrehiwet; B. Harris; B. Ojediran; A. Duncan; H. Syeda; D. Henderson & C. Borba, *Risky sexual behaviors and substance use among youths in post-conflict Liberia*. **Journal of Public Health and Epidemiology**, 12(2), 2020, 114–127.
51. F. Benebo; B. Schumann & M. Vaezghasemi, *Intimate partner violence against women in Nigeria: A multilevel study investigating the effect of women's status and community norms*, **BMC Women's Health**, 18(1), 2018, 136.

52. S. Madiba, E. Ralebona, & M. Lowane, *Perceived stigma as a contextual barrier to early uptake of HIV testing, treatment initiation, and disclosure; the case of patients admitted with AIDS-related illness in a rural hospital in South Africa*, **Healthcare**, 9(8), 2021, 962.
53. N. Augustine Bala; A. Azman & P. S. Singh, *The impact of gender discrimination and HIV stigma on women living in North Central Nigeria*. **Cogent Social Sciences**, 8(1), 2022, 2027612.
54. S. Ahmed, J. Autrey, I. Katz, M. Fox, S. Rosen, D. Onoya, T. Bärnighausen, K. H. Mayer, & J. Bor, *Why do people living with HIV not initiate treatment? A systematic review of qualitative evidence from low- and middle-income countries*, **Social science & Medicine**, 213, 2018, 72–84.
55. T. Egbe; C. Nge; H. Ngouekam; E. Asonganyi & D. Nsagha, *Stigmatization among people living with HIV/AIDS at the Kumba Health District, Cameroon*. **Journal of the International Association of Providers of AIDS Care (JIAPAC)**, 19, 2020, 2325958219899305.
56. O. Olawore; A. A. Tobian; J. Kagaayi; J. M. Bazaale; B. Nantume; G. Kigozi; J. Nankinga; F. Nalugoda; G. Nakigozi; G. Kigozi; R. H. Gray; M. J. Wawer; R. Ssekubugu; J. S. Santelli; S. J. Reynolds; L. W. Chang; D. Serwadda & M. K. Grabowski, *Migration and risk of HIV acquisition in Rakai, Uganda: A population-based cohort study*. **The Lancet HIV**, 5(4), 2018, e181–e189.
57. R. Maulide Cane, D. Melesse, N. Kayeyi, A. Manu, Y. Wado, A. Barros, & T Boerma, *HIV trends and disparities by gender and urban–rural residence among adolescents in sub-Saharan Africa*. **Reproductive Health**, 18(1), 2021, 120.
58. J. Galjour; P. Havik; P. Aaby; A. Rodrigues & E. K. Mpinga, *Chronic political instability and the HIV/AIDS response in Guinea-Bissau from 2000 to 2015: A systematic review*. **Tropical Medicine and Infectious Disease**, 6(1), 2021, 36.
59. E. Koegler & C. Kennedy, *A scoping review of the associations between mental health and factors related to HIV acquisition and disease progression in conflict-affected populations*. **Conflict and Health**, 12(1), 2018, 1–22.
60. S. Nesheim, L. FitzHarris, M. Lampe, & K. Gray, *Reconsidering the number of women with HIV infection who give birth annually in the United States*. **Public Health Reports**, 133(6), 2018, 637–643.
61. P. Gona; C. Gona; S. Ballout; S. Rao; R. Kimokoti; C. Mapoma & A. Mokdad, *Burden and changes in HIV/AIDS morbidity and mortality in Southern Africa Development Community Countries, 1990–2017*. **BMC Public Health**, 20(1), 2020, 867.
62. M. Mahy; K. Marsh; K. Sabin; I. Wanyeki; J. Daher & P. D. Ghys, *HIV estimates through 2018: Data for decision-making*. **AIDS (London, England)**, 33(Suppl 3), 2019, S203–S211.
63. O. Amin; J. Powers; K. Bricker & A. Chahroudi, *Understanding viral and immune interplay during vertical transmission of HIV: Implications for cure*. **Frontiers in Immunology**, 2021, 12.

64. S. Horter, S. Bernays, Z. Thabede, V. Dlamini, B. Kerschberger, M. Pasipamire, ... & A. Wringe, —*I don't want them to know*!: How stigma creates dilemmas for engagement with treat-all HIV care for people living with HIV in Eswatini. *African, Journal of AIDS Research*, 18(1), 2019, 27-37.
65. L. Trindade, L. Nogueira, I. Rodrigues, A. Ferreira, G. Corrêa, & N. Andrade, *HIV infection in pregnant women and its challenges for the prenatal care*, *Revista Brasileira de Enfermagem*, 74, 2021.
66. R. Remien; M. Stirratt; N. Nguyen; R. Robbins; A. Pala & C. Mellins, *Mental health and HIV/AIDS: The need for an integrated response*. *AIDS (London, England)*, 33(9), 2019, 1411–1420.
67. T. Sullivan, *The intersection of intimate partner violence and HIV: Detection, disclosure, discussion, and implications for treatment adherence*, *Topics in Antiviral Medicine*, 27(2), 2019, 84–87.
68. N. Burhan, & M. Febriliant, *Gender differences in denial-acceptance duration based on Kubler-ross cycle after HIV diagnosis*, *Jurnal Kedokteran Brawijaya*, 31(3), 2021, 168-171.
69. Y. Li; X. Zhang; B. Liao; J. Liang; W. He, J. Liu, Y. Yang, Y. Zhang, T. Ma & J. Wang, *Social support status and associated factors among people living with HIV/AIDS in Kunming city, China*. *BMC Public Health*, 21(1), 2021, 1413.
70. P. de Los Rios, C. Okoli, E. Castellanos, B. Allan, B. Young, G. Brough, & N. Van de Velde, *Physical, emotional, and psychosocial challenges associated with daily dosing of HIV medications and their impact on indicators of quality of life: Findings from the positive perspectives study*, *AIDS and Behavior*, 25, 2021, 961-972.
71. E. Kontomanolis; S. Michalopoulos; G. Gkasdaris & Z. Fasoulakis, *The social stigma of HIV–AIDS: Society's role*. *HIV/AIDS (Auckland, N.Z.)*, 9, 2017, 111–118.
72. N. Woollett; S. Pahad & V. Black, —*We need our own clinics*!: Adolescents' living with HIV recommendations for a responsive health system, *PLOS ONE*, 16(7), 2021, e0253984.
73. B. Tran, R. Ho, C. Ho, C. Latkin, H. Phan, G. Ha, G. Vu, J. Ying, & M. Zhang, *Depression among patients with HIV/AIDS: Research development and effective interventions (GAPRESEARCH)*, *International Journal of Environmental Research and Public Health*, 16(10), 2019, 1772.
74. B. Nkosi, & P. C. Rosenblatt, *From 'death sentence to hope', HIV and AIDS in South Africa: Transforming shame in context*, *The Bright Side of Shame: Transforming and Growing Through Practical Applications in Cultural Contexts*, 2019, 77-87.
75. J. Xie; Z. Wang; Q. Li; Q. He; G. Xu; Y. Li; K. Zhou; L. Li & J. Gu, *Associations between antiretroviral therapy-related experiences and mental health status among people living with HIV in China: A prospective observational cohort study*. *AIDS Research and Therapy*, 18(1), 2021, 60.
76. R. Thom & C. McDougale, *Child and adolescent psychiatry*, **Oxford University Press**,

2021

- ⁷⁷. DS American Psychiatric Association and American Psychiatric Association, *Diagnostic and statistical manual of mental disorders: DSM-5*, Vol. 5, 2013.
- ⁷⁸. R. Thom; D. A. Silbersweig & R. J. Boland, *Major depressive disorder in medical illness: A review of assessment, prevalence, and treatment options*. **Psychosomatic Medicine**, 81(3), 2019, 246–255.
- ⁷⁹. S. Melrose, *Persistent depressive disorder or dysthymia: An overview of assessment and treatment approaches*. 2019.
- ⁸⁰. Thom, R., & McDougle, C, *Child and adolescent psychiatry*, **Oxford University Press**, 2021.
- ⁸¹. T. Vos; S. Lim; C. Abbafati; K. Abbas; M. Abbasi; M. Abbasifard; M. Abbasi-Kangevari; H. Abbastabar; F. Abd-Allah & A. Abdelalim, *Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019*. **The Lancet**, 396(10258), 2020, 1204–1222.
- ⁸². D. Santomauro, A. Herrera, J. Shadid, P. Zheng, C. Ashbaugh, D. Pigott, ... & A. J. Ferrari, *Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic*, **The Lancet**, 398(10312), 2021, 1700-1712.
- ⁸³. E. Belleau; M. Treadway & D. Pizzagalli, *The impact of stress and major depressive disorder on hippocampal and medial prefrontal cortex morphology*. **Biological Psychiatry**, 85(6), 2019, 443–453.
- ⁸⁴. F. Gaspar, K. Wizner, J. Morrison, & C. Dewa, *The influence of antidepressant and psychotherapy treatment adherence on future work leaves for patients with major depressive disorder*. **BMC Psychiatry**, 20(1), 2020, 320.
- ⁸⁵. B. Tran; C. Ho; C. Latkin; H. Phan; G. Ha; G. Vu; J. Ying & M. Zhang, *Depression among patients with HIV/AIDS: Research development and effective interventions (GAPRESEARCH)*, **International Journal of Environmental Research and Public Health**, 16(10), 2019.
- ⁸⁶. J. Payne, & J. Maguire, *Pathophysiological mechanisms implicated in postpartum depression*. **Frontiers in Neuroendocrinology**, 52, 2019, 165-180.
- ⁸⁷. E. O'Connor; C. Senger; M. Henninger; B. Gaynes; E. Coppola & M. Weyrich, *Interventions to prevent perinatal depression: A systematic evidence review for the US preventive services task force*, 2019.
- ⁸⁸. X. Yin, N. Sun, N. Jiang, X. Xu, Y. Gan, J. Zhang, & Y. Gong, *Prevalence and associated factors of antenatal depression: Systematic reviews and meta-analyses*, **Clinical Psychology Review**, 83, 2021, 101932.
- ⁸⁹. B. Hutchens & J. Kearney, *Risk factors for postpartum depression: An umbrella review*. **Journal of Midwifery & Women's Health**, 65(1), 2020, 96–108.

90. J. Hahn-Holbrook; T. Cornwell-Hinrichs & I. Anaya, *Economic and health predictors of national postpartum depression prevalence: A systematic review, meta-analysis, and meta-regression of 291 studies from 56 countries*. **Frontiers in Psychiatry**, 8, 2018, 248.
91. J. Slomian; G. Honvo; P. Emonts; J. Reginster & O. Bruyère, *Consequences of maternal postpartum depression: A systematic review of maternal and infant outcomes*. **Women's Health**, 15, 2019, 1745506519844044.
92. E. Waldron; I. Burnett-Zeigler; V. Wee; Y. Ng; L. Koenig; A. Pederson; E. Tomaszewski & E. Miller, *Mental health in women living with HIV: The unique and unmet needs*. **Journal of the International Association of Providers of AIDS Care (JIAPAC)**, 20, 2021, 232595822098566.
93. J. Hoare, T. Sevenoaks, B. Mtukushe, T. Williams, S. Heany & N. Phillips, *Global systematic review of common mental health disorders in adults living with HIV*, **Current HIV/AIDS Reports**, 2021, 1–12.
94. A. Yousuf; S. R. Mohd Arifin; R. Musa & M. L. Md. Isa, *Depression and HIV disease progression: A mini-review*. **Clinical Practice and Epidemiology in Mental Health : CP & EMH**, 15(1), 2019, 153–159
95. M. Levy, A. Monroe, M. Horberg, D. Benator, S. Molock, R. Doshi, & A. Castel, *Pharmacologic treatment of psychiatric disorders and time with unsuppressed HIV viral load in a clinical HIV cohort*. **Journal of Acquired Immune Deficiency Syndromes**, 82(3), 2019, 329.
96. W. Wang; C. Xiao; X. Yao; Y. Yang; H. Yan & S. Li, *Psychosocial health and suicidal ideation among people living with HIV/AIDS: A cross-sectional study in Nanjing, China*. **PLOS ONE**, 13(2), 2018, e0192940.
97. A. Owora, *Major depression disorder trajectories and HIV disease progression: Results from a 6-year outpatient clinic cohort*. **Medicine**, 97(12), 2018, e0252.
98. C. Kemp, L. Lipira, D. Huh, P. Nevin, J. Turan, J. Simoni & D. Rao, *HIV stigma and viral load among African-American women receiving treatment for HIV*, **AIDS**, 33(9), 2019, 1511-1519.
99. M. Dianatinasab; M. Fararouei; V. Padehban; A. Dianatinasab; Y. Alimohamadi; S. Beheshti; Z. AminiLari & M. AminiLari, *The effect of a 12-week combinational exercise program on CD4 count and mental health among HIV infected women: A randomized control trial*. **Journal of Exercise Science & Fitness**, 16(1), 2018, 21–25.
100. Q. Zhu; D. Huang; J. Lv; P. Guan & X. Bai, *Prevalence of perinatal depression among HIV-positive women: A systematic review and meta-analysis*. **BMC Psychiatry**, 19(1), 2019, 330.
101. S. Madiba, *When pregnancy coincides with positive diagnosis of HIV: Accounts of the process of acceptance of self and motherhood among women in South Africa*. **International Journal of Environmental Research and Public Health**, 18(24), 2021, 13006.

102. M. Levy; A. Waters; S. Sen; A. Castel; M. Plankey; S. Molock; F. Asch; L. Goparaju & S. Kassaye, *Psychosocial stress and neuroendocrine biomarker concentrations among women living with or without HIV*. **PLOS ONE**, 16(12), 2021, e0261746.
103. A. Adamu; G. Mchunu & J. R Naidoo, *Stress and resilience among women living with HIV in Nigeria*. **African Journal of Primary Health Care & Family Medicine**, 11(1), 2019, 1–6.
104. S., Cohen, & T. Wills, *Stress, social support, and the buffering hypothesis*. **Psychological Bulletin**, 98(2), 1985, 310-357.
105. F. Sufredini, C. Catling, J. Zugai, & S. Chang, *The effects of social support on depression and anxiety in the perinatal period: A mixed-methods systematic review*, **Journal of Affective Disorders**, 2022.
106. V. Seffren; I. Familiar; S. Murray; J. Augustinavicius; M. Boivin; N. Nakasujja; R. Opoka & J. Bass, *Association between coping strategies, social support, and depression and anxiety symptoms among rural Ugandan women living with HIV/AIDS*. **AIDS Care**, 30(7), 2018 888–895.
107. C. Keene, J. Euvrard, & K. Amico, *Conceptualising engagement with HIV care for people on treatment: The indicators of HIV care and antiretroviral engagement (InCARE) framework*. **BMC Health Serv Res**, 23(435), 2023.
108. R. Lazarus, & S. Folkman, *Stress: Appraisal, and coping*. **Springer Publishing Company**, 1984.
109. G. Kisigo, J. Ngocho, B. Knettel, M. Oshosen, B. Mmbaga, & M. Watt, *–At home, no one knows!l: A qualitative study of retention challenges among women living with HIV in Tanzania*, **PLOS ONE**, 15(8), 2020, e0238232.
110. K. LeMasters, J. Dussault, C. Barrington, A. Bengtson, B. Gaynes, V. Go, ... & B. Pence, *Pain in my heart": Understanding perinatal depression among women living with HIV in Malawi*, **PLOS ONE**, 15(6), 2020, e0227935.
111. Y. Matsuda, T. Schwartz, Y. Chang, & L. Beeber, *A refined model of stress–diathesis relationships in mothers with significant depressive symptom severity*. **Journal of the American Psychiatric Nurses Association**, 27(3), 2021, 240–250.
112. E. Moseholm, I. Aho, & Å. Mellgren, *Psychosocial health in pregnancy and postpartum among women living with - and without HIV and non-pregnant women living with HIV living in Nordic countries – Results from a longitudinal survey study*. **BMC Pregnancy Childbirth**, 22(20), 2022.
113. B. Harrington, B. Pence, M. John, C. Melhado, J. Phulusa, B. Mthiko, B. Gaynes, J. Maselko, W. Miller, & M. Hosseinipour, *Prevalence and factors associated with antenatal depressive symptoms among women enrolled in Option B+ antenatal HIV care in Malawi: a cross-sectional analysis*, **Journal of mental health (Abingdon, England)**, 28(2), 2019, 198–205.
114. G. Engel, *The need for a new medical model: a challenge for biomedicine*. **Science (New York, N.Y.)**, 196(4286), 1977, 129–136.

115. K. Crenshaw, *Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics*, **The University of Chicago Legal Forum**, 1989, 139-167.
116. A. Norcini Pala, M. Kempf, D. Konkle-Parker, T. Wilson, P. Tien, G. Wingood, T. Neilands, M. Johnson, S. Weiser, C. Logie, J. Turan, & B. Turan, *Intersectional stigmas are associated with lower viral suppression rates and antiretroviral therapy adherence among women living with HIV*. **AIDS (London, England)**, 36(13), 2022, 1769–1776.
117. I. Rosenstock, *The health belief model and preventive health behavior*. **Health Education Monographs**, 2, 1974, 354-386.
118. A. Chadambuka, L. Katirayi, & A. Muchedzi, *Acceptability of lifelong treatment among HIV-positive pregnant and breastfeeding women (Option B+) in selected health facilities in Zimbabwe: a qualitative study*. **BMC Public Health**, 18, 2018, 57.
119. E. Nyamukoho; W. Mangezi; B. Marimbe; R. Verhey & D. Chibanda, *Depression among HIV positive pregnant women in Zimbabwe: A primary health care based cross-sectional study*. **BMC Pregnancy and Childbirth**, 19(1), 2019, 53.
120. H. Abate; C. Mekonnen & Y. Ferede, *Depression among HIV-positive pregnant women at Northwest Amhara referral hospitals during COVID-19 Pandemic*. **Risk Management and Healthcare Policy**, Volume 14, 2021, 4897–4905.
121. J. Ngocho; M. Watt; L. Minja; B. Knettel; B. Mmbaga; P. Williams & K. Sorsdahl, *Depression and anxiety among pregnant women living with HIV in Kilimanjaro region, Tanzania*. **PLOS ONE**, 14(10), 2019, e0224515.
122. W. Abebe; M. Gebremariam; M. Molla; S. Teferra; L. Wissow & A. Ruff, *Prevalence of depression among HIV-positive pregnant women and its association with adherence to antiretroviral therapy in Addis Ababa, Ethiopia*. **PLOS ONE**, 17(1), 2022, e0262638.
123. N. Zotova; I. Familiar; B. Kawende; F. Kasindi; N. Ravelomanana; A. Parcesepe; A. Adedimeji; K. Lancaster; D. Kaba; P. Babakazo & M. Yotebieng, *HIV disclosure and depressive symptoms among pregnant women living with HIV: A cross-sectional study in the Democratic Republic of Congo*, **Journal of the International AIDS Society**, 25(2), 2022.
124. N. Mbatha; K. Mokwena & S. Madiba, *Clinical and obstetric risk factors for postnatal depression in HIV positive women: A cross sectional study in health facilities in rural KwaZulu-Natal*. **International Journal of Environmental Research and Public Health**, 17(22), 2020, 8425.
125. E. Tuthill; J. Pellowski; S. Young & L. Butler, *Perinatal depression among HIV-Infected women in KwaZulu-Natal South Africa: Prenatal depression predicts lower rates of exclusive breastfeeding*. **AIDS and Behavior**, 21(6), 2017, 1691–1698.
126. Y. Huang; D. Luo; X. Chen; D. Zhang; Z. Huang & S. Xiao, *HIV-Related stress experienced by newly diagnosed people living with HIV in China: A 1-Year Longitudinal Study*. **International Journal of Environmental Research and Public Health**, 17(8), 2020, 2681.

- ¹²⁷. A. Maltby; B. Odhiambo; E. Akama; J. Pellowski; C. Cohen; S. Weiser & A. Conroy, —*I found out I was pregnant, and I started feeling stressed*ll: *A longitudinal qualitative perspective of mental health experiences among perinatal women living with HIV*. **AIDS and Behavior**, 25(12), 2021, 4154–4168.
- ¹²⁸. D. Proudfoot, *Frozen in a moment in time: The experiences of mothers being diagnosed with HIV infection*. **Journal of the Association of Nurses in AIDS Care**, 29(2), 2018, 323–329.
- ¹²⁹. E. Kinyanda; S. Hoskins; J. Nakku; S. Nawaz & V. Patel, *Prevalence and risk factors of major depressive disorder in HIV/AIDS as seen in semi-urban Entebbe district, Uganda*. **BMC Psychiatry**, 11, 2011, 205.

Do Not Copy, Lead City University, Nigeria

Chapter Three

Methodology

This chapter explains the processes used execute research necessary to meet the objectives of the study. It discusses the research design and the methodology's constituent parts, such as the study's demographic, sample, recruitment, location, instruments used for gathering data, and analytical strategy.

3.1 Research Design

To achieve the objectives of this study and better understand the psychosocial health of WLWH during pregnancy and early motherhood both quantitative and qualitative data needed to be gathered. Thus, a mixed-method design was adopted. For this study, the first phase involved the use of a facility-based cross-sectional survey to collect quantitative data after which a qualitative instrument was used to collect data for the second phase.

3.2 Population of the Study

The study population consisted of women living with HIV over the age of 18 that are pregnant or have given birth within the last two years attending anti-retroviral treatment clinics in Ibadan, Oyo state, Nigeria.

A total of four treatment centres within Ibadan, with a high prevalence of the target population, were selected for this study. The centres are;

- State Hospital, Adeoyo, Ringroad
- Adeoyo Maternity Health Centre
- St. Mary Catholic Hospital, Eleta
- Saint Annes Anglican Hopital, Molete

3.3 Sampling and Sampling Techniques

A purposive sampling method was adopted in selecting the health facilities because ART treatment is not available in all health facilities. The facilities chosen had a high prevalence of the target population needed to conduct this study. Simple random sampling was utilized to choose WLWH from each of the health facilities who were currently pregnant or had recently given birth for the quantitative portion of this study. For the purpose of the study, which will inform a representative sample, simple random sampling gave WLWH an equal opportunity to participate. This technique was chosen for sampling since it is impartial and assisted in gathering accurate data¹.

3.3.1 Sample Size

3.3.1.1 Sample Size for Quantitative Phase

The sample size for the qualitative phase of this study was determined using Fisher's formula for the determination of sample size for descriptive studies.

$$n = \frac{Z_{\alpha}^2 pq}{d^2}$$

n = Desired sample size Z = Standard normal variable, 1.96 at 95% confidence level

p = Estimated proportion of pregnant women with depression² q = (1 - p)

d = Allowable error α = Level of significance

The population proportion of 26.6% gotten from a previous study on the prevalence of depression in pregnant women². The estimation of sample size for this study will be given as:

$$Z_{\alpha} = \frac{1}{2} (1 - \frac{\alpha}{2}) = 1.96 \quad p = 26.6$$

$$d = 5\% \text{ or } 0.05 \quad \alpha = 5\% \text{ or } 0.05$$

Therefore, the estimated sample size (n)=300.

Correcting for a non-response rate of 10%, the estimated sample size will be n/0.9

Thus, the estimated sample size=333

3.3.2.1 Sample Size for Qualitative Phase

The sample size in qualitative studies is less than in quantitative studies, and there are no established guidelines for calculating sample sizes in qualitative research. According to some, qualitative research is concerned with meaning rather than generalization. Thus, investigating a smaller number of individuals may allow for a more in-depth evaluation of the qualities addressing the problem under consideration³. It has also been proposed that qualitative researchers defend interview samples based on qualitative methodologists' recommendations and identify samples utilized in similar studies⁴.

Similar qualitative research with HIV-infected pregnant and postpartum women employing in-depth interviews have employed sample sizes ranging from 17 to 20^{5,6}. This study interviewed 17 people based on the recommendations of research methodologists and the sample sizes utilized in previous studies.

3.3.2 Eligibility Criteria

The eligibility criteria are a construct that helps to select individuals who should be included or removed from the study sample. The study participants were WLWH attending and receiving treatment at the 4 selected HIV clinics in the Ibadan metropolis of Oyo State. Eligible participants for this study were WLWH, 18 years and above who are pregnant or had experienced pregnancy in the last two years before recruitment.

Inclusion Criteria

All participants of the study were women living with HIV that are at least 18 years of age or older, who are pregnant or have been pregnant within the last two years, receiving antiretroviral treatments in the selected healthcare centres.

Exclusion Criteria

This study excluded all women were unable to provide express voluntary consent for participation.

3.4 Description of the Research Instrument Quantitative Phase

A questionnaire was used to obtain information on the socio-demographic characteristics of respondents and the factors associated with the psychosocial challenges.

Two instruments were used for the collection of data on depressive symptoms and perceived stress respectively. They are:

1. Edinburgh Postnatal Depression Scale (EPDS) for measuring depressive symptoms.
2. Perceived Stress Scale for measuring perceived stress.

Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale was used to assess symptoms of perinatal depression⁷. The scale has 10 items with responses on a 4-point Likert scale ranging from 0 (absence of depressive moods) to 3 (worst mood). A total score ranging from 0 to 30 is calculated, and a cut-off point of ≥ 12 indicates an increased likelihood of clinical depression.

The scale does not mention the words pregnancy, child, birth, or infant and has also been validated in a non-pregnant population⁸.

Perceived Stress Scale

Perceived stress was measured using the Perceived Stress Scale. The Perceived Stress Scale (PSS) is a 10-item self-report assessment of the stress domains of unpredictability, lack of control, burden overload, and stressful life circumstances⁹. Responses are on a 5-point Likert scale ranging from 0 (never) to 4 (very often). The PSS score is the sum of all responses with higher scores indicating more perceived stress and can range from 0 to 40.

Qualitative Phase

The qualitative phase consisted of individual interviews connected (that is, involving the same participants) with the survey study through sampling. The individual interviews were conducted using a hybrid, narrative/semi-structured format.

The semi-structured interviews were conducted with seventeen participants. The interview guide was designed to capture the experiences of WLWH during the perinatal period. The interview guide was adapted from the Uganda AIDS Rural Treatment Outcomes (UARTO) study and it has been validated⁵.

3.5 Reliability and Validity of the Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale (EPDS) is one of the most widely used screening instruments for assessing symptoms of perinatal depression and anxiety⁸. It assesses emotional experiences over the past seven days using ten Likert-scale items. This self-reporting instrument was originally developed in the United Kingdom (U.K.) by Cox, Holden and Sagovsky in 1987.

The psychometric properties of the EPDS in primary health care were: 86 % sensitivity (correctly identifying true cases), 78 % specificity (correctly identifying people without the condition) and 73 % positive predictive value (proportion of respondents scoring positive in the test who had a mental disorder diagnosed by clinical interview)⁷.

3.6 Reliability and Validity of the Perceived Stress Scale

The 14-item self-report Perceived Stress Scale is widely used to assess the degree to which situations in one's life are appraised as stress⁹. As a global stress measure, the PSS items are general in nature rather than event-specific, and evaluate the extent to which individuals perceive their lives to be –unpredictable, uncontrollable, and overloading⁹. Respondents rate the frequency of their feelings and thoughts about life events and situations over the previous month using a five-point scale ranging from (0) *Never* to (4) *Very Often*. The PSS yields a total score that describes overall perceived stress.

The initial study reported that scores on the PSS-10 demonstrated adequate internal consistency reliability ($\alpha = .78$); moderate concurrent criterion validity with the amount of stress experienced during an average week ($r = .39, p < .001$) and the frequency of stressful life events within the past year ($r = .32, p < .001$); and adequate convergent validity as evidenced by expected negative associations with perceived health status ($r = -.22, p < .001$) and positive associations with psychosomatic symptoms ($r_s = .28$ to $.34, p < .001$) and health service utilization ($r = .22, p < .001$)⁹.

Since then, other studies have similarly reported that the PSS-10 has good internal consistency reliability^{10,11}, and adequate convergent validity based on associations with measures of physical and mental health¹¹.

3.7 Data Collection Procedures

The process of data collection for this study was undertaken in Ibadan, Oyo State over six weeks from, July to August 2022. All the questionnaires were administered by interviewers to HIV-infected women getting treatment at any of the four anti-retroviral clinics during the course of the study. The questionnaires were administered in person to aid with the language barrier because most of the participants spoke the local language of Yoruba. This allowed the study participants to interact with the device in their own language. It was also beneficial to

administer the questionnaires in person since respondents could seek for explanation on any issue that they found difficult to grasp. Prior to administering the questionnaire, participants were provided with information sheets outlining the objective and scope of the study. The contents of the information sheets were also read and explained to the participants after which the participants were allowed to ask questions. Upon acceptance to participate in the research, they were given consent forms to sign. Participants were informed of their right to withdraw from participating in the study at any time they wish to do so. They were also given assurance of their confidentiality. The questionnaire took a maximum of 10 minutes to complete.

For the qualitative phase of this study, in-depth interviews were conducted among HIV-infected women in their perinatal period, allowing the different issues related to this research area to be covered. A total of 17 interviews were conducted between July and August 2022 with HIV-infected pregnant women attending any of the four anti-retroviral treatment clinics. All interviews were conducted face-to-face with the participants and took place in private rooms in the selected treatment clinics. Each interview lasted for about twenty to thirty minutes. Interview participants were reminded of the content of the information sheet given to them during the quantitative phase of the study and of their right to withdraw from participating in the study. Their approval was also requested to record the interview. The interview guide included inquiries concerning WLWH's pregnancies and postpartum experiences, women's attitudes toward getting pregnant, how their HIV status affected those attitudes, and their partners' perceptions of the pregnancy. Probes were used to clarify and help elaborate questions throughout the interviews, thus expanding the stories the women share within the larger narrative.

3.7.1 Data Storage

All interview data and transcripts were encrypted and saved on a password-protected USB stick and computer. All of the printed informational materials, consent papers, and transcripts were kept in a secure location at the with the university.

3.8 Method of Data Analysis

Quantitative Data Analysis

Before analysis, the completeness of the data was evaluated. Data entry was carried out using Microsoft Excel and analysis was done with Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics of demographic information for each participant were computed. Descriptive statistics were also used to describe the prevalence of depression and perceived stress. Factors associated with depression and perceived stress were evaluated using multivariate logistic regression.

Qualitative Data Analysis

The interview audio recordings were translated and transcribed verbatim into English. The transcripts were then examined to evaluate the accuracy and integrity of the translation. Nvivo 12 (QRS International) was used to facilitate analyses. An initial analysis of the data was done using content analysis to investigate the experiences of depression among WLWH during pregnancy and postpartum. Transcripts were read to identify major themes and to inform the development of a coding scheme to categorize the data. The final coding scheme included both a priori themes and those which emerged from preliminary readings of the transcripts. A codebook was created to guide the coding process. To extract the overarching narrative from the most relevant facts, data reduction approaches were used.

3.9 Ethical Considerations

Ethical approval was obtained from the Lead City University Health Research and Ethics Committee. Ethical approval was also obtained from the Oyo State Ministry of Health Research Ethics Committee.

Three key ethical principles—respect for others, beneficence, and justice—guide researchers. All three of these guidelines were followed during the research procedure.

Confidentiality and Anonymity

To begin, because living with HIV and AIDS is such a sensitive subject, confidentiality and anonymity were maintained throughout this study. The names of participants were not requested on the questionnaires. Participants' identities were safeguarded by eliminating any information that could lead to their identity during the presentation of the findings. Privacy was also protected by ensuring that all information and data obtained during the study were safely preserved and locked away. Participants were notified that the information obtained during the study would be submitted to Lead City University's Department of Public Health.

Voluntariness and Informed Consent

All potential participants were asked to provide written informed consent for the study. Each questionnaire included consent forms. Potential participants were given a thorough explanation of the purpose of the study before being asked for written consent. They were made aware of their rights to refuse to share information, to withdraw from the study at any time, and to ask for clarity with regards to any of the questions asked during the study. After signing the consent form, the participants received a copy to take home. There was no form of coercion used to get participants to take part in the study.

Translation of Protocol to the Local Language

The participants' primary language, Yoruba, was also employed to communicate with them. To enhance comprehension, the study tool for data collection as well as the informed consent form were translated into Yoruba.

Do Not Copy, Lead City University, Nigeria

Endnotes

1. P. Pandey, & M. M. Pandey, *Research methodology tools and techniques*. Bridge Center. 2021
2. A. Ogueji. *Experiences and predictors of psychological distress in pregnant women living with HIV*. **British Journal of Health Psychology**, 26(3), 2021, 882–901.
3. B. Saunders; J. Sim; T. Kingstone; S. Baker; J. Waterfield; B. Bartlam; H. Burroughs & C Jinks, *Saturation in qualitative research: Exploring its conceptualization and operationalization*, **Quality & Quantity**, 52(4), 2018, 1893–1907.
4. K. Vasileiou; J. Barnett; S. Thorpe & T Young, *Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period*. **BMC Medical Research Methodology**, 18(1), 2018, 1–18.
5. T. Mbatha, & A Dube, *HIV positive pregnant mothers' perceptions and experiences regarding the prevention of mother-to-child transmission, Option B+ Program*. **Journal of Patient Experience**, 8, 2021, 23743735211065270–23743735211065270.
6. S. Madiba, *When pregnancy coincides with positive diagnosis of HIV: Accounts of the process of acceptance of self and motherhood among women in South Africa*. **International Journal of Environmental Research and Public Health**, 18(24), 2021, 13006.
7. J. Cox; J. Holden; & R Sagovsky. *Detection of postnatal depression: Development of the 10-item Edinburgh postnatal depression scale*. **The British Journal of Psychiatry**, 150(6), 1987, 782–786.
8. B. Levis, Z. Negeri, Y. Sun, A. Benedetti, B. Thombs, & DEPRESSion Screening Data (DEPRESSD) EPDS Group, *Accuracy of the Edinburgh Postnatal Depression Scale (EPDS) for screening to detect major depression among pregnant and postpartum women: Systematic review and meta-analysis of individual participant data*, **BMJ (Clinical Research Ed.)**, 371, 2020, m4022.
9. S. Cohen; T. Kamarck, & R. Mermelstein, *A global measure of perceived stress*. **Journal of Health and Social Behavior**, 24(4), 1983, 385–396.
10. M. Mozumder, *Reliability and validity of the perceived stress scale in Bangladesh*. **PLOS ONE**, 17(10), 2022, e0276837.
11. C. Bastianon, E. Klein, A. Tibubos, E. Brähler, M. Beutel, & K. Petrowski, *Perceived stress scale (PSS-10) psychometric properties in migrants and native Germans*. **BMC Psychiatry**, 20(1), 2020, 450.

Chapter Four

Results and Discussion of Findings

This chapter presents the participants' demographic factors, relationship-related factors, behavioural factors, clinical factors, pregnancy-related factors, and the frequencies of probable depression and perceived stress. It then presents the association between the variables and frequency of probable depression and perceived stress. The chapter describes the psychological state of respondents in terms of probable depression and perceived stress, as measured by the survey. The chapter discusses socio-demographic elements that affect their psychological well-being. Finally, it summarizes the survey responses of the participants.

4.1 Demographic Data Analysis

280 pregnant WLWH and 150 mothers living with HIV were recruited for this study, giving a total sample size of 430. 28 participants were excluded due to incomplete survey data noticed during data cleaning, resulting in 402 WLWH being included in this study

Table 4.1 depicts the participants' demographic information for this study. The mean age of the study sample was 35.8 years (SD = 6.6) and the participants were between the age range of 19 to 49 years. The majority of the participants, 225 (56%), identified themselves as Christians, with 179 (43.8%) identifying as Muslims and 1 (0.2%) identifying with other religions. 352 (87.6%) participants were from the Yoruba tribe, and 50 (12.4%) were from Non-Yoruba ethnic groups. The percentage of married participants was 92.3%, and those that were not married were 33 (7.7%), with 373 (92.8%) having spousal relationships and 29 (7.2%) having non-spousal partners.

With regard to their level of education, those who attained a secondary school education were the majority with 173 (43%) participants, 94 (23.4%) participants had primary school education, 90 (22.4%) had tertiary education, and 45 (11.2%) had no formal education.

Employment in the study sample was high: 334 (83.1%) participants were employed and 68 (16.9%) were unemployed. 234 (58.2%) of the participants earn an income below 20,000 naira, 48(11.9%) earn between 20,000 and 30,000, 77(19.2%) between 31,000 and 40,000, 27(6.7%) between 41,000 and 50,000, and 16(4.0%) earn above 51,000.

Do Not Copy, Lead City University, Nigeria

Table 4.1 Sociodemographic Characteristics of the Study Sample

Variable	Frequency	Total(%)	Antenatal (%) n=263	Postpartum(%) n=139
Age (n=402)	402			
Mean (S.D)	35.8 (6.6)			
Religion (n=402)				
Christianity	225	56.0	150(57)	75(54)
Islam	177	43.8	113(43)	64(46)
Tribe				
Yoruba	352	87.6	225(85.6)	127(91.4)
Non-Yoruba	50	12.4	38(14.4)	12(8.6)
Level of Education (n=402)				
Primary Level	94	23.4	53(20.2)	41(29.5)
Secondary Level	173	43.0	107(40.7)	66(47.5)
Tertiary Level	90	22.4	68(25.9)	22(15.8)
None	45	11.2	35(13.3)	10(7.2)
Marital Status				
Married	371	92.3	246(93.5)	125(89.9)
Not Married	31	7.7	17(6.5)	14(10.1)
Type of Partner(n=402)				
Spousal	373	92.8	247(93.9)	126(90.6)
Non-Spousal	29	7.2	16(6.1)	13(9.4)
Employment Status(n=402)				
Employed	334	83.1	225(85.6)	109(78.4)
Unemployed	68	16.9	38(14.4)	30(21.6)
Income Level(n=402)				
<20,000	234	58.2	157(59.7)	77(55.4)
20,000-30,000	48	11.9	19(7.2)	29(20.9)
31,000-40,000	77	19.2	60(22.8)	17(12.2)
41,000-50,000	27	6.7	13(4.9)	14(10.1)
>51,000	16	4.0	14(5.3)	2(1.4)

Source: Field Survey, 2022

Table 4.2 shows the clinical, behavioural and obstetric characteristics of the participants of this study. All participants in the study sample had started anti-retroviral therapy at the time of their interview. The majority (48.3%) started taking ART 1 – 5 years ago, 19.2% started 6 – 10 years, 21.1% started less than 1 year ago and 11.4% started more than 10 years ago. 93% had a viral load below 50 copies/ml, 4.7% had a viral load above 50 copies/ml, and 2.2% had their viral load recorded as TND (Target Not Detected). 14 (3.5%) reported cigarette smoking and 388 (96.5%) self-identified as non-smokers. 78 patients reported alcohol consumption, with (%) having consumed alcohol within the last 12 months and 324 (80.6%) denied alcohol intake. Out of the study sample 263 (65.4%) were pregnant, 109 reported a gestational age of 5-13 weeks, 85 reported 14-28 weeks and 69 reported 29-40 weeks. 73 reported that the pregnancy was planned while 190 reported that they did not plan to get pregnant.

Do Not Copy, Lead City University, Nigeria

Table 4.2 Clinical, Behavioural and Obstetric Characteristics of the Study Sample

Variable	Frequency	Percent (%)	Antenatal(%)	Postpartum(%)
Years On ART(n=402)				
<1 Year	85	21.1	50(19)	35(25.2)
1-5 Years	194	48.3	136(51.7)	58(41.7)
6-10 Years	77	19.2	46(17.5)	15(10.8)
> 10 Years	46	11.4	31(11.8)	31(22.3)
Viral Load				
<50 copies/ml	374	93.0	243(92.4)	131(94.2)
≥ 50 copies/ml	19	4.7	13(4.9)	6(4.3)
Target Not Detected (TND)	9	2.2	7(2.7)	2(1.4)
Alcohol Consumption (n=402)				
Yes	78	19.4	50(19)	28(20.1)
No	324	80.6	213(81)	111(79.9)
Tobacco Intake(n=402)				
Yes	14	3.5	14(5.3)	0
No	388	96.5	249(94.7)	139(100)
Problems in Previous Pregnancy (n=402)				
Yes	175	43.5	104(39.5)	64(46)
No	227	56.5	159(60.5)	75(54)
Planned Pregnancy (n=263)				
Yes	73	27.8	73(27.8)	N/A
No	190	72.2	190(72.2)	N/A
Gestational Age (n=263)				
5-13 weeks	109	41.4	109(41.4)	N/A
14-28 weeks	85	32.3	85(32.3)	N/A
29-40 weeks	69	26.3	69(26.3)	N/A

Source: Field Survey, 2022

Table 4.3 shows the relationship and support-related characteristics of the participants of this study. Of all the participants 335 were aware of their partner's status; with 152 having positive partners and 178 having negative partners. 246 (61.2%) had disclosed their status to their partners. 318 participants reported receiving adequate support from their partner and 287 reported receiving support from family and friends.

Table 4.3 Relationship and Support-related Characteristics of the Study Sample

Variable	Frequency	Percentage (%)	Antenatal (%) n=263	Postpartum(%) n=139
Partners Status(n=335)				
Positive	152	45.4	118(44.9)	39(28.1)
Negative	178	54.6	97(36.9)	81(58.3)
Status Disclosure (n=394)				
Yes	246	61.2	153(58.2)	93(66.9)
No	148	36.8	108(41.1)	40(28.8)
Perceived Social Support				
Support from partner (n=394)				
Yes	318	80.7	218(82.8)	100(72)
No	76	19.3	43(20.9)	33(23.8)
Support from other family and friends (n=402)				
Yes	287	71.4	56(40.3)	83(59.7)
No	115	28.6	59(22.4)	56(40.3)
History of Conflict with Partner				
Yes	126	31.3	80(30.4)	48(34.5)
No	266	68.7	181(68.8)	85(61.2)

Source: Field Survey, 2022

4.2 Presentation of Data

4.2.1 Research Question One:

The levels of depression and perceived stress among women living with HIV during the perinatal period in Ibadan, Oyo State.

4.2.1.1 Depression Among Women Living with HIV During the Perinatal Period

The Edinburgh Postnatal Depression Scale (EPDS) was divided into no depression (score of 9 or less), probable depression (score between 10 and 12), and depression (score of 13 or more). According to the EPDS, a score of 13 or more is interpreted as –suffering from a depressive illness of varying severity. For this study, depression was assessed as an EPDS score of 13 or more (EPDS \geq 13).

The mean EPDS score obtained for all women was 14. Table 4.4 shows the percentage of women who reported depressive symptoms. The responses were re-coded according to their actual responses. The responses referring to a score of -0 and -1 were coded as -no, while -2 and -3 were coded as -yes. Q1 and Q2 indicate anhedonia, Q3-Q6 indicate anxiety, Q7-10 depression, and Q10 self-harm.

Table 4.4 Prevalence of Depressive Symptoms According to EPDS

EPDS Questions	Frequency (%)		
	Total (n=402)	Antenatal (n=263)	Postpartum (n=139)
I have been able to laugh and see the funny side of things (No)	36 (8.9%)	15(5.7%)	21(15.1%)
I have looked forward with enjoyment to things (No)	60(14.9%)	25(9.5%)	35(25.2%)
I have blamed myself unnecessarily when things went wrong (Yes)	238(59.2%)	164(62.3%)	74(53.2%)
I have been anxious or worried for no good reason (Yes)	156(38.8%)	101(68.4%)	55(39.6%)
I have felt scared or panicky for no very good reason (Yes)	272(67.6%)	211(80.2%)	61(43.9%)
Things have been getting on top of me (Yes)	244(60.7%)	167(63.5%)	77(55.4%)
I have been so unhappy that I had difficulty sleeping (Yes)	263(65.4%)	198(8.9%)	65(46.8%)
I have felt sad or miserable (Yes)	209(52%)	154(75.3%)	55(39.6%)
I have been so unhappy that I have been crying (Yes)	209(52%)	150(57%)	59(42.4%)
The thought of harming myself has occurred to me (Yes)	208(51.7%)	150(57%)	58(41.7%)

Source: Field Survey, 2022

Table 4.5 shows that majority (60.7%) of the women who participated in this study, consisting of 162 pregnant women and 82 mothers, had an EPDS score greater than 12, and show symptoms of depression

Table 4.5 Prevalence of Depression

Variable	Total(%)	Antenatal(%) n=263	Postpartum(%) n=139
No Depression	124(30.8)	85(32.3)	39(28.1)
Probable Depression	34(8.4)	16(6.1)	18(12.9)
Depression	244(60.7)	162(61.6)	82(59)

Source: Field Survey, 2022

4.2.1.2 Perceived Stress Among Women Living with HIV During the Perinatal Period

The Perceived Stress Scale (PSS-10) scale was divided into low stress (score of 13 or less), moderate stress (score between 14 and 26) and high perceived stress (score between 27 and 40). For this study, stress was assessed as a PSS-10 score of 14 or more ($PSS-10 \geq 14$).

Table 4.6 shows the percentage of the women who reported indicators of perceived stress. The responses were re-coded according to their actual responses. The responses referring to a score of -0|| and -1|| were coded as -no||, while -2||, -3|| and -4|| were coded as -yes||. The mean value of perceived stress symptoms among the women was 20.07 ± 5.1 (mean \pm SD).

Table 4.6 Prevalence of Indicators of Perceived Stress According to PSS-10

PSS-10 Questions	Frequency (%)		
	Total	Antenatal	Postpartum
In the last month, how often have you been upset because of something that happened unexpectedly? (Yes)	73(18.2%)	25	48
In the last month, how often have you felt that you were unable to control the important things in your life? (Yes)	99(24.6%)	44	55
In the last month, how often have you felt nervous and stressed? (Yes)	173(43%)	114	59
In the last month, how often have you felt confident about your ability to handle your personal problems? (No)	234(58.2%)	163	71
In the last month, how often have you felt that things were going your way? (No)	212(52.7%)	150	62
In the last month, how often have you felt confident about your ability to handle your personal problems? (No)	248(61.7%)	162	86
In the last month, how often have you been able to control irritations in your life? (No)	225(56%)	157	68
In the last month, how often have you felt that you were on top of things? (No)	229(57%)	166	63
In the last month, how often have you been angered because of things that happened that were outside of your control? (Yes)	162(40.3%)	98	64
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? (Yes)	128(31.8%)	76	44

Source: Field Survey, 2022

As shown in Table 4.7, 22 % of participants were having low stress, 77% had moderate level of stress and 1% had a high level of stress.

Table 4.7 Prevalence of Perceived Stress

Variable	Total(%)	Antenatal(%)	Postpartum(%)
Low Stress	87(21.6)	67(25.5)	20(14.4)
Moderate Stress	310(77.1)	194(73.8)	116(83.5)
High Stress	5(1.3)	2(0.8)	3(2.2)

Source: Field Survey, 2022

4.2.1.3 Depression and Perceived Stress Among Women Living with HIV During the Perinatal Period

To examine the factors associated with depression and stress in WLWH during the perinatal phase, participants were divided into four groups: (a) Low Depression (EPDS < 13) – Low Stress (PSS-10 < 14), (b) Depression (EPDS ≥ 13) – Low Stress (PSS-10 < 14), (c) Low Depression (EPDS < 13) – High Stress (PSS-10 ≥ 14), and (d) Depression (EPDS ≥ 13) – High Stress (PSS-10 ≥ 14). The number of participants for each group were: (a) Depression – High Stress ($n = 259$), (b) Depression – Low Stress ($n = 19$), (c) Low depression – High Stress ($n = 114$), and (d) Low depression – Low stress ($n = 10$). For this study, the co-occurrence of depression and stress was assessed as a simultaneous EPDS score of 13 or more and a PSS-10 score of 14 or more (i.e EPDS ≥ 13, PSS-10 ≥ 14). This is shown in Table

4.8

below.

Table 4.8 Prevalence of the Co-occurrence of Depression and Stress

Variable	Total(%)	Antenatal(%)	Postpartum(%)
Low Depression-Low stress	10 (2.5)	3(1.1)	7(5)
Low Depression-High Stress	114(28.4)	82(31.2)	32(23)
Depression-Low Stress	19(4.7)	12(4.6)	7(5)
Depression-High Stress	259(64.4)	166(63.1)	93(66.9)

Source: Field Survey, 2022

4.2.2 Research Question Two:

The factors associated with depression and perceived stress among women living with HIV during the perinatal period in Ibadan, Oyo State.

4.2.2.1 Factors Associated with Perinatal Depression

The study examined the association between sociodemographic, behavioural, clinical, and pregnancy-related factors with depression in WLWH during the perinatal period. Using a bivariate analysis approach, this study investigated the relationship between each independent variable and self-reported symptoms of depression.

4.2.2.1.1 Association Between Sociodemographic Variables and Depression

Chi-square tests were used to investigate the relationship between sociodemographic factors and depression. Table 4.9 shows the results of the Chi-square testing. According to Table 4.9, the Chi-square test revealed that marital status ($p=0.026$), type of partner ($p=0.009$) and income level ($p=0.000$), thus showing that the variables are significantly associated with depression.

Table 4.9 Sociodemographic Variables and Depression

Variable	Depression (EPDS \geq 13)					
	Overall n=244 (%)	P-value	Antenatal Depression n=162(%)	P-value	Postpartum Depression n=82(%)	P-value
Religion						
Christianity	124(50.8)	0.228	83(51.3)	0.046	41(50)	0.262
Islam	120(48.9)		78(48.7)		41(50)	
Tribe						
Yoruba	206(84.4)	0.058	132(81.5)	0.017	74(90.2)	0.572
Non-Yoruba	38(15.6)		30(18.5)		8(9.8)	
Level of Education (n=402)						
Primary Level	67(27.5)	0.075	39(24.1)	0.062	28(34.1)	0.363
Secondary Level	96(39.3)		58(35.8)		38(46.3)	
Tertiary Level	50(20.5)		40(24.7)		10(12.2)	
None	31(12.7)		25(15.4)		6(7.3)	
Marital Status						
Married	231(94.7)	0.026	155(95.7)	0.073	76(92.7)	0.196
Not Married	13(5.3)		7(4.3)		6(7.3)	
Type of Partner(n=402)						
Spousal	233(95.5)	0.009	156(96.3)	0.041	77(93.9)	0.114
Non-Spousal	11(4.5)		6(3.7)		5(6.1)	
Employment Status						
Employed	202(82.8)	0.843	138(85.2)	0.831	64(78)	0.899
Unemployed	42(17.2)		24(14.8)		18(22)	
Income Level						
<20,000	121(49.6)	0.000	72(44.4)	0.000	49(59.8)	0.176
20,000-30,000	37(15.2)		19(11.7)		18(22)	
31,000-40,000	60(24.6)		52(32.1)		8(9.8)	
41,000-50,000	16(6.6)		11(6.8)		5(6.1)	
>51,000	10(4.1)		8(4.9)		2(2.4)	

Source: Field Survey, 2022

4.2.2.1.2 Association between Clinical, Behavioural and Obstetric Characteristics and Depression

The results from the bivariate analysis, as shown in Table 4.10, years of ART($p=0.000$), alcohol intake($p=0.000$), tobacco use ($p=0.012$) and gestational age ($p=0.000$) are significantly associated with depression as they have p-value of the variable is less than 0.05.

Table 4.10 Clinical, Behavioural and Obstetric Characteristics and Depression

Variable	Depression (EPDS \geq 13)					
	Overall	P-value	Antenatal Depression	P-value	Postpartum Depression	P-value
Years on ART						
<1 Year	48(19.7)	0.000	28(34.1)	0.004	20(24.4)	0.010
1-5 Years	102(41.8)		74(45.7)		28(34.1)	
6-10 Years	56(23)		34(21)		22(26.8)	
> 10 Years	38(15.6)		26(16)		12(14.6)	
Viral Load						
<50 copies/ml	231(94.7)	0.274	153(94.4)	0.281	78(95.1)	0.868
\geq 50 copies/ml	9(3.7)		6(3.7)		3(93.7)	
Target Not Detected (TND)	4(1.6)		3(1.9)		1(1.2)	
Alcohol Intake						
Yes	71(29.1)	0.000	48(29.6)	0.000	23(28)	0.005
No	173(70.9)		114(70.4)		59(72)	
Tobacco Use						
Yes	4(1.6)	0.012	4(2.5)	0.009	0	-
No	240(98.4)		158(97.5)		82(100)	
Planned Pregnancy						
Yes	37(15.2)	0.071	37(15.2)	0.024	N/A	-
No	125(51.2)		125(51.2)		N/A	
Gestational Age						
5-13 weeks	35(14.3)	0.000	35(14.3)	0.000	N/A	-
14-28 weeks	73(29.9)		73(29.9)		N/A	
29-40 weeks	54(22.1)		54(22.1)		N/A	
Problems in Previous Pregnancy						
Yes	101(41.1)	0.841	52(32.1)	0.002	49(59.8)	0.000
No	143(58.6)		110(67.9)		33(40.2)	

Source: Field Survey, 2022

4.2.2.1.3 Association Between Relationship and Support Related Variables and Depression

As reported in Table 4.11, the Chi-square test revealed the p-values for relationship-related variables including the status of the partner ($p=0.002$), support from partner ($p=0.009$), support from other family and friends ($p=0.001$), and history of conflict with the partner ($p=0.000$) were less than 0.05. It can be concluded the mentioned variables are significantly associated with depression.

Table 4.11 Relationship and Support-related Characteristics and Depression

Variable	Depression (EPDS \geq 13)					
	Overall	P-value	Antenatal Depression	P-value	Postnatal Depression	P-value
Status of Partner						
Positive	110(45.1)	0.002	82(50.6)	0.004	28(34.1)	0.148
Negative	103(42.2)		60(37)		43(52.4)	
Status Disclosure						
Yes	158(64.8)	0.182	109(67.3)	0.001	49(59.8)	0.051
No	82(33.6)		52(32.1)		30(36.6)	
Social Support						
Support from Partner						
Yes	195(79.9)	0.056	132(81.5)	0.050	63(76.9)	0.140
No	45(18.5)		29(17.9)		16(19.5)	
Support from other Family and Friends						
Yes	160(65.6)	0.001	113(69.8)	0.000	47(57.3)	0.490
No	84(34.4)		49(30.2)		35(4.7)	
History of Conflict with Partner						
Yes	100(41)	0.000	62(38.3)	0.002	38(46.3)	0.002
No	140(57.4)		99(61.1)		41(50)	

Source: Field Survey, 2022

4.2.2.1.4 Association between Perceived Stress and Depression

According to the results from the bivariate analysis indicated in Table 4.12 there is a significant association between perceived stress and depression.

Table 4.12 Perceived Stress and Depression

Variable (Stress)	Depression (EPDS \geq 13)			P-value
	Overall	Antenatal Depression	Postpartum Depression	
Low stress	13	8	5	0.000
Moderate Stress	226	152	74	
High Stress	5	2	3	

Source: Field Survey, 2022

4.2.2.1.5 Predictors of Perinatal Depression

A binomial logistic regression was carried out to identify predictors of perinatal depression based on the significant variables, which included the marital status, type of spousal, status of partner, status disclosure, income level, support from other family and friends, gestational age, alcohol intake, tobacco use, years on ART and years since diagnosis. Following the logistic regression analysis, four variables were found to be statistically significant in association with perinatal depression. They are: status of partner ($p=0.012$), income level ($p=0.032$), gestational age ($p=0.002$) and alcohol intake ($p=0.000$). The analysis further shows that women with positive partners had less likely odds of having symptoms of perinatal depression (OR=0.56, 95% CI 0.24-1.30). It also revealed that the odds of reporting symptoms of perinatal depression were 6.96 more likely to occur while having an income level below 20,000 (OR=6.96, 95% CI 1.18-40.95). The odds of reporting symptoms of perinatal depression was 4.68 more likely to occur with a gestational age above 14 weeks (OR=4.68, 95% CI 1.74-12.57).

Table 4.13 Predictors of Perinatal Depression

Variable	Overall	%	Odds Ratio(95% CI)	P-value
Marital Status				
Married	231	94.7	0.75(0.37, 1.77)	0.702
Not Married	13	5.3	Ref	
Type of Partner(n=402)				
Spousal	233	95.5	2.11(0.78,5.01)	0.068
Non-Spousal	11	4.5	Ref	
Status of Partner				
Positive	110	45.1	0.56(0.24, 1.29)	0.012
Negative	103	42.2	Ref	
Income Level				
<20,000	121	49.6	6.96(1.18,40.95)	0.032
20,000-30,000	37	15.2	3.05(0.42,22.04)	0.270
31,000-40,000	60	24.6	5.48(0.81,37.18)	0.082
41,000-50,000	16	6.6	4.77(0.55,41.18)	0.156
>51,000	10	4.1	Ref	
Support from Other Family and Friends				
No	84	34.4	0.50(0.25,1.01)	0.050
Yes	160	65.5	Ref	
History of Conflict with Partner				
No	140	57.4	2.46(1.31,4.61)	0.050
Yes	100	42	Ref	
Gestational Age				
14-28 weeks	73	14.3	4.68(1.74,12.57)	0.002
29-40 weeks	54	29.9	0.30(0.06, 0.82)	0.024
5-13 weeks	35	22.1	Ref	
Alcohol Intake				
Yes	71	29.1	0.02(0.01,0.12)	0.000
No	173	70.9	Ref	
Tobacco Use				
No	240	98.4	0.14(0.02,1.06)	0.057
Yes	4	1.6	Ref	
Years on ART				
<1 Year	48	19.7	2.01(0.10,4.04)	0.051
1-5 Years	102	41.8	1.87(1.01,3.47)	0.047
6-10 Years	56	23	Ref	
> 10 Years	38	15.6	0.62(0.24,1.64)	0.339

Source: Field Survey, 2022

4.2.2.2 Factors Associated with Perceived Stress

This study examined the association between sociodemographic, behavioural, clinical and pregnancy-related factors with perceived stress in WLWH during the perinatal period.

4.2.2.2.1 Association Between Sociodemographic Variables and Stress

According to the results from the bivariate analysis presented in Table 4.14, none of the sociodemographic variables were found to be significantly associated with perceived stress as they all had p-values above 0.05.

Table 4.14 Sociodemographic Variables and Perceived Stress

Variable	Stress (PSS-10 \geq 14)					
	Overall	P-value	Antenatal	P-value	Postpartum	P-value
Religion						
Christianity	210(56.3)	0.851	143(57.7)	0.673	67(53.6)	0.801
Islam	163(43.7)		105(42.3)		58(46.4)	
Tribe						
Yoruba	324(86.9)	0.128	211(85.1)	0.377	113(90.4)	0.225
Non-Yoruba	49(13.1)		37(14.9)		12(9.6)	
Educational Level						
Primary Level	89(23.9)	0.331	51(20.6)	0.711	38(30.4)	0.379
Secondary Level	159(42.6)		100(40.3)		59(47.2)	
Tertiary Level	81(21.7)		63(25.4)		18(14.4)	
None	44(11.8)		34(13.7)		10(8)	
Marital Status						
Married	344(92.2)	0.864	233(94.0)	0.265	111(88.8)	0.187
Not Married	29(7.8)		15(6.0)		14(11.2)	
Type of Partner						
Spousal	346(92.8)	0.945	234(94.4)	0.226	112(89.6)	0.205
Non-Spousal	27(7.2)		14(5.6)		13(10.4)	
Employment Status						
Employed	310(83.1)	0.961	215(86.7)	0.032	95(76)	0.038
Unemployed	63(16.9)		33(13.3)		30(24)	
Income Level						
<20,000	218(58.4)	0.334	147(59.3)	0.047	71(56.8)	0.324
20,000-30,000	46(12.3)		19(7.7)		27(21.6)	
31,000-40,000	72(19.3)		59(23.8)		13(10.4)	
41,000-50,000	24(6.4)		12(4.8)		12(9.6)	
>51,000	13(3.5)		11(4.4)		2(1.6)	

Source: Field Survey, 2022

Do Not Copy, Lead City University, Nigeria

4.2.2.2 Association Between Clinical, Behavioural and Obstetric Characteristics and Perceived Stress

As reported in Table 4.15, the bivariate analysis revealed that the p values for years on ART ($p=0.047$), whether they had a planned pregnancy ($p=0.002$) and gestational age ($p=0.032$) are less than 0.05. This indicates that they are significantly associated with perceived stress

Table 4.15 Clinical, Behavioural and Obstetric and Perceived Stress

Variable	Stress (PSS-10 \geq 14)					
	Overall	P-value	Antenatal	P-value	Postpartum	P-value
Years on ART						
<1 Year	84(22.5)	0.047	50(20.2)	0.022	34(27.2)	0.270
1-5 Years	175(46.9)		123(49.6)		52(41.6)	
6-10 Years	73(19.6)		46(18.5)		27(21.6)	
>10 Years	41(11.0)		29(11.7)		12(9.6)	
Viral Load						
<50 copies/ml	348(93.3)	0.243	230(92.7)	0.253	118(94.4)	0.773
\geq 50 copies/ml	16(4.3)		11(4.4)		5(4.0)	
Target Not Detected (TND)	9(2.4)		7(2.8)		2(1.6)	
Alcohol Consumption						
Yes	73(19.6)	0.760	47(19)	0.920	26(20.8)	0.564
No	300(80.4)		201(81)		99(79.2)	
Tobacco Use						
Yes	14(5.6)	0.288	14(5.6)	0.344	0	-
No	359(96.2)		234(94.4)		125(100)	
Planned Pregnancy						
Yes	63(16.9)	0.002	63(25.4)	0.001	N/A	-
No	185(49.6)		185(74.6)		N/A	
Gestational Age						
5-13 weeks	103(27.6)	0.032	103(41.5)	0.021	N/A	-
14-28 weeks	84(22.5)		84(33.9)		N/A	
29-40 weeks	61(16.4)		61(24.6)		N/A	
Problems in Previous Pregnancy						
Yes	159(42.6)	0.223	98(39.5)	0.970	61(48.8)	0.051
No	214(57.4)		150(60.5)		64(51.2)	

Source: Field Survey, 2022

4.2.2.2.3 Association between Relationship and Support-related Variables and Stress

As reported in Table 4.16, the bivariate analysis revealed that the none of the relationship and support related variables were found to be significantly associated with perceived stress as they all had p-values above 0.05.

Table 4.16 Relationship and Support-related Variables and Perceived Stress

Variable	Stress (PSS-10 \geq 14)		Antenatal	P-value	Postpartum	P-value
	Overall	P-value				
Status of Partner						
Positive	148(39.7)	0.245	113(45.6)	0.001	35(28)	0.274
Negative	166(44.5)		95(38.3)		71(56.8)	
Status Disclosure						
Yes	228(61.1)	0.825	145(58.5)	0.025	83(66.4)	0.698
No	138(37)		102(41.1)		36(28.8)	
Social Support						
Support from Partner						
Yes	294(78.8)	0.634	206(83.1)	0.033	88(70.4)	0.780
No	72(21.2)		41(16.9)		31(29.6)	
Support from other Family and Friends						
Yes	266(71.3)	0.900	193(77.8)	0.686	73(58.4)	0.346
No	107(28.7)		55(22.2)		52(41.6)	
History of Conflict with Partner						
Yes	118(31.6)	0.786	173(69.8)	0.016	75(60)	0.577
No	248(66.5)		74(29.8)		44(35.2)	

Source: Field Survey, 2022

4.2.2.2.4 Predictors of Perceived Stress

The association between perceived stress and its associated factors among the participants of the study was analysed using chi-square tests. All factors which had a p-value <0.05 in the bivariable analysis were considered for the binomial logistic regression. Thus, having a planned pregnancy, gestational age, and years on ART were included in the analysis. Following the analysis gestational age (p=0.10) was found to be statistically significant. The presence of perceived stress was associated with gestational age between 29 and 40 weeks (OR=0.05, 95% CI 0.01-0.50), showing that the odds of reporting perceived stress was 0.05 times more likely.

Table 4.17 Predictors of Perceived Stress

Variable	Stress (PSS-10 ≥ 14)		Odds Ratio(95% CI)	P-value
	Overall	%		
Planned Pregnancy				
Yes	63	16.9	0.36(0.10,1.27)	0.112
No	185	49.6	Ref	
Gestational Age				
14-28 weeks	84	22.5	0.32(0.08,1.26)	0.104
29-40 weeks	61	16.4	0.05(0.01, 0.50)	0.010
5-13 weeks	103	27.6	Ref	
Years on ART				
<1 Year	84	22.5	0.21(0.02,1.97)	0.174
1-5 Years	175	46.9	1.88(0.61,5.75)	0.272
6-10 Years	73	19.6	Ref	
>10 Years	41	11.0	2.18(0.55,8.57)	0.267

Source: Field Survey,

2022

4.2.2.3 Factors Associated with Perinatal Depression and Perceived Stress

The study examined the association between sociodemographic, behavioural, clinical and pregnancy-related factors with the co-occurrence of depression and perceived stress in WLWH during the perinatal period

4.2.3.1.1 Association Between Sociodemographic Variables and Co-Occurrence of Depression and Perceived Stress

The bivariate analysis revealed that the p value for type of partner ($p=0.022$) and income level ($p=0.000$) were less than 0.05. Thus, there is a significant association between income level and the co-occurrence of depression and perceived stress.

Do Not Copy, Lead City University, Nigeria

4.18 Association between Socio-demographic Variables and Co-occurrence of Depression and Perceived Stress

Variables	Depression and Stress (EPDS \geq 13, PSS-10 \geq 14)					
	Overall	P-value	Antenatal	P-value	Postpartum	P-value
Religion						
Christianity	137(52.9)	0.200	88(53)	0.184	49(52.7)	0.670
Islam	122(47.1)		78(47)		44(47.3)	
Tribe						
Yoruba	219(84.6)	0.060	137(82.5)	0.068	82(88.2)	0.057
Non-Yoruba	40(15.4)		29(17.5)		11(11.8)	
Educational Level						
Primary Level	68(26.3)	0.124	39(23.5)	0.091	29(31.2)	0.916
Secondary Level	102(39.4)		59(35.5)		43(46.2)	
Tertiary Level	57(22)		43(25.9)		14(15.1)	
None	32(12.4)		25(15.1)		7(7.5)	
Marital Status						
Married	244(94.2)	0.052	159(95.8)	0.053	85(91.4)	0.413
Not Married	15(5.8)		7(4.2)		8(8.6)	
Type of Partner						
Spousal	246(95)	0.022	160(96.4)	0.028	86(92.5)	0.293
Non-Spousal	13(5)		6(3.6)		7(7.5)	
Employment Status						
Employed	215(83.0)	0.958	143(86.1)	0.720	72(77.4)	0.684
Unemployed	44(17)		23(13.9)		21(22.6)	
Income Level						
<20,000	124(47.9)	0.000	73(44)	0.000	51(54.8)	0.888
20,000-30,000	39(15.1)		19(11.4)		20(21.5)	
31,000-40,000	63(24.3)		52(31.3)		11(11.8)	
41,000-50,000	21(8.1)		12(7.2)		9(9.7)	
>51,000	12(4.6)		10(6)		2(2.2)	

Source: Field Survey, 2022

4.2.3.1.2 Association between Clinical, Behavioural and Obstetric Characteristics and Co-occurrence of Depression and Perceived Stress

The results from the bivariate analysis (Table 4.19) indicate that years on ART ($p=0.009$), alcohol consumption ($p=0.000$), tobacco use ($p=0.004$), planned pregnancy ($p=0.005$) and gestational age ($p=0.000$) are significantly associated with the co-occurrence of depression and perceived stress.

Table 4.19 Association between Clinical, Behavioural and Obstetric Variables and Co-occurrence of Depression and Perceived Stress

Variables	Depression and Stress (EPDS \geq 13, PSS-10 \geq 14)					
	Overall	P-value	Antenatal	P-value	Postpartum	P-value
Years on ART						
<1 Year	53(20.5)	0.009	31(18.7)	0.012	22(23.7)	0.674
1-5 Years	112(43.2)		75(45.2)		37(39.8)	
6-10 Years	59(22.8)		36(21.7)		23(24.7)	
> 10 Years	35(13.5)		24(14.5)		11(11.8)	
Viral Load						
<50 copies/ml	243(93.8)	0.206	154(92.8)	0.207	89(95.7)	0.578
\geq 50 copies/ml	9(3.5)		6(3.6)		3(3.2)	
Target Not Detected (TND)	7(2.7)		6(3.6)		1(1.1)	
Alcohol Consumption						
Yes	72(27.8)	0.000	47(28.3)	0.000	25(26.9)	0.006
No	187(72.2)		119(71.7)		68(73.1)	
Tobacco Use						
Yes	4(1.5)	0.004	4(2.4)	0.006	0	-
No	255(98.5)		162(97.6)		93(100)	
Planned Pregnancy						
Yes	35(13.5)	0.005	35(21.1)	0.002	N/A	-
No	131(50.6)		131(78.9)		N/A	
Gestational Age						
5-13 weeks	35(13.5)	0.000	35(21.1)	0.000	N/A	-
14-28 weeks	79(30.5)		79(47.6)		N/A	
29-40 weeks	52(20.1)		52(31.3)		N/A	
Problems in Previous Pregnancy						
Yes	106(40.9)	0.636	52(31.3)	0.000	54(58.1)	0.000
No	153(59.1)		114(68.7)		39(41.9)	

Source: Field Survey,
2022

Do Not Copy, Lead City University, Nigeria

4.2.3.1.3 Association Between Relationship and Support Related Variables and Co-Occurrence of Depression and Perceived Stress

The results from the bivariate analysis indicated that there are significant associations between status of partner ($p=0.000$), status disclosure ($p=0.046$), support from family and friends ($p=0.001$), history of conflict with partner ($p=0.002$) and the co-occurrence of depression and perceived stress.

Table 4.20 Association between Relationship and Support-related Variables and Co-occurrence of Depression and Perceived Stress

Variables	Depression and Stress (EPDS \geq 13, PSS-10 \geq 14)					
	Overall	P-value	Antenatal	P-value	Postpartum	P-value
Status of Partner						
Positive	108(41.7)	0.000	80(57.8)	0.000	28(30.1)	0.702
Negative	122(47.1)		70(42.2)		52(55.9)	
Status Disclosure						
Yes	170(65.6)	0.046	112(67.5)	0.000	58(62.4)	0.235
No	84(32.4)		53(31.9)		31(33.3)	
Social Support						
Support from Partner						
Yes	207(80)	0.089	136(81.9)	0.402	71(76.4)	0.088
No	47(20)		29(18.1)		18(23.6)	
Support from other Family and Friends						
Yes	170(65.6)	0.001	117(70.5)	0.000	53(57)	0.352
No	89(34.4)		49(29.5)		40(43)	
History of Conflict with Partner						
Yes	98(37.8)	0.002	59(35.5)	0.059	39(41.9)	0.031
No	156(60.2)		106(63.9)		50(53.8)	

Source: Field Survey,

2022

4.2.3.1.3 Predictors of Depression and Perceived Stress

A binomial logistic regression was calculated to identify predictors of perinatal depression based on the significant variables. Following the logistic regression analysis, five variables were found to be statistically significant in association with the occurrence of perinatal depression and perceived stress. They are: status of partner ($p=0.03$) income level ($p=0.04$), whether the pregnancy was planned ($p=0.015$), gestational age ($p=0.003$), and years on ART ($p=0.006$). In terms of sociodemographic characteristics, the co-occurrence of depression and perceived stress was found to be 5.69 times more likely to occur while having an income level below 20,000 (OR=5.69, 95% CI 1.05-30.83). The analysis further shows that women with positive partners had less likely odds of having symptoms of perinatal depression and perceived stress. (OR=0.40, 95% CI 0.17-0.92). Having a planned pregnancy (OR=0.35, 95% CI 0.15- 0.82) was found make it 0.35 times more likely to simultaneously report symptoms of perinatal depression and perceived stress. The odds of reporting symptoms of perinatal depression and perceived stress was 4.68 more likely to occur with a gestational age above 14 weeks (OR=4.68, 95% CI 0.04-0.53). Being on ART (OR=2.34, 95% CI 1.28-4.28) for 2 to 5 years as of the time of the survey were also found to be significantly associated with the co-occurrence of depression and perceived stress.

Table 4.21 Predictors of Depression and Perceived Stress

Variable	Depression and Stress (EPDS \geq 13, PSS-10 \geq 14)			
	Overall	%	Odds Ratio (95% CI)	P-value
Type of Partner				
Spousal	246	95	2.18(0.65,7.31)	0.513
Non-Spousal	13	5		
Status of Partner				
Positive	108	41.7	0.40(0.17,0.92)	0.031
Negative	122	47.1	Ref	
Status Disclosure				
No	84	32.4	0.57(0.27,10.76)	0.571
Yes	170	65.6	Ref	
Income Level				
<20,000	124	47.9	5.69(1.05,30.83)	0.044
20,000-30,000	39	15.1	1.71(0.26,11.36)	0.581
31,000-40,000	63	24.3	2.97(0.491,18.00)	0.236
41,000-50,000	21	8.1	2.79(0.35,21.92)	0.332
>51,000	12	4.6	Ref	
Support from other family and friends				
No	89	34.4	0.49(0.24,0.98)	0.042
Yes	170	65.6	Ref	
History of Conflict with Partner				
No	156	60.2	2.47(1.32,4.61)	0.005
Yes	98	37.8	Ref	
Planned Pregnancy				
Yes	35	13.5	0.35(0.15, 0.82)	0.015
No	131	50.6	Ref	
Gestational Age				
29-40 weeks	52	20.1	3.67(1.34,10.08)	0.012
14-28 weeks	79	30.5	4.68(0.04,0.53)	0.003
5-13 weeks	35	13.5	Ref	
Alcohol Consumption				
Yes	72	27.8	0.11(0.04,0.31)	0.000
No	187	72.2	Ref	
Tobacco Use				
No	255	98.5	0.70(0.11,4.39)	0.701
Yes	4	1.5		
Years on ART				
>1 Year	53	20.5	1.99(0.10,3.96)	0.051
1-5 Years	112	43.2	2.34(1.28,4.28)	0.006
6-10 Years	59	22.8	1.02(1.06,0.43)	0.971

Source: Field Survey, 2022

Do Not Copy, Lead City University, Nigeria

4.2.3 Research Question Three

The psychosocial experiences and perceived coping measures of women living with HIV during the perinatal period in Ibadan, Oyo State.

The interview guide used was designed to capture experiences, challenges and coping strategies of WLWH during the perinatal period. Each interview session took about 15 – 30 minutes.

Table 4.22 Key Interview Themes and Sample Questions

Key interview themes	Sample Questions
Diagnosis	<ul style="list-style-type: none">● How did you find out about your diagnosis?<ul style="list-style-type: none">○ How did you react to finding out?
Disclosure	<ul style="list-style-type: none">● Who did you tell first and why?<ul style="list-style-type: none">○ What was the reaction of this person?○ Did you feel rejection or mistreatment?● Did anyone help you, who did you go to when you needed support?● Did your diagnosis affect the way you interact with those around you?
Feelings towards pregnancy	<ul style="list-style-type: none">● Did your diagnosis change your perception of your pregnancy?<ul style="list-style-type: none">○ If yes/no, why?● What were some of the challenges you faced during the course of your pregnancy because of your HIV diagnosis?
Feelings towards outcome of pregnancy	<ul style="list-style-type: none">● Has your child been tested for HIV?● If yes, how did you feel about going for testing?● What was the result? How did it feel to learn the result?
Experiences following childbirth	<ul style="list-style-type: none">● How would you describe your experience of living with HIV?● How did having this [pregnancy outcome] affect your life?

Source ²²

4.2.3.1 Participants' Characteristics

The total number of participants comprised 17 HIV-infected women within their perinatal phase. Participants ranged in age from 22 to 43 years. Table 4.23 shows that majority of the participants (n=16) were married, with one (n=1) being separated. Six individuals had completed post-secondary education, seven had completed secondary school, and two had completed primary school. All of the participants were Christians in terms of religion.

Table 4.23 Demographic Data for Interview Participants

Demographic Information	Number of Participants (n=17)
Age (Mean=30.8 ± 5.6)	
18-24	3
24-34	10
>35	4
Tribe	
Yoruba	17
Igbo	-
Hausa	-
Religion	
Christianity	17
Islam	-
Marital Status	
Married	16
Separated	1
Employment Status	
Employed	17
Unemployed	-
Educational Level	
Primary	3
Secondary	8
Tertiary	6
Perinatal Status	
Antenatal	5
Postpartum	12
Source:	Interviews,

2022

4.2.3.2 Psychological Experiences and Challenges During the Perinatal Period

The thematic analysis identified four significant themes as major issues experienced by WLWH during pregnancy and postpartum. The main themes included: 1) Unexpected Diagnosis, 2) Disclosure Issues 3) Emotional Distress and 4) Isolation

Table 4.24 Main Themes and Sub-themes for Psychological Experiences and Challenges

Themes	Sub-themes
Unexpected Diagnosis	Fear Due to Preconception of HIV Shock, Disbelief and Denial of Diagnosis Anger Towards Partner
Disclosure Issues	Fear of disclosure Outcome of disclosure
Emotional Distress and Fear	Fear for the life of their child Guilt, Shame and Self-Blame
Isolation	Stigmatization Self-isolation

Source: Interviews, 2022

4.2.3.2.1 Unexpected Diagnosis

Majority of the participants revealed that were shocked when they learned they had HIV. Since they had not anticipated such a diagnosis, they were taken aback when they found out that they were HIV-positive and even disputed their status. The women retained strong memories of the intensity of this shock.

Fear due to Preconception of HIV

Some of the participants had misconceptions of the disease as a result of information and beliefs disseminated by the public. They perceived HIV as a disease that was synonymous with death and this informed their feelings of fear. This is evident from Participant 2 who said:

—I know that it was like a death sentence!

Their perceptions of the disease led them to have feelings of sadness and grief upon

diagnosis. A response supporting this was given by Participant 9:

—I had heard the disease kills people and other things like that. That's why I was crying. That's why I was thinking so much that time.‖

For some of these participants, learning that they had HIV was comparable to receiving the diagnosis of a terminal illness and this generated feelings of uncertainty and hopelessness. Participant 12 shared that a leading factor in the generation of these feelings is the way being diagnosed with HIV is described by others:

—They normally use one harsh term in Yoruba, and it really demoralises people living with HIV. They say —won it lumbar koori it o gbogun‖ (They have been struck with a disease that has no cure)‖

This response was supported by Participant 1 who also said

—I didn't know much about it before then. Only that it was a disease with no cure.‖

Shock, Disbelief and Denial of Diagnosis

The initial reaction to being informed of the HIV diagnosis was reported by the participants. They experienced intense feelings of shock and sadness following the revelation that they had been diagnosed with the disease. This is apparent in the experience recounted by Participant 1 and 13:

—I don't think that there's a single person who would receive that kind of news so suddenly that wouldn't feel as shocked as I was at that moment. It hit me so suddenly.‖P1

—I didn't believe it. When they told me the first time, I had to tell them to repeat it again because maybe I was hearing something else.‖ P13

Participant 12 supports this as she also gives a report of her feelings of shock and devastation upon hearing of her diagnosis:

—I was devastated. I had almost gone mad. Almost, it was just a tiny line for me, if not for God's grace. I just thank God.¶

With further exploration of the cause of this shock, a common finding was that the positive HIV test result was unexpected. This worsened the experience of being informed and women linked this aspect to being unprepared for the result.

Participant 11 illustrated this and reported that she was shocked because she had done the test before and gotten a negative result

—When we got married, we did all the tests. And there was nothing like HIV. So, I didn't understand how I came about it.¶

Participants 7 and 12 respectively further proved that they did not expect their diagnosis because they only had one partner and they believed positive results were associated with being promiscuous and unsafe sexual behaviours.

—I did not have it in mind at all because I'm not a promiscuous person. I didn't think I had done anything I wasn't supposed to do somewhere and I would have gotten it from there. I didn't have it in mind at all that I could have the disease until they told me that I did.¶ P7

—I didn't do anything related to such a thing. I got married very late. I got married at the age of 30 and I was a virgin so it never came to my consciousness to think about HIV.¶

P12

The initial denial and disbelief with the positive result was a very common finding amongst the participants. The study reveals that the participants experienced great difficulty in accepting their HIV-positive status and thus adopted denial and, in some cases, avoidance in the face of bad news. This is evident in the responses from Participants 9 and 10 where they highlighted that they did not return to the clinic after they were diagnosed.

—At first, I didn't even come...I didn't come back. When the first detected that I had the disease, I won't lie to you, I didn't come at first. When they told me I should come and get medication, I didn't come back|| P9

—When they first told me I did not take it seriously...Because I didn't think it was something that I could have at that time.|| P10

One of the participants also describes the denial from the perspective of her partner:

—He was so surprised, like —what is happening?||. He was sure they made a mistake so we went to another hospital for the test and the test was still positive.|| P11

Anger Towards Partner

While the participants were upset with themselves for contracting the illness, they also laid the blame for it on their spouses. According to them, their partners had lied to them about their HIV serostatus and the possibility of HIV transmission. This was highlighted by Participant 12 in her account of disclosing her diagnosis to her partner:

—He was asking —how did you go about it?||Where did you get it from?||, it was so ridiculing and I did not even have the knowledge to tell him to go for the test meanwhile he had also been living with it and he kept it as a secret from me, I didn't know anything.|| P12

Participant 7 reported that she was well aware of how she was infected and was angry and blamed her husband:

—I was very angry with him because I know it was from him, he doesn't know how to stay in one place. I even tried to fight and shout at him; it was like he tried to kill me. I got even angrier when I thought that our children could have it too.|| P7

Participants 1 and 9 also expressed pain and unhappiness at being negatively affected by the sexual behaviours of their partners:

—He does not know how to protect himself and he does not like using condoms. It's just unfortunate that I had to be on the receiving end of that. It was very painful think back on it.|| P1

—It was disappointing. I was disheartened. And I knew that he got it from another woman and gave it to me. It's unfair.|| P9

4.2.3.2.2 Disclosure of HIV Diagnosis

The disclosure amongst the participants was disparate. Some participants perceived their diagnosis as a personal burden that they had to deal with on their own. This was illustrated by

participants 7 and 11 who highlighted that it was important to keep their HIV diagnosis as a secret.

—Aside from my husband, I haven't told anyone.¶P7

—I haven't told anyone, because it is our own personal family issue. Nobody else needs to know about.¶ P11

According to the findings, participants only disclosed their HIV diagnosis and that of their child to persons they could rely on to keep the information as a secret. This showed that disclosure was selective. Additionally, they disclosed to those they thought would support them.

—I was ashamed to tell her at first. But my mother and I are close and I needed someone to talk to that time. And normally, there was nothing I couldn't talk to her about. She was the only one I could turn to.¶P4

Fear of disclosure

Nearly all women expressed fear of disclosure and anxiety about HIV-related stigma and rejection as key concerns. Women worried that disclosing their positive HIV status to their partners would lead to assumptions that they had been unfaithful to the partnership and they feared the emotional and physical violence and isolation that may have followed. These fears were illustrated by participants 2 and 3 in their reports regarding disclosure to their partners:

—No, I did not tell him. I didn't want more problems. If he knows about it, he can throw us out. Where would I go? And I cannot raise a child myself.¶P2

—My husband and I just got married that time so it was something that I was very afraid about telling him because he would think I'm unfaithful or that he would think the baby is not his.‖ P3

In addition to the fear and distress about abandonment following disclosure, Participant 2 also believed that others would not keep the information confidential and they would be rejected or treated differently:

—Before I tested positive, I had heard things people had said about those that have the disease. They say its incurable and people that get it are dirty. I didn't want anyone to look at me or my child like that. We would both be isolated. Nobody would want to come near us‖ P2

Participant 7 preferred not to disclose her diagnosis to her mother because of the fear that the news might take a toll on her health:

—My mother told me she had been coming here to get medication for her high blood pressure and for diabetes too. I didn't tell her because I did want it to be a reason for her to keep thinking. There's nobody that would hear of such a disease and won't be shocked.‖ P7

Outcome of Disclosure

The participants who disclosed their own HIV diagnosis reported both negative and positive reactions. Some participants revealed that they experienced rejection and embarrassment resulting from disclosure to their families and sexual partners.

Participant 13 narrated that she was humiliated, isolated and ultimately rendered homeless by her partner and his family when she disclosed her positive diagnosis:

—He told everybody in his family that I had HIV. I felt so ashamed. He was telling them that I was sleeping around and I wanted to give him a child that didn't belong to him.... I don't stay with him anymore. They said I should leave.¶ P13

In a similar portrayal of disclosure, Participant 9 revealed that her father's response to her positive diagnosis was to tell her that it was something to be kept secret:

—I told my father when he was still alive too because he just passed away this year. He told me that I should just keep it to myself and make sure nobody knows about it because it's not something that you not people know.¶ P9

In contrast, some of the participants reported that they received support from the people close to them after disclosure. This was evident from Participant 12 who said:

—There's so much stigmatization and false information when it comes to HIV but they are very supportive. Even my daughter checks with me to make sure I'm fine.¶ P12

Participants 3 and 6 also reported that their partners were not supportive upon initial disclosure but became more accommodating and supportive after the intervention of counselling from the workers with their respective health facilities:

—He is resigned about it now. He has accepted it. Initially, it wasn't easy but we thank God. Now there is no problem at all.¶ P3

—He reacted the way you would expect anybody to react when you hear that kind of thing. But one thing I'll never forget is that he was more focused on my health and the health of our child. The love that he has for me, made him to take things more calmly.¶

P6

4.2.3.2.3 Emotional Distress

Participants described the impact of being diagnosed with HIV as psychological and emotional. They gave accounts of the participants, what could be described as extreme emotional distress. The majority of the participants reported that being pregnant added to their anxiety. They were worried that their unborn child may contract HIV, which caused them pain.

Fear for the life of their child

Participants, upon the discovery of their HIV diagnosis during their pregnancy, were concerned about the prospect that their unborn child would contract HIV and feared that their babies would die soon after birth due to HIV:

—I was about to have a baby and I wanted to have more children after that. I didn't understand it because I thought that they were trying to tell me that I could not have children or my baby was going to die. || P3

—You can't be happy with something like that. It's something you will feel bad about. And I was so scared about whether it was going to affect the baby or not. || P11

—I was afraid, very afraid because my child was all I was living for and if they had it, I wouldn't know what to do. Even though I had been taking my medication and giving my child too... When you're doing something right, you'll still be afraid of the hand of the devil. || P1

One of the participants who was aware of her diagnosis prior to her pregnancy shared the

same fears before she got pregnant and as well as after:

—I thought about it a lot that time. Before and after I got pregnant. I was thinking, would I be able to have a child? And when I got pregnant, I was thinking, will this child live or die?|| P10

Guilt, Shame and Self-blame

A lot of participants expressed sentiments of shame and guilt. They reported being ashamed of their diagnosis and viewed themselves as pariahs:

—I don't know what anybody else thinks, I can't speak for them but for me, it's something that isn't good.|| P11

—He told me that I should just keep it to myself and make sure nobody knows about it because it's not something that you not people know...Yes, I believe it.|| P9

They also felt responsible for subjecting their child to the possibility of living with HIV and thus blamed themselves:

—...I realized that these tattoos that I drew on my body were the most likely cause. And I was just thinking that what if I didn't do that to myself, I wouldn't be here and sick like this, by myself because I couldn't let anyone follow me so they wouldn't find out. I still look at them with regret because now I'm suffering for it and my child might have to suffer for it too.|| P10

They were also overwhelmed by feelings of pain when they learned about the child's HIV diagnosis. One of the participants who had a child that tested positive reported feelings of guilt and blamed herself for giving her child the disease:

—When they told me I should bring him for testing I was shaking because he could be positive too. And it happened that he was. ah I cried that day... It is even better for me to be positive and die but I didn't want that for my child. I gave him the disease. I was the one that caused it. And he would have to live like that for the rest of his life.¶ P2

4.2.3.2.4 Isolation

In this study, stigma and the fear of stigma were pervasive in these women's lives and had a major impact. Some of the participants experienced stigma from healthcare providers as well as family members upon disclosure. Being diagnosed with HIV also led these women to wilfully withdraw and isolate themselves. This was as a result of the fear of being rejected, and fear of the prejudice of the people around them.

Stigmatization

When seeking antenatal care services at the hospital, some of the study's participants were subjected to stigma and discrimination. Compared to women who were HIV-negative, they received less favourable treatment from medical professionals.

—Despite the fact that I work in a hospital environment when people see you have it, they..., actually on your case note they would write it there on your case note. They would use that sign, the red positive, they would put there to mark that thing. Everyone in that field would know that the person is HIV positive and treat you somehow.¶ P12

—I remember that when I got pregnant again, they would complain. They would ask if I'm not done having children. They said don't I know that I'm sick.... Hearing things like that, there is no way you won't feel bad.¶ P3

Stigma was also reported from several sources including family members.

—She was very disheartened when I told her. It was very painful for both of us. She

thought I was going to die, that was the first thing she shouted about. It wasn't until I tried to calm her down and explain to her. But even then, she has shifted away from me, she's not as free with me as she used to be. I noticed that she doesn't let her children come near me.¶ P9

Self-isolation

For most of the participants, their diagnosis contributed to feelings of low self-worth and they felt the need to isolate themselves from their immediate environment. This may also be perceived as means of coping with the fear of stigmatization.

—I was withdrawn, I didn't go to parties, I didn't mingle, I discontinued associating with all my friends.¶ P12

—I don't talk to people, even to the people that attend this clinic with me. I don't have friends here.¶ P7

—You can't be relying on anybody except God and maybe your parents. But my mom who could have been some form of support for me doesn't stay in Ibadan. So, it's just me and God.¶ P10

4.2.3.3 Coping Strategies

The women in this study spoke about a variety of difficulties that come with being an HIV-positive pregnant woman, such as not having support to meet one's emotional and financial needs; having trouble following ART instructions; and internalizing stigma associated with HIV. The methods women used to cope with adversity in the face of significant challenges were examined.

Table 4.25 Main Themes and Sub-themes for Coping Strategies

Themes	Sub-themes
Acceptance of Self and HIV Diagnosis	
Social Support from Partners, Family and Friends	
Support from Healthcare Delivery System	The role of counseling Confidence in ART and Adherence

Source: Interviews, 2022

4.2.3.3.1 Acceptance of Self and HIV Diagnosis

As was already noted, participants in this study experienced internal stigma connected to HIV, which caused them to withdraw from their community. As this participant explains in great detail:

—I was totally withdrawn, I didn't go to parties, I didn't mingle, I discontinued associating with all my friends. It really affected me even up till today because majority of the friends I had then I have lost their contacts, I don't have any information about them.¶ P12

However, viewing HIV as a disease that affects many people rather than a death sentence and accepting her own HIV status was a powerful step towards self-acceptance. She later says:

—If someone having diabetes can be living on drugs, someone that is hypertensive can be living on drugs, someone with hepatitis can be living on drugs, then what is the big deal about living with HIV that you cannot just continue living in your drugs and you will be doing very fine. And life goes on.¶ P12

The majority of participants reported being in denial following their diagnosis. This made the process of accepting their own HIV status difficult. Some of the participants indicated they gradually accepted the lifelong condition after coming to terms with their HIV diagnosis:

—When you've lived with it for long enough, it's not as bad as people think it is. || P8

4.2.3.3.2 Social Support from Partners, Family and Friends

Some participants indicated that having their partners' and other family members' support influenced their pregnancy experience and postpartum results in a beneficial way. The participants described how their partner and family members were committed to helping them adhere to ART and PMTCT protocols:

—He is resigned about it now. He has accepted it. Initially, it wasn't easy but we than God. Now there is no problem at all. He even reminds me to take my medication. || P3

—She has helped me so much with my child. He's even with her now in Ondo. I didn't want my husband to question why my child was taking medication so I was with my mother from when I gave birth till I stopped breastfeeding. || P4

If not for my mother, I don't know where I would be now. I've been staying with her. At first, she was being cautious but I explained what they told me in the health facility, that if I take my medication, I would be healthy. She always reminds me to take my medication. She is the one that has been helping me with my child. P13

4.2.3.3.3 Support from Healthcare Delivery System

Some women were able to overcome their concerns about perinatal transmission, seek HIV care, and give birth to an HIV-uninfected child with the assistance of reliable healthcare professionals regarding PMTCT practices.

—They told me that my baby could be healthy and without the disease. That was all I wanted... They told me that I could have a healthy baby that wouldn't even have HIV and that was a relief for me. || P1

The Role of Counselling

The importance of regular counselling was emphasized by the participants. In their opinion, seeking counselling was essential to coming to terms with their situation. They also admitted that the counselling they got had given them hope for a future.

—That was where they counselled me. They told me that there was no problem, that I should calm down and nothing would happen to me...It helped me a lot. They explained to me that having this disease doesn't mean I will die. They told me that I could live a healthy life as long as I took my medication. P2

—When I first heard I was so afraid, my mind was all over the place. But those in this health facility are people that helped me to calm down. They told me that there would be no problem once I'm able to use my medication regularly. P3

Some participants also talked about how helpful it was to interact with other WLWH within the healthcare facility:

—And I had also met some people with the disease that had a baby and nothing was wrong with the baby, so I didn't feel anyhow. I wasn't afraid. P8

Confidence in the use of ART and Adherence

The participants' faith in ART served as a further coping mechanism after receiving their HIV diagnoses. Mothers with HIV and their children are now able to have normal lives because there are effective anti-retroviral medications available.

—I'm taking my drugs religiously and my viral load is so low, I cannot infect you. I would tell you there's no big deal, I can be able to have a child, you have a child and I have a child, your child is normal and my child is normal, you can breastfeed and I can breastfeed.¶ P12

—I've been taking my medication when I'm supposed to. Nobody would even know that there is any disease in my body.¶ P2

—But they told us that if we keep using the medication everything that it won't affect the baby. And I made sure I took my medication regularly.¶ P11

4.3 Discussion of Findings

This study focused on the psychosocial challenges and experiences among WLWH who were within their perinatal phase and were accessing ART within Ibadan.

The objective of the quantitative phase of this study was to assess the prevalence of depression and perceived stress among study participants as well as to identify the variables that would be associated to those outcomes.

The qualitative aspect of the study used an inductive approach with in-depth interviews to investigate the psychological experiences and perceived coping strategies of WLWH during their perinatal period. The findings are presented and compared to earlier studies in this section.

The study results indicated a high prevalence of perinatal symptoms (60.7%) with antenatal depression and postpartum depression having a prevalence of 61.6% and 58.9% respectively.

The prevalence of perinatal depression is higher than what was found (38.4 %) in a similar study in Ethiopia. The prevalence of antenatal depression of 61.6% as measured by the EPDS with a cut-off of ≥ 13 is slightly higher than the prevalence found in a previous study in Ekiti State, Nigeria (49.5%)¹⁰.

A prevalence of 47.6% was also reported in a study conducted in Addis Ababa, Ethiopia¹¹. The prevalence is also higher than the 52.5% reported in a study conducted in India among women on ART¹². The differences in prevalence might be due to differences in sociodemographic characteristics and tools used to assess depression. The prevalence of depression that was observed in this study is one of the highest rates seen in sub-Saharan Africa. This indicates a need to better screen and identify conditions which may adversely affect maternal and child outcomes.

In the current study, the mean perceived stress was 20.01. This indicates moderate stress among women living with HIV during the perinatal period. These findings are in line with reports from another study carried out in Nigeria that indicated a moderate mean perceived stress among its study population¹³. The participants' level of stress may put them at a higher risk of mental conditions, as it is in the general population and in situations with social inequality¹⁴. Stress is an important risk factor for depressive symptoms¹⁵. Similar to other studies, it was found that women within the study sample that reported depressive symptoms (64%) reported significantly higher levels of perceived stress than women without depressive symptoms (28%).

This study used multivariate analysis to highlight factors associated with perinatal depression and perceived stress in a sample of WLWH recruited from ART clinics.

The study found that the status of the partner of participants was significantly associated with depression and perceived stress. With an odds ratio of 0.389, participants with a positive

partner were less likely to report symptoms of depression and perceived stress as compared to women with negative partners. This may be due to the social support provided by a positive partner as opposed to a negative partner. Studies also corroborate that having a positive partner increases the likelihood of having access to help when sick, general support in form of finances as well as HIV-specific support¹⁶.

According to the study, participants who earned below 20,000 were 5.6 times more likely to report symptoms of depression and perceived stress. The results are consistent with those reported in studies in Ethiopia and South Africa, which presented that low-income and unemployment were related to depression among HIV-positive women^{17,18}. The reason could be that in low-income countries, women are pressured to default academics for poverty-related factors, which later result in their more prominent engagement on domestic work, as well as the lack of access to health education and awareness. This is ascribed to the possible negative interaction between mental disorders (e.g., depression) and poverty, primarily because, in principle, people with depression commonly perform poorly in their daily tasks¹⁹.

In addition, pregnancy may decrease their employability and even their potential to work because of the type of labour impoverished women may need to undertake²⁰.

The results from this study also revealed that having a planned pregnancy (OR=0.348, 95% CI 0.149-0.819), is indicative of a lower likelihood of reporting symptoms of depression and perceived stress during the perinatal period.

According to the study, pregnant women within their second (14-28 weeks) and third (29-40 weeks) trimesters were more likely to report symptoms of depression and perceived stress with odds of 4.7 and 3.7 respectively. This is in contrast with other studies which have reported no association between gestational age and depression among women living with HIV.

This could be due to physiological changes which take place during this period which may be inclinatory to the development of depression. It could also be due to the heightened anxiety during the third trimester^{21,22}.

This study indicates having problems in a previous pregnancy (OR= 2.10) was significantly associated with the co-occurrence of depression and perceived stress. This indicates that women living with HIV that had complications in their previous pregnancy were twice as likely to report symptoms of depression and perceived stress as compared to those that did not. This could be a result of the complications being events that were highly severe and stressful to them. This finding is in line with previous studies which reported that having previous complications in pregnancy is a significant factor in the development of depression²³.

Resulting from the in-depth interviews, participants in this study described a wide range of pregnancy and postpartum challenges associated with living with HIV.

Upon awareness of their HIV diagnosis, the participants of this study experienced a variety of emotions of high intensity. These emotions are consistent with those found in other similar studies^{24,25}. For the participants, being diagnosed with HIV was a shocking and life-altering event, and believed that death was not far behind. Findings from this also showed that the women had a difficult time accepting their HIV diagnoses and the effect that it could have on both their lives and the lives of the child that they were expecting. These findings are similar to reports from other studies where the immediate psychological and emotional impacts of a positive HIV diagnosis were described as severe, leading to feelings of depression and reduced self-worth^{26,27}.

The study also revealed that the women were in denial because they did not believe they were at significant risk of contracting HIV. According to research, denial of risk prior to diagnosis indicates that HIV was not a concern for the women due to the perception that HIV occurs in

demographics that they are not a part of²⁸.

The majority of the study's participants had only one partner, and they majorly associated HIV infection with sexual promiscuity. Studies have shown that, women believe only having one sexual partner will prevent them from contracting HIV¹⁹. Those who reported having partners that engaged in unsafe sexual behaviours reported feelings of anger and blame towards their partners.

Disclosure of HIV status was a major challenge among our study participants. The women felt discouraged from disclosing their partners because the fear of divorce, interpersonal/domestic violence, neglect or other forms of psychological abuse deterred women from immediately disclosing to their male partners. These results support earlier research that indicated intimate relationship abuse, blame, and desertion were linked to WLWH who disclosed their HIV status²⁹.

The women in this study reported that they experienced feelings of anxiety, dread, and worry for both their own health and the health of their unborn children. They also reported fears about being unable to care for their children due to ill health. The participants indicated that they experienced described feelings of anxiety, guilt and self-blame. Being pregnant and HIV positive made the women, anxious and worried about the wellbeing of their children. This caused them a great deal of emotional distress. This is similar to concerns reported in other studies³⁰. During pregnancy, the participants were plagued by the fear that the child might be infected. This is corroborated by studies which report that maternal levels of anxiety are significantly increased prior to the confirmation of the child's HIV diagnosis¹².

This study found that WLWH experienced perinatal distress and anxiety related to the baby's health and status, which persisted during the infant HIV testing phase. These findings were in line with earlier research findings^{31,32}.

The results emphasize how crucial it is to give women post- diagnosis psychosocial assistance in a timely manner as part of the chain of care for PMTCT in order to help them get over their worries of vertical transmission and seek HIV care²².

Several studies have identified isolation as a response to an HIV diagnosis^{15,17}. Participants in this study described self-imposed social seclusion or isolation as well as disengagement from routine tasks. Some of the participants also reported being openly criticized by healthcare professionals for being pregnant.

According to studies, the psychosocial issues faced by HIV- positive pregnant and postpartum women are not addressed in HIV or prenatal clinics²². This underlines the importance of including forms psychosocial therapy within PMTCT programmes, in order to aid self-acceptance and the acceptance of HIV diagnosis¹⁵.

This study identifies helpful coping mechanisms that WLWH used to deal with difficulties they had throughout pregnancy and after giving birth. The results from this study imply that WLWH women can successfully navigate severe social and psychological difficulties and achieve healthy pregnancies by using effective coping mechanisms.

Consistent with previous studies, the findings from this study revealed that acceptance of HIV status and acceptance of self was a primary coping strategy used by women. Acceptance of HIV status and acceptance of self helps individuals to reframe their situation^{33,18} and is also a sign of motivation to deal with difficult situations, overcome denial and face reality.

Partners and family members played significant roles by contributing to the reduction of the women's difficulties. The role of spousal and family support in lowering the likelihood of psychological distress among WLWH has been well documented^{7,34}. Social support has also been found to slow the advancement of HIV disease, extending HIV-positive individuals' survival times³⁵.

Some of the participants of this study were able to rely on support from family members to help them cope with the challenges associated with being pregnant and living with HIV.

This is in line with earlier studies that indicated that family support is linked to lower stress, better medication adherence, and a decreased risk of psychological distress, all of which led to better quality of life for HIV-positive women³⁶.

Additionally, studies have demonstrated that family support enhances physical outcomes and guards against the unfavourable social effects of HIV infection³⁷.

The findings from this study also indicated that support from healthcare providers regarding ART and PMTCT practice helped women overcome fears of death and perinatal transmission, as well as encouraged them to engage in HIV care, leading them to have children that are not infected with HIV. This is consistent with a prior study conducted in Uganda, where patients at PMTCT clinics described health professionals as being kind and sympathetic, which helped patients cope with the difficulties and anxiety associated with receiving an HIV-positive diagnosis²⁴.

For the participants of this study, coping was also aided by observing other women who had gone through similar experiences. This is related to what has been documented in a previous study that knowing someone who is living with HIV enables those infected to accept their HIV status because of the inner comfort they feel knowing that someone shares their experience³⁸. This finding echoes earlier work showing that peer support groups play an important role in helping women living with HIV to understand HIV and PMTCT programs leading to retention in care and adherence to ART^{39,40}.

On the other hand, the participants did not feel comfortable disclosing their status to community members for fear of stigma. This is contrary to what has been reported in a previous study that community members play a role in helping WLWH adhere to their

medication and cope with the illness⁴¹.

Do Not Copy, Lead City University, Nigeria

Endnotes

1. I. Ade-Ojo; M. Dada & T. Adeyanju, *Comparison of anxiety and depression among HIV-positive and HIV-negative pregnant women during COVID-19 pandemic in Ekiti State, Southwest Nigeria*. **International Journal of General Medicine**, Volume 15, 2022, 4123–4130.
2. W. Abebe; M. Gebremariam; M. Molla; S. Teferra; L. Wissow & A. Ruff, *Prevalence of depression among HIV-positive pregnant women and its association with adherence to antiretroviral therapy in Addis Ababa, Ethiopia*. **PLOS ONE**, 17(1), 2022, e0262638.
3. A. Sarna; R. Singh; M. Duggal; P. Chandra & N. Reynolds, *The prevalence and determinants of depression among HIV positive perinatal women receiving antiretroviral therapy in India*. **Archives of Women's Mental Health**, 22(3), 2019, 399–404.
4. A. Adamu; G. Mchunu & J. R Naidoo, *Stress and resilience among women living with HIV in Nigeria*. **African Journal of Primary Health Care & Family Medicine**, 11(1), 2019, 1–6.
5. A. Otu, C. H. Charles & S. Yaya, *Mental health and psychosocial well-being during the COVID-19 pandemic: The invisible elephant in the room*. **International Journal of Mental Health Systems**, 14, 2020, 1-5.
6. S. Shah; A. Laving; V. Okech-Helu & M. Kumar, *Depression and its associated factors: Perceived stress, social support, substance use and related sociodemographic risk factors in medical school residents in Nairobi, Kenya*. **BMC Psychiatry**, 21, 2021, 444.
7. J. Iveniuk; L. Calzavara; S. Bullock; J. B. Mendelsohn; A. Burchell; L. Bisailon; A. Daftary; B. Lebouché; R. Masching & T. Thompson, *Social capital and HIV-serodiscordance: Disparities in access to personal and professional resources for HIV-positive and HIV-negative partners*. **SSM – Population Health**, 17, 2022, 101056.
8. K. Peltzer; V. Rodriguez & D. Jones, *Prevalence of prenatal depression and associated factors among HIV-positive women in primary care in Mpumalanga province, South Africa*. **SAHARA-J: Journal of Social Aspects of HIV/AIDS**, 13(1), 2016, 60–67.
9. A. Yousuf, R. Musa; M. L. Isa & S. R. M. Arifin, *Anxiety and depression among women living with HIV: Prevalence and correlations*. **Clinical Practice & Epidemiology in Mental Health**, 16(1), 2020, 59–66.
10. A. Al Jarad; A. Al Hadi; A. Al Garatli; A. Akram; D. Alsaedi; F. Al Mansour, H. El Amin; M. Khaled; N. Alharthi; R. Al Owesie; S. Abdullah; T. Matar & T. Darwish, *Impact of cognitive dysfunction in the Middle East depressed patients: The ICMED Study*. **Clinical Practice and Epidemiology in Mental Health : CP & EMH**, 14, 2018, 270–283.
11. E. Oh, & O. Ug, *Psychosocial predictors of peripartum depression among Nigerian women*, **Journal of Women's Health and Development**, 02(02), 2019.
12. M. Moshoeshe & S. Madiba, *Parenting the child with HIV in limited resource communities in South Africa: Mothers with HIV's emotional vulnerability and hope for the future*. **Women's Health**, 17, 2021, 17455065211058564.

13. A. Dadi, E. Miller, T. Bisetegn & L. Mwanri, *Global burden of antenatal depression and its association with adverse birth outcomes: An umbrella review*, **BMC Public Health**, 20(1), 2020, 173.
14. E. Oh & O. Ug, *Psycho-social predictors of peripartum depression among Nigerian women*. **Journal of Women's Health and Development**, 02(02), 2019
15. C. Contreras; N. Rumaldo; M. Lindeborg; M. Mendoza; D. Chen; O. Saldaña; M. Wong; M. Muñoz; E. Schrier; L. Lecca; A. Castro; S. Shin & A. Nelson, *Emotional experiences of mothers living with HIV and the quest for emotional recovery: A qualitative study in Lima, Peru*. **The Journal of the Association of Nurses in AIDS Care : JANAC**, 30(4), 2019, 440–450.
16. N. Fauk, K. Hawke, L. Mwanri, & P. Ward, *Stigma and discrimination towards people living with HIV in the context of families, communities, and healthcare settings: A qualitative study in Indonesia*. **International Journal of Environmental Research and Public Health**, 18(10), 2021, 5424.
17. D. Payán; K. Derose; M. Fulcar; H. Fariás & K. Palar, —*It was as though my spirit left, like they killed me*: *The disruptive impact of an HIV-Positive diagnosis among women in the Dominican Republic*. **Journal of the International Association of Providers of AIDS Care (JIAPAC)**, 18, 2019, 232595821984904
18. S. Madiba, *When pregnancy coincides with positive diagnosis of HIV: Accounts of the process of acceptance of self and motherhood among women in South Africa*. **International Journal of Environmental Research and Public Health**, 18(24), 2021, 13006.
19. F. Scorgie, N. Khoza, S. Delany-Moretlwe, J. Velloza, N. Mangxilana, M. Atujuna, M. Chitukuta, K. Matambanadzo, S. Hosek & L. Makhale, *Narrative sexual histories and perceptions of HIV risk among young women taking PrEP in southern Africa: Findings from a novel participatory method*, **Social Science & Medicine**, 270, 2021, 113600.
20. A. Odiachi; S. Ereka; L. Cornelius; C. Isah; H. Ramadhani; L. Rapoport & N. Sam-Agudu, *HIV status disclosure to male partners among rural Nigerian women along the prevention of mother-to-child transmission of HIV cascade: A mixed methods study*. **Reproductive Health**, 15(1), 2018, 36.
21. D. Proudfoot, *Frozen in a moment in time: The experiences of mothers being diagnosed with HIV infection*. **Journal of the Association of Nurses in AIDS Care**, 29(2), 2018, 323–329.
22. E. Waldron, I. Burnett-Zeigler, V. Wee, Y. Ng, L. Koenig, A. Pederson, ... & E. Miller, *Mental health in women living with HIV: the unique and unmet needs*, **Journal of the International Association of Providers of AIDS Care (JIAPAC)**, 20, 2021, 2325958220985665.
23. M. Moshoeshoe, & S. Madiba, *Parenting the child with HIV in limited resource communities in South Africa: Mothers with HIV's emotional vulnerability and hope for the future*, **Women's Health**, 17, 2021, 17455065211058564.

24. L. Pierce, S. Regan, I. Idigbe, J. Adeola, Z. Musa, O. Ezechi, B. Oladeji, O. Gureje, K. A. Freedberg, P. Okonkwo & A. A. Ahonkhai, *Psychological distress increases 30-fold among people with HIV in the first year on art in Nigeria—a call for integrated mental health services*, **International Journal of Behavioral Medicine**, 30(1), 2023, 38–48.
25. N. Mabachi, M. Brown, M. Sandbulte, C. Wexler, K. Goggin, M. Maloba & S. Finocchiaro-Kessler, *Using a Social Support framework to understand how HIV positive Kenyan men engage in PMTCT/EID care: Qualitative insights from male partners*. **AIDS and Behavior**, 24(1), 2020, 18–28.
26. R. Remien, M. Stirratt, N. Nguyen, R. Robbins, A. Pala, & C. Mellins, *Mental health and HIV/AIDS: The need for an integrated response*. **AIDS (London, England)**, 33(9), 2019, 1411.
27. V. Seffren; I. Familiar; S. Murray; J. Augustinavicius; M. Boivin; N. Nakasujja; R. Opoka & J. Bass, *Association between coping strategies, social support, and depression and anxiety symptoms among rural Ugandan women living with HIV/AIDS*. **AIDS Care**, 30(7), 2018 888–895.
28. I. Ouansafi, D. Chibanda, E. Munetsi, & V. Simms, *Impact of friendship bench problem-solving therapy on adherence to ART in young people living with HIV in Zimbabwe: A qualitative study*. **PLOS ONE**, 16(4), 2021, e0250074.
29. A. Mkandawire, V. Jumbe, & A. Nyondo-Mipando, *To disclose or not: Experiences of HIV infected pregnant women in disclosing their HIV status to their male sexual partners in Blantyre, Malawi*, **BMC Public Health**, 22, 2022, 1552.
30. J. Ngocho; M. Watt; L. Minja; B. Knettel; B. Mmbaga; P. Williams & K. Sorsdahl, *Depression and anxiety among pregnant women living with HIV in Kilimanjaro region, Tanzania*. **PLOS ONE**, 14(10), 2019, e0224515.
31. R. Berg; S. Page & A. Øgård-Repål, *The effectiveness of peer-support for people living with HIV: A systematic review and meta-analysis*. **PloS ONE**, 16(6), 2021, e0252623
32. G. Visalli; B. Cosenza; F. Mazzù; M. Bertuccio; P. Spataro; G. Pellicanò; A. Di Pietro; I. Picerno & A. Facciola, *Knowledge of sexually transmitted infections and risky behaviours: A survey among high school and university students*. **Journal of Preventive Medicine and Hygiene**, 60(2), 2019, E84.
33. F. Mazambara; D. Chagwena; T. Mudzviti; S. Sithole;, T. Monera-Penduka; C. Maponga & G. Morse, *Utility of HIV support groups in advancing implementation research in resource-limited settings: Experiences from an urban-setting HIV support group in Zimbabwe*. **AIDS Research and Therapy**, 19(1), 2022, 7.

Chapter Five

Conclusion

This study examined the level of depressive symptoms and perceived stress and assessed the factors associated with them. The study also explored the psychosocial experiences of women living with HIV during their perinatal period.

This study was carried out using a mixed-method study design. For the quantitative phase of the study, a cross-sectional survey was designed in which 402 women living with HIV in the selected ART health facilities participated. The research instrument used for this study assessed depression using the Edinburgh Postnatal Depression Scale (EPDS) and perceived stress using the Perceived Stress Scale (PSS-10). The research instrument was also designed to assess socio-demographic, clinical, behavioural and pregnancy-related variables. In the qualitative phase of this study, one-on-one in-depth interview was conducted with participants. The interview questions covered topics such as the experiences of WLWH during pregnancy and after giving birth, women's ideas and feelings regarding getting pregnant, how their HIV status affected their thoughts and feelings around pregnancy, and their perceived coping mechanisms,

5.2.1 Summary of Findings

This part provides an overview of the findings that address the current thesis's research questions. The findings are organised in accordance with the research objectives.

5.2.1.1 Objective One: To Identify the Level of Depression and Stress among Women living with HIV during the Perinatal Period in Ibadan, Oyo State

The study's findings show that women living with HIV who attend the selected ART clinics in Ibadan have a considerably high level of depression. This is evident as 60.7% of the women that participated in this study had EPDS scores ranging from 13 to 30. The overall

mean score, 20.07, of perceived stress also revealed moderate levels of perceived stress among participants.

Do Not Copy, Lead City University, Nigeria

The results of this study also revealed the 64% of the participants in this study report symptoms indicative of the co-occurrence of high levels of depression and stress.

5.2.1.2 Objective Two: To Identify the Factors Associated with Depression and Stress among Women with HIV During the Perinatal Period in Ibadan, Oyo State

The results of this study indicated a significant relationship between depression and having a positive partner, having an income level below 20,000, a gestational age above 14 weeks and alcohol intake. The study also revealed a statistically significant relationship between perceived stress and having an income level below 30,000 and gestational age between 29 and 40 weeks. The co-occurrence of depression and perceived stress was also found to be significantly associated with having a negative partner, having an income level below 20,000, having a planned pregnancy, gestational age above 14 weeks and having problems in a previous pregnancy

5.2.1.3 Objective Three: To Identify the Psychosocial Challenges During the Perinatal Period among Women Living with HIV in Ibadan, Oyo State.

In this study, women living with HIV reported experiencing various challenges during their perinatal period. Majority of the participants received their diagnosis during their pregnancy. They struggled with feelings of shock and denial and found it distressing to accept their HIV diagnosis. Some of the women were unable to accept their diagnosis because it was unexpected and they did not perceive themselves as vulnerable to being diagnosed with the disease. Some of the participants of this study also reported being angry with their partners because they believed they were victims of their partner's sexual behaviour. The women also reported experiencing great emotional distress, most prominently in the form of anxiety towards the wellbeing of their child stemming from the fear of vertical transmission and subsequent death of their children. Disclosure, when conferred, was often to partners and

people

closest

to

the

Do Not Copy, Lead City University, Nigeria

participant and were perceived to be able to provide support for them. Disclosure, to some of the participants, was also believed to be a personal matter which they were determined to keep secret, even from their partners. The study also reports that the women also withheld information regarding diagnosis because of a fear of stigma from their partner, family and members of their community.

Participants in this study reported self-imposed social isolation or withdrawal, as well as disengagement from usual activities. Some individuals also reported receiving open criticism from healthcare providers for being pregnant.

5.2.1.4 Objective Four: To Examine Perceptions of How to Cope with the Challenges During the Perinatal Period Among Women Living with HIV in Ibadan, Oyo State.

This study explored the coping strategies utilized by the participants to cope with the challenges they face. The findings revealed that the participant's acceptance of HIV status and acceptance of self was a primary coping strategy used by women. Some women also relied on family members for support to cope with the stressors of being pregnant and living with HIV. The findings from this study also indicated that support from healthcare providers regarding ART and PMTCT practice helped women overcome fears of death and perinatal transmission, as well as encouraged them to engage in HIV care, leading them to have children that are not infected with HIV.

5.2 Conclusion

This study reveals a substantial prevalence of possible depression, perceived stress, and the co- occurrence of depression and perceived stress in the population of women living with HIV.

The study also explores the reactions of pregnant women who are HIV positive as well as the process of self-acceptance after receiving the diagnosis. Despite a varied and contextual

acceptance process, the ladies gradually modified their attitudes about HIV and accepted the diagnosis as a lifelong condition. Several variables such as disclosure to significant individuals, getting support, the need to survive, faith in ART, and optimism for life after diagnosis, influenced the transition from HIV diagnosis to motherhood. This study also found that women continue to face stigma and discrimination, as well as fear of disclosure and abandonment as a result of their HIV diagnosis. These difficulties discourage women from screening for HIV and also impairs their capacity to take drugs, which may jeopardise their physical health and the health of their children.

The reports from this study agree with prior research that indicate accepting an HIV diagnosis is necessary for engaging in HIV care and that psychological needs to be treated with the same zeal as physical health in order to reach the goal of eliminating mother-to-child HIV transmission.

5.3 Recommendations

1. The study recommends that screening for prenatal and postpartum depression and access to mental health interventions should be part of routine maternal healthcare for all women.
2. To assist WLWH with navigation of HIV care during pregnancy and after, strategies aimed at encouraging HIV testing, safe disclosure, preconception counselling to help plan pregnancies and involving male partners in antenatal care should be considered.
3. Health care providers that attend to pregnant WLWH may help with their psychological needs and help curtail related challenges by working to support, promote, and facilitate positive strategies for coping that they are already using. These efforts include regular screening of patients for psychological distress in the HIV clinics and refer for mental health assessment and treatment.

4. To respond to their various needs, policies that support networks of WLWH should be implemented, and financial assistance should be provided through current funding sources.
5. The local systems that assist WLWH in gaining economic empowerment and bettering their standard of living, such as the Network of People Living with HIV and AIDS in Nigeria (NEPWHAN), should be supported and developed.
6. Even though WLWH are capable of overcoming difficulties individually, there is a need to encourage WLWH to form support groups so they can motivate one another as they navigate HIV care. Additionally, community education and disseminating details about how various WLWH deal with difficulties may be helpful to other women facing comparable difficulties.

5.4 Contribution to Knowledge

This study has established a better understanding of the personal experiences of women living with HIV as well as identifying and documenting the specific psychosocial challenges experienced by women living with HIV during pregnancy and postpartum. The study shed light on the impact of HIV on the mental health of pregnant women and new mothers by exploring the prevalence and severity of depression and perceived stress.

The study investigated and helped develop an understanding of various factors including socioeconomic status, social support, stigma, and discrimination, that contribute to the psychosocial challenges which can help to guide the development of support programs and policies.

The study also identified the factors related to how pregnant women and new mothers living with HIV cope with the emotional and social aspects of this disease which can help address their mental health needs at different stages of the perinatal period and identify strategies for

improving their mental well-being in settings like Nigeria where socio-structural factors have been shown to affect HIV-related health outcomes and mental health.

5.5 Suggested Areas for Future Research

This study explored the psychosocial challenges experienced by women living with HIV (WLWH) during pregnancy and the postpartum period in Ibadan, Oyo State. It is suggested that further studies be carried out across larger study areas and populations. Longitudinal studies can also be carried out to follow women living with HIV from pregnancy through the postpartum period to provide a more in-depth understanding of the trajectory of the psychosocial challenges they face.

The role of healthcare systems and healthcare providers in addressing the psychological challenges of women living with HIV during pregnancy and postpartum can also be further examined. As part of this, it would be necessary to evaluate the accessibility, availability, and quality of healthcare services as well as the attitudes and procedures used by healthcare professionals to support the psychological health of these women.

Research can also be done to examine how social networks and peer support can help to reduce the psychosocial challenges of women living with HIV and foster their wellbeing. The study would explore the advantages of communities, community-based interventions, and peer support programs.

Further research can also be done to explore how maternal mental health of women living with HIV can impact their parenting behaviors, child development, and the long-term well-being of the child.

Bibliography

Chapters in Books

- Bandura, Albert. *'Social Cognitive Theory of Moral Thought and Action'*. In Handbook of Moral Behavior and Development, Psychology Press, 2014, 69–128.
- Ramtohul, Ramola. *Women's Sexual and Reproductive Rights in Contemporary Africa*, In Expanding Perspectives on Human Rights in Africa, Routledge, 2019, 251–67,
- Uchino, Bert N, Kimberly Bowen, Robert Kent de Grey, Jude Mikel & Edwin B Fisher. *Social Support and Physical Health: Models, Mechanisms & Opportunities*, In Principles and Concepts of Behavioral Medicine, Springer, 2018, 341–72.

E-Books

- American Psychiatric Association, DS and American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*. Vol. 5. American psychiatric association Washington, DC, 2013.
- Lazarus, Richard & Folkman, Susan. *Stress: Appraisal, and Coping*. Springer Publishing Company, 1984.
- Pandey, Prabhat & Meenu Mishra Pandey. *Research Methodology Tools and Techniques*, Bridge Center, 2021.
- Sherwin, Susan, & Barbara Parish. *Women, Medicine, Ethics and the Law*. Routledge, 2020.
- Thom, Robyn & Christopher McDougle, *Child and Adolescent Psychiatry*, 2021, Oxford University Press.
- World Health Organization. *Contraceptive Eligibility for Women at High Risk of HIV: Guidance Statement: Recommendations on Contraceptive Methods Used by Women at High Risk of HIV*, Geneva: World Health Organization, 2019.

Journals

- Abate, Hailemichael Kindie, Chilot Kassa Mekonnen & Yohannes Mulu Ferede, *Depression Among HIV-Positive Pregnant Women at Northwest Amhara Referral Hospitals During COVID-19 Pandemic*, **Risk Management and Healthcare Policy**, Volume 14, 2021, 4897–4905.
- Abebe, Workeabeba, Mahlet Gebremariam, Mitike Molla, Solomon Teferra, Larry Wissow & Andrea Ruff, *Prevalence of Depression among HIV-Positive Pregnant Women and Its Association with Adherence to Antiretroviral Therapy in Addis Ababa, Ethiopia*, **PLOS ONE** 17, 1, 2022, e0262638.
- Acheanpong, Kwabena, Xiongfeng Pan, Atipasa Chiwanda Kaminga & Aizhong Liu, *Prevalence*

*and Risk Factors of Prenatal Depression among Pregnant Women Attending Antenatal Clinic at Adventist Hospital, Bekwai Municipality, Ghana, **Medicine** 101, 10, 2022, e28862.*

- Adamu, Aliyu, Gugu Mchunu & Joanne R. Naidoo, *Stress and Resilience among Women Living with HIV in Nigeria, **African Journal of Primary Health Care and Family Medicine**, 11, 1, 2019*
- Ade-Ojo, Idowu Pius, Mobolaji Usman Dada & Tolulope Benedict Adeyanju, *Comparison of Anxiety and Depression Among HIV-Positive and HIV-Negative Pregnant Women During COVID-19 Pandemic in Ekiti State, Southwest Nigeria, **International Journal of General Medicine**, Volume 15, 2022, 4123–4130.*
- Adimora, Dorothy Ebere & Alexandra Okezie Onwu, *Socio-Demographic Factors of Early Sexual Debut and Depression among Adolescents, **African Health Sciences**, 19, 3, 2019, 2634–2644.*
- Agu, Ifunanya Clara, Chinyere Ojiugo Mbachu, Chinyere Okeke, Irene Eze, Chibuike Agu, Uchenna Ezenwaka, Nkoli Ezumah & Obinna Onwujekwe, *Misconceptions about Transmission, Symptoms and Prevention of HIV/AIDS among Adolescents in Ebonyi State, South-East Nigeria, **BMC Research Notes** 13, 1, 2020, 1–5.*
- Ahmed, Syed Imran, Maryam Farooqui, Syed Azhar Syed Sulaiman, Mohamed Azmi Hassali & Christopher K C Lee, *Facilitators and Barriers Affecting Adherence Among People Living With HIV/AIDS: A Qualitative Perspective, **Journal of Patient Experience** 6, 1, 2019, 33–40.*
- Al Jarad, Abdulqader, Ahmad Al Hadi, Ali Al Garathi, Aly Akram, Dakhil Alsaedi, Fahad Al Mansour & Hany El Amin, *Impact of Cognitive Dysfunction in the Middle East Depressed Patients: The ICMED Study, **Clinical Practice and Epidemiology in Mental Health : CP and EMH**, 2018, 270–283.*
- Allen, Jessica, Reuben Balfour, Ruth Bell & Michael Marmot, *Social Determinants of Mental Health, **International Review of Psychiatry**, 26, 4, 2014, 392–407.*
- Amin, Omayma, Jenna Powers, Katherine M. Bricker & Ann Chahroudi, *Understanding Viral and Immune Interplay During Vertical Transmission of HIV: Implications for Cure, **Frontiers in Immunology**, 12, 2021.*
- Armistead, Lisa P., William D. Marelich, Marya T. Schulte, Marylou Gilbert & Debra A. Murphy, *HIV and Mother–Child Conflict: Associations with Mother’s Mental and Physical Health, **Child and Adolescent Social Work Journal : C and A** 36, 6, 2019, 621–629.*
- Ashaba, Scholastic, Angela Kaida, Bridget Frances Burns, Kasey O’Neil, Emma Dunkley, Christina Psaros, Jasmine Kastner, Alexander C. Tsai, David R. Bangsberg & Lynn T. Matthews, *Understanding Coping Strategies during Pregnancy and the Postpartum Period: A Qualitative Study of Women Living with HIV in Rural Uganda, **BMC Pregnancy and Childbirth**, 17, 2, 2017, 138.*
- Ashaba, Scholastic, Angela Kaida, Jessica N. Coleman, Bridget F. Burns, Emma Dunkley, Kasey O’Neil & Jasmine Kastner, *Psychosocial Challenges Facing Women Living with HIV during the Perinatal Period in Rural Uganda, **PLOS ONE** 12, 1, 2017, e0176256.*

- Asrat, Biksegn, Crick Lund, Fentie Ambaw, Emily Claire Garman & Marguerite Schneider, *Major Depressive Disorder and its Association with Adherence to Antiretroviral Therapy and Quality of Life: Cross-Sectional Survey of People Living with HIV/AIDS in Northwest Ethiopia*, **BMC Psychiatry** 20, 1, 2020, 1–13.
- Augustine Bala, Nalah, Azlinda Azman & Paramjit Singh Jamir Singh, *The Impact of Gender Discrimination and HIV Stigma on Women Living in North Central Nigeria*, **Cogent Social Sciences** 8, 1, 2022, 2027612.
- Aurpibul, Linda, Fuanglada Tongprasert, Uraivan Wichasilp & Arunrat Tangmunkongvorakul, *Depressive Symptoms Associated with Low Quality of Life Among Pregnant and Postpartum Women Living with HIV in Chiang Mai, Thailand*, **International Journal of Maternal and Child Health and AIDS , IJMA**, 9, 3, 2020, 421–429.
- Awofala, Awoyemi Abayomi & Olusegun Emmanuel Ogundele, *HIV Epidemiology in Nigeria*, **Saudi Journal of Biological Sciences**, 25, 4, 2018, 697–703.
- Awungafac, George, Elvis T Amin, Akemfua Fualefac, Noah F Takah, Lucy A Agyingi, Julius Nwobegahay, Pascale Ondoa & Patrick A Njukeng, *Viral Load Testing and the Use of Test Results for Clinical Decision Making for HIV Treatment in Cameroon: An Insight into the Clinic-Laboratory Interface*, **PLOS ONE** 13, 6, 2018, e0198686.
- Bacchus, Loraine J, Meghna Ranganathan, Charlotte Watts & Karen Devries, *Recent Intimate Partner Violence against Women and Health: A Systematic Review and Meta-Analysis of Cohort Studies*, **BMJ OPEN** 8, 7, 2018, e019995.
- Banigbe, Bolanle, Carolyn M. Audet, Prosper Okonkwo, Olujide O. Arije, Elizabeth Bassi, Kate Clouse, Melynda Simmons, Muktar H. Aliyu, Kenneth A. Freedberg & Aima A. Ahonkhai, *Effect of PEPFAR Funding Policy Change on HIV Service Delivery in a Large HIV Care and Treatment Network in Nigeria*, **PLOS ONE**, 14, 9, 2019, e0221809.
- Basha, Elyas Admasu, Behailu Tariku Derseh, Yohannes Gebre Egziabher Haile, & GedionTafere, *Factors Affecting Psychological Distress among People Living with HIV/AIDS at Selected Hospitals of North Shewa Zone, Amhara Region, Ethiopia*, **AIDS Research and Treatment**, 2019.
- Bastianon, Christina Diane, Eva M. Klein, Ana Nanette Tibubos, Elmar Brähler, Manfred E. Beutel, & Katja Petrowski. *Perceived Psychiatry, Stress Scale (PSS-10) Psychometric Properties in Migrants and Native Germans*. **BMC**, 20(1), 2020 450.
- Bay-Cheng, Laina Y, *Agency Is Everywhere, but Agency Is Not Enough: A Conceptual Analysis of Young Women's Sexual Agency*, **The Journal of Sex Research**, 56, 4, 2019, 462–474.
- Bekker, Linda-Gail, George Alleyne, Stefan Baral, Javier Cepeda, Demetre Daskalakis, David and Dowdy, Mark Dybul, *Advancing Global Health and Strengthening the HIV Response in the Era of the Sustainable Development Goals: The International AIDS Society—Lancet Commission*, **Lancet , London, England**, 392, 10144, 2018, 312–358.
- Belleau, Emily L, Michael T Treadway & Diego A Pizzagalli, *The Impact of Stress and Major Depressive Disorder on Hippocampal and Medial Prefrontal Cortex Morphology*, **Biological Psychiatry** 85, 6, 2019, 443–453.

Benebo, Faith Owunari, Barbara Schumann & Masoud Vaezghasemi, *Intimate Partner Violence against Women in Nigeria: A Multilevel Study Investigating the Effect of Women's Status and Community Norms*, **BMC Women's Health** 18, 1, 2018, 136.

Berg, Rigmor C., Samantha Page & Anita Øgård-Repål, *The Effectiveness of Peer-Support for People Living with HIV: A Systematic Review and Meta-Analysis*, **PLOS ONE**, 16, 6, 2021, e0252623.

Billong, Serge C, Georges Nguéfack-Tsague, Joseph Fokam, Faran Emmanuel, Shajy Isac, Raoul AT Fodjo, Marie Nicole Ngoufack, Sylvie Kwedi, Laure Vartan Moukam & Thomas Tchelmi, *Mapping and Size Estimates of Female Sex Workers in Cameroon: Toward Informed Policy for Design and Implementation in the National HIV Program*, **PLOS ONE** 14, 2, 2019, e0212315.

Do Not Copy, Lead City University, Nigeria

- Birdthistle, Isolde, Clare Tanton Andrew Tomita, Kristen de Graaf, Susan B Schaffnit, Frank Tanser & Emma Slaymaker, *Recent Levels and Trends in HIV Incidence Rates among Adolescent Girls and Young Women in Ten High-Prevalence African Countries: A Systematic Review and Meta-Analysis*, **The Lancet Global Health** 7, 11, 2019, e1521–e1540.
- Blount, Ashley J., Charmayne R. Adams, Ann L. Anderson-Berry, Corrine Hanson, Kara Schneider & Gurudutt Pendyala, *Biopsychosocial Factors during the Perinatal Period: Risks, Preventative Factors & Implications for Healthcare Professionals*, **International Journal of Environmental Research and Public Health**, 18, 15, 2021, 8206.
- Boily-Larouche, Geneviève, Julie Lajoie, Brenden Dufault, Kenneth Omollo, Juliana Cheruiyot, Jane Njoki, Monika Kowatsch, Makobu Kimani, Joshua Kimani & Julius Oyugi. *Characterization of the Genital Mucosa Immune Profile to Distinguish Phases of the Menstrual Cycle: Implications for HIV Susceptibility*, **The Journal of Infectious Diseases**, 219, 6, 2019, 856–866.
- Brittain, Kirsty, Claude A. Mellins, Robert H. Remien, Tamsin Phillips, Allison Zerbe, Elaine J. Abrams & Landon Myer, *HIV-Status Disclosure and Depression in the Context of Unintended Pregnancy among South African Women*, **Global Public Health** 14, 8, 2019, 1087–1097.
- Burhan, Niniek Budiarti, & Muhammad Reza Febriliant. *Gender Differences in Denial-Acceptance Duration Based on Kubler-Ross Cycle After HIV Diagnosis*, **Jurnal Kedokteran Brawijaya**, 31(3), 2021, 168-171
- Çankaya, Seyhan, *The Effect of Psychosocial Risk Factors on Postpartum Depression in Antenatal Period: A Prospective Study*, **Archives of Psychiatric Nursing**, 34(3), 2020, 176–83.
- Cárdenas, Emilia F, Autumn Kujawa, & Kathryn L Humphreys. *Neurobiological Changes During the Peripartum Period: Implications for Health and Behavior*. **Social Cognitive and Affective Neuroscience**, 15(10), 2020, 1097–1110.
- Centers for Disease Control , CDC, *Kaposi's Sarcoma and Pneumocystis Pneumonia among Homosexual Men—New York City and California*, **MMWR. Morbidity and Mortality Weekly Report** 30, 25, 1981, 305–308.
- Cohen, Myron S, Olivia D Council & Jane S Chen, *Sexually Transmitted Infections and HIV in the Era of Antiretroviral Treatment and Prevention: The Biologic Basis for Epidemiologic Synergy*, **Journal of the International AIDS Society**, 22, 2019, e25355.
- Cohen, Sheldon, & Wills, Thomas. *Stress, Social Support, and the Buffering Hypothesis*. **Psychological Bulletin**, 98(2), 1985, 310-357.
- Cohen, Sheldon, Tom Kamarck & Robin Mermelstein, *A Global Measure of Perceived Stress*, **Journal of Health and Social Behavior** 24, 4, 1983, 385–396.
- Cohn, Lillian B, Nicolas Chomont & Steven G Deeks, *The Biology of the HIV-1 Latent Reservoir and Implications for Cure Strategies*, **Cell host and Microbe**, 27(4) , 2020, 519–530.
- Contreras, Carmen, Nancy Rumaldo, Michael Masao Lindeborg, Milagros Mendoza, David Roy Chen, Olga Saldaña & Milagros Wong, *Emotional Experiences of Mothers Living with HIV*

and the Quest for Emotional Recovery: A Qualitative Study in Lima, Peru, **The Journal of the Association of Nurses in AIDS Care : JANAC** ,30(4) , 2019, 440–450.

Costin, Joshua M, *Cytopathic Mechanisms of HIV-1*, **Virology Journal**, 4(1) , 2007, 1–22.

Cox, John L, Jeni M Holden & Ruth Sagovsky, *Detection of Postnatal Depression: Development of the 10-Item Edinburgh Postnatal Depression Scale*, **The British Journal of Psychiatry**, 150(6), 1987, 782–786.

Do Not Copy, Lead City University, Nigeria

- Crenshaw, Kimberle, *Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics*, **The University of Chicago Legal Forum**, 1989, 139-167.
- Creswell, John W & Mariko Hirose, *Mixed Methods and Survey Research in Family Medicine and Community Health*, **Family Medicine and Community Health**, 7(2), 2019.
- Daar, Eric S, Christopher D Pilcher & Frederick M Hecht, *Clinical Presentation and Diagnosis of Primary HIV-1 Infection*, **Current Opinion in HIV and AIDS**, 3(1) , 2008, 10–15.
- Dadi, Abel Fekadu, Emma R. Miller, Telake Azale Bisetegn, & Lillian Mwanri. *Global Burden of Antenatal Depression and Its Association with Adverse Birth Outcomes: An Umbrella Review*, **BMC Public Health**, 20(1), 2020, 173.
- Dagher, Rada K., Hannah E. Bruckheim, Lisa J. Colpe, Emmeline Edwards & Della B. White, *Perinatal Depression: Challenges and Opportunities*, **Journal of Women's Health**, 30(2), 2021, 154–159.
- Ddamulira, Christopher, Norman Nsereko, Edith Akankwasa, Miph Musoke & Frank Pio Kiyingi, *Philosophical Perspectives on Community Based Non-Communicable Disease Services and the Quality of Life of People Living with HIV in Uganda*, **Journal of Environmental Science and Public Health**, 4(4), 2020, 409–430.
- De Coninck, Zaake, Laith Hussain-Alkhateeb, Göran Bratt, Anna Mia Ekström, Magnus Gisslén, Max Petzold & Veronica Svedhem, *Non-AIDS Mortality Is Higher among Successfully Treated People Living with HIV Compared with Matched HIV-Negative Control Persons: A 15-Year Follow-up Cohort Study in Sweden*, **AIDS Patient Care and STDs**, 32(8) , 2018, 297–305.
- Deese, Jennifer, Subarna Pradhan, Hannah Goetz, & Charles Morrison, *Contraceptive Use and the Risk of Sexually Transmitted Infection: Systematic Review and Current Perspectives*, **Open Access Journal of Contraception**, 9, 2018 , 91–112.
- Desalegn, Selam Yibeltal, Mengstu Melkamu Asaye, Wubedle Zelalem Temesgan & Marta Berta Badi, *Antenatal Depression and Associated Factors among HIV-Positive Pregnant Women in South Gondar Zone Public Health Facilities, Northwest Ethiopia, a Cross-Sectional Study*, **Clinical Epidemiology and Global Health**, 16 , 2022, 101072.
- Dianatinasab, Mostafa, Mohammad Fararouei, Valiollah Padehban, Aria Dianatinasab, Yousef Alimohamadi, Shohreh Beheshti, Zeinab AminiLari & Mahmood AminiLari, *The Effect of a 12-Week Combinational Exercise Program on CD4 Count and Mental Health among HIV Infected Women: A Randomized Control Trial*, **Journal of Exercise Science and Fitness**, 16(1), 2018, 21–25.
- Dorsey, Marquitta S, Dione King, Tyriesa Howard-Howell & Yarneccia Dyson, *Culturally Responsive Sexual Health Interventions for Black Adolescent Females in the United States: A Systematic Review of the Literature, 2010-2020*, **Children and Youth Services Review** , 2022, 106480.
- Duko, Bereket, Epherem Geja, Mahlet Zewude & Semere Mekonen, *Prevalence and Associated Factors of Depression among Patients with HIV/AIDS in Hawassa, Ethiopia, Cross-Sectional Study*, **Annals of General Psychiatry** 17(1) , 2018, 1–6.

Dupont, Haley A, Jeff Lam, Matthew W Woods, Mohammed A Zahoor & Charu Kaushic, *Hormonal Influence on HIV-1 Transmission in the Female Genital Tract: New Insights from Systems Biology*, **American Journal of Reproductive Immunology**, 80(2), 2018, e13019.

Do Not Copy, Lead City University, Nigeria

- Egbe, Catherine O, Patrick S Dakum, Ernest Ekong, Brandon A Kohrt, John G Minto & Cynthia J Ticao, *Depression, Suicidality & Alcohol Use Disorder among People Living with HIV/AIDS in Nigeria*, **BMC Public Health**, 17(1) , 2017, 1–13.
- Egbe, Thomas Obinchemti, Cynthia Adanze Nge, Hermann Ngouekam, Etienne Asonganyi & Dickson Shey Nsagha, *Stigmatization among People Living with HIV/AIDS at the Kumba Health District, Cameroon*, **Journal of the International Association of Providers of AIDS Care** , **JIAPAC**, 19, 2020, 2325958219899305.
- Eluwa, George I.E, Sylvia B. Adebajo, Titilope Eluwa, Obinna Ogbanufe, Oluwafunke Ilesanmi & Charles Nzelu, *Rising HIV Prevalence among Men Who Have Sex with Men in Nigeria: A Trend Analysis*, **BMC Public Health** 19(1), 2019, 1201.
- Engel, George L., *The Need for A New Medical Model: A Challenge For Biomedicine*. **Science**, 196(4286), 1977, 129–136.
- Essex, Max & Phyllis J Kanki, *The Origins of the AIDS Virus*, **Scientific American**, 259(4), 1988, 64–71.
- Etowa, Josephine, Edidiong Ekanem, Oluwakemi Ariyo, Haoua Inoua, Yvette Ashiri, Hilary Nare, Eno Akan Essien & Egbe B. Etowa, *Mental Health Experiences of African, Caribbean and Black , ACB, Mothers Living with HIV in the Context of Infant Feeding*, **International Journal of Africa Nursing Sciences**, 15, 2021, 100358.
- Exposto, Levi Anatolia SM, Cleofas da Costa Seixas, Leonardo Ximenes & Cesaltino Maria Pires, *Efforts in Preventing and Curing HIV/AIDS: A Systematic Review*, **Interdisciplinary Social Studies** 1(3), 2021, 249–266.
- Fauk, Nelsensius Klau, Karen Hawke, Lillian Mwanri & Paul Russell Ward, *Stigma and Discrimination towards People Living with HIV in the Context of Families, Communities & Healthcare Settings: A Qualitative Study in Indonesia*, **International Journal of Environmental Research and Public Health**, 18(10), 2021, 5424.
- Fauk, Nelsensius Klau, Lillian Mwanri, Karen Hawke, Leila Mohammadi & Paul Russell Ward, *Psychological and Social Impact of HIV on Women Living with HIV and Their Families in Low-and Middle-Income Asian Countries: A Systematic Search and Critical Review*, **International Journal of Environmental Research and Public Health**, 19(11), 2022, 6668.
- Fauk, Nelsensius Klau, Lillian Mwanri, Karen Hawke, Leila Mohammadi, & Paul Russell Ward.
The Impact of HIV On Women Living with HIV and Their Families in Low-And Middle-Income Countries: A Systematic Review. **MedRxiv**, 2022, 2022–04.
- Fauk, Nelsensius Klau, Paul Russell Ward, Karen Hawke & Lillian Mwanri, *HIV Stigma and Discrimination: Perspectives and Personal Experiences of Healthcare Providers in Yogyakarta and Belu, Indonesia*, **Frontiers in Medicine**, 8 , 2021, 625787.
- Ferenchick, Erin K, Parashar Ramanuj & Harold Alan Pincus, *Depression in Primary Care: Part 1—Screening and Diagnosis*, **BMJ**, 365 , 2019.
- Galjour, Joshua, Philip Havik, Peter Aaby, Amabelia Rodrigues & Emmanuel Kabengele Mpinga, *Chronic Political Instability and the HIV/AIDS Response in Guinea-Bissau from 2000 to*

2015: *A Systematic Review*, **Tropical Medicine and Infectious Disease**, 6(1), 2021, 36.

Gallo, R. C., S. Z. Salahuddin, M. Popovic, G. M. Shearer, M. Kaplan, B. F. Haynes, T. J. Palker, R. Redfield, J. Oleske & B. Safai, *Frequent Detection and Isolation of Cytopathic Retroviruses , HTLV-III, from Patients with AIDS and at Risk for AIDS*, **Science, New York, N.Y.**, 224(4648) ,1984, 500–503.

Gaspar, Fraser W., Kerri Wizner, Joshua Morrison, & Carolyn S. Dewa. *The Influence of Antidepressant and Psychotherapy Treatment Adherence on Future Work Leaves for Patients with Major Depressive Disorder*. **BMC Psychiatry**, 20(1), 2020, 320.

Gelaw, Muluaem Mihret, Ejigu Gebeye Zeleke, Mezgebu Silamsaw Asres & Mebratu Mitiku Reta, *One-Third of Perinatal Women Living with HIV Had Perinatal Depression in Gondar Town Health Facilities, Northwest Ethiopia*, **HIV/AIDS , Auckland, N.Z.**, 12, 2020, 887–895.

George, William H, *Alcohol and Sexual Health Behavior: _What We Know and How We Know It*, **The Journal of Sex Research**, 56(4–5), 2019, 409–424.

Ghoma Linguissi, Laure Stella, Tani Sagna, Serge Théophile Soubeiga, Luc Christian Gwom, Céline Nguéfeu Nkenfou, Dorcas Obiri-Yeboah, Abdoul Karim Ouattara, Virginio Pietra & Jacques Simpire, *Prevention of Mother-to-Child Transmission , PMTCT, of HIV: A Review of the Achievements and Challenges in Burkina-Faso*, **HIV/AIDS , Auckland, N.Z.**, 11, 2019, 165–177.

Gibas, Kevin M, Polly van den Berg, Victoria E Powell & Douglas S Krakower, *Drug Resistance during HIV Pre-Exposure Prophylaxis*, **Drugs**, 79(6), 2019, 609–619.

Gona, Philimon N., Clara M. Gona, Suha Ballout, Sowmya R. Rao, Ruth Kimokoti, Chabila C. Mapoma & Ali H. Mokdad, *Burden and Changes in HIV/AIDS Morbidity and Mortality in Southern Africa Development Community Countries, 1990–2017*, **BMC Public Health**, 20(1), 2020, 867.

Goodenough, Christopher J., Kunjal Patel & Russell B. Van Dyke, *Is There a Higher Risk of Mother-to-Child Transmission of HIV Among Pregnant Women with Perinatal HIV Infection?* , **The Pediatric Infectious Disease Journal**, 37(12), 2018, 1267–1270.

Govender, Romona D., Muhammad Jawad Hashim, Moien AB Khan, Halla Mustafa & Gulfaraz Khan, *Global Epidemiology of HIV/AIDS: A Resurgence in North America and Europe*, **Journal of Epidemiology and Global Health**, 11(3), 2021, 296–301.

Guintivano, Jerry, Tracy Manuck & Samantha Meltzer-Brody, *Predictors of Postpartum Depression: A Comprehensive Review of the Last Decade of Evidence*, **Clinical Obstetrics and Gynecology**, 61(3) , 2018, 591.

Hahn-Holbrook, Jennifer, Taylor Cornwell-Hinrichs & Itzel Anaya, *Economic and Health Predictors of National Postpartum Depression Prevalence: A Systematic Review*, *Meta-*

Analysis & Meta-Regression of 291 Studies from 56 Countries, **Frontiers in Psychiatry**, 8 , 2018, 248.

Hamzah, Lisa & Elizabeth Hamlyn, *Sexual and Reproductive Health in HIV-Positive Adolescents*,

Current Opinion in HIV and AIDS 13(3), 2018, 230–235.

Hapgood, Janet P, *Is the Injectable Contraceptive Depo-Medroxyprogesterone Acetate , DMPA-IM, Associated with an Increased Risk for HIV Acquisition? The Jury Is Still Out*, **AIDS Research and Human Retroviruses**, 36(5), 2020, 357–366.

Harrington, Bryna J., Mina C. Hosseinipour, Madalitso Maliwichi, Jacob Phulusa, Allan Jumbe, Shaphil Wallie, Bradley N. Gaynes, Joanna Maseko, William C. Miller & Brian W. Pence, *Prevalence and Incidence of Probable Perinatal Depression among Women Enrolled in Option B+ Antenatal HIV Care in Malawi*, **Journal of Affective Disorders**, 239, 2018, 115–122.

Do Not Copy, Lead City University, Nigeria

- Harrington, Bryna J., Mina C. Hosseinipour, Madalitso Maliwichi, Jacob Phulusa, Allan Jumbe, Shaphil Wallie, Bradley N. Gaynes, Joanna Maselko, William C. Miller, & Brian W. Pence, *Prevalence and factors associated with antenatal depressive symptoms among women enrolled in Option B+ antenatal HIV care in Malawi: a cross-sectional analysis*, **Journal of Mental Health (Abingdon, England)**, 28(2), 2019, 198–205.
- Hoare, Jacqueline, Tatum Sevenoaks, Bulelwa Mtukushe, Taryn Williams, Sarah Heany, & Nicole Phillips. *Global Systematic Review of Common Mental Health Disorders in Adults Living with HIV*, **Current HIV/AIDS Reports**, 2021, 1–12.
- Horter, Shona, Sarah Bernays, Zanele Thabede, Velibanti Dlamini, Bernhard Kerschberger, Munyaradzi Pasipamire, Barbara Rusch, & Alison Wringe. —*I Don't Want Them to Know! How Stigma Creates Dilemmas for Engagement with Treat-All HIV Care for People Living with HIV in Eswatini*. **African, Journal of AIDS Research**, 18(1), 2019, 27-37
- Huang, Yunxiang, Dan Luo, Xi Chen, Dexing Zhang, Zhulin Huang & Shuiyuan Xiao, *HIV-Related Stress Experienced by Newly Diagnosed People Living with HIV in China: A 1-Year Longitudinal Study*, **International Journal of Environmental Research and Public Health** 17(8), 2020, 2681.
- Hutchens, Bridget F & Joan Kearney, *Risk Factors for Postpartum Depression: An Umbrella Review*, **Journal of Midwifery and Women's Health**, 65(1), 2020, 96–108.
- Ion, Allyson, Anne C Wagner, Saara Greene, Mona R Loutfy & HIV Mothering Study Team, *HIV- Related Stigma in Pregnancy and Early Postpartum of Mothers Living with HIV in Ontario, Canada*, **AIDS Care**, 29(2) , 2017, 137–144.
- Iveniuk, James, Liviana Calzavara, Sandra Bullock, Joshua B. Mendelsohn, Ann Burchell, Laura Bisailon, Amrita Daftary, Bertrand Lebouché, Renée Masching & Tamara Thompson, *Social Capital and HIV-Serodiscordance: Disparities in Access to Personal and Professional Resources for HIV-Positive and HIV-Negative Partners*, **SSM – Population Health**, 17 , 2022, 101056.
- James, Spencer L, Degu Abate, Kalkidan Hassen Abate, Solomon M Abay, Cristiana Abbafati, Nooshin Abbasi & Hedayat Abbastabar, *Global, Regional & National Incidence, Prevalence & Years Lived with Disability for 354 Diseases and Injuries for 195 Countries and Territories, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017*, **The Lancet** 392(10159), 2018, 1789–1858.
- Jorjoran Shushtari, Zahra, Seyed Ali Hosseini, Homeira Sajjadi, Yahya Salimi, Armita Shahesmaeili & Tom A.B. Snijders, *HIV Risk Perception and Sexual Behaviors among Female Sex Workers in Tehran, Iran*, **Medical Journal of the Islamic Republic of Iran**, 33, 2019, 101.
- Kabapy, Ahmed F, Hanan Z Shatat & Ekram W Abd El-Wahab, *Attributes of HIV Infection over Decades , 1982–2018, A Systematic Review and Meta-analysis*, **Transboundary and Emerging Diseases**, 67(6), 2020, 2372–2388.
- Karim, Salim S Abdool, & Cheryl Baxter, *HIV Incidence Rates in Adolescent Girls and Young Women in Sub-Saharan Africa*, **The Lancet Global Health**, 7(11), 2019, e1470–71.
- Keene, Claire M., Jonathan Euvrard, K . Rivet Amico, Ayesha Ragunathan, Mike English, Jacob

McKnight & Catherine Orrell, *Conceptualising Engagement with HIV Care for People on Treatment: The Indicators of HIV Care and AntiRetroviral Engagement (InCARE) Framework*. **BMC Health Serv Res**, 23(435), 2023.

Kiecolt-Glaser, Janice K, *Marriage, Divorce & the Immune System*, **American Psychologist**, 73(9), 2018, 1098.

Do Not Copy, Lead City University, Nigeria

Kim, Hana, Godfrey N. Musuka, Zindoga Mukandavire, Adam Branscum, & Diego F. Cuadros.

When Distance Matters: Mapping HIV Health Care Underserved Communities in Sub-Saharan Africa. **PLOS Global Public Health**, 1(11), 2021, e0000013.

Kim, Pilyoung, *How Stress Can Influence Brain Adaptations to Motherhood*, **Frontiers in Neuroendocrinology**, 60, 2021, 100875.

Kinyanda, Eugene, Susan Hoskins, Juliet Nakku, Saira Nawaz & Vikram Patel, *Prevalence and Risk Factors of Major Depressive Disorder in HIV/AIDS as Seen in Semi-Urban Entebbe District, Uganda*, **BMC Psychiatry**, 11, 30, 2011, 205.

Knettel, Brandon A., Linda Minja, Lilian N. Chumba, Martha Oshosen, Cody Cichowitz, Blandina

T. Mmbaga & Melissa H. Watt, *Serostatus Disclosure among a Cohort of HIV-Infected Pregnant Women Enrolled in HIV Care in Moshi, Tanzania: A Mixed-Methods Study*, **SSM – Population Health**, 7, 2019, 100323.

Koehler, Erica & Caitlin E Kennedy, *A Scoping Review of the Associations between Mental Health and Factors Related to HIV Acquisition and Disease Progression in Conflict-Affected Populations*, **Conflict and Health**, 12(1), 2018, 1–22.

Kontomanolis, Emmanuel N, Spyridon Michalopoulos, Grigorios Gkasdaris & Zacharias Fasoulakis, *The Social Stigma of HIV–AIDS: Society’s Role*, **HIV/AIDS, Auckland, N.Z.**, 9, 2017, 111–118.

LeMasters, Katherine, Josée Dussault, Clare Barrington, Angela Bengtson, Bradley Gaynes, Vivian Go & Mina C. Hosseinipour, *‘Pain in My Heart’: Understanding Perinatal Depression among Women Living with HIV in Malawi*, **PLOS ONE**, 15(6), 2020, e0227935.

Levis, Brooke, Zelalem Negeri, Ying Sun, Andrea Benedetti, & Brett D Thombs. *Accuracy of the Edinburgh Postnatal Depression Scale (EPDS) for Screening to Detect Major Depression Among Pregnant and Postpartum Women: Systematic Review and Meta-Analysis of Individual Participant Data*, **BMJ (Clinical Research Ed.)**, 371, 2020, m4022.

Levy, Matthew E, Ansley Waters, Sabyasachi Sen, Amanda D Castel, Michael Plankey, Sherry Molock, Federico Asch, Lakshmi Goparaju & Seble Kassaye, *Psychosocial Stress and Neuroendocrine Biomarker Concentrations among Women Living with or without HIV*, **PLOS ONE**, 16(12), 2021, e0261746.

Levy, Matthew E, Ansley Waters, Sabyasachi Sen, Amanda D Castel, Michael Plankey, Sherry Molock, Federico Asch, Lakshmi Goparaju, & Seble Kassaye. *Pharmacologic Treatment of Psychiatric Disorders and Time with Unsuppressed HIV Viral Load in a Clinical HIV Cohort*. **Journal of Acquired Immune Deficiency Syndromes**, 82(3), 2019, 329.

Li, Pengsheng, Haiyan Wang, Jinping Feng, Gengdong Chen, Zixing Zhou, Xiaoyan Gou, Shaoxin Ye, Dazhi Fan, Zhengping Liu & Xiaoling Guo, *Association Between Perceived Stress and Prenatal Depressive Symptoms: Moderating Effect of Social Support*, **Journal of Multidisciplinary Healthcare**, 14, 2021, 3195–3204.

Li, Yi, Xiao-Wen Zhang, Bin Liao, Jun Liang, Wen-Jie He, Jun Liu, Yao Yang, Yun-Hai Zhang, Tao Ma & Jing-Ying Wang, *Social Support Status and Associated Factors among People*

Living with HIV/AIDS in Kunming City, China, **BMC Public Health**, 21(1), 2021, 1413.

Liu, Cindy H., Sunah Hyun, Leena Mittal & Carmina Erdei, *Psychological Risks to Mother–Infant Bonding during the COVID-19 Pandemic*, **Pediatric Research**, 91(4), 2022, 853–861.

Do Not Copy, Lead City University, Nigeria

- Los Rios, Patricia de, Chinyere Okoli, Erika Castellanos, Brent Allan, Benjamin Young, Garry Brough, Marvelous Muchenje, Anton Eremin, Giulio Maria Corbelli, & Marta McBritton. *Physical, Emotional, and Psychosocial Challenges Associated with Daily Dosing of HIV Medications and Their Impact on Indicators of Quality of Life: Findings From the Positive Perspectives Study*, **AIDS and Behavior**, 25, 2021, 961-972.
- Lusskin, Shari I, Sabrina J Khan, Carrie Ernst, Sally Habib, Madeleine E Fersh & Elizabeth S Albertini, *Pharmacotherapy for Perinatal Depression*, **Clinical Obstetrics and Gynecology** 61(3), 2018, 544–561.
- Mabachi, Natabhona M., Melinda Brown, Matthew Sandbulte, Catherine Wexler, Kathy Goggin, May Maloba, & Sarah Finocchiaro-Kessler. *Using a Social Support Framework to Understand How HIV Positive Kenyan Men Engage in PMTCT/EID Care: Qualitative Insights from Male Partners*. **AIDS and Behavior**, 24(1), 2020, 18–28.
- Madiba, Sphiwe, Evelyn Ralebona, & Mygirl Lowane, *Perceived Stigma as a Contextual Barrier to Early Uptake of HIV Testing, Treatment Initiation, and Disclosure; The Case of Patients Admitted with AIDS-Related Illness in a Rural Hospital in South Africa*, **Healthcare**, 9, 2021, 962.
- Madiba, Sphiwe, *When Pregnancy Coincides with Positive Diagnosis of HIV: Accounts of the Process of Acceptance of Self and Motherhood among Women in South Africa*, **International Journal of Environmental Research and Public Health**, 18(24), 2021, 13006.
- Mahamboro, Dionius B., Nelsensius K. Fauk, Paul R. Ward, Maria S. Merry, Theodorus A. Siri & Lillian Mwanri, *HIV Stigma and Moral Judgement: Qualitative Exploration of the Experiences of HIV Stigma and Discrimination among Married Men Living with HIV in Yogyakarta*, **International Journal of Environmental Research and Public Health**, 17(2), 2020, 636.
- Mahy, Mary, Kimberly Marsh, Keith Sabin, Ian Wanyeki, Juliana Daher & Peter D. Ghys, *HIV Estimates through 2018: Data for Decision-Making*, **AIDS**, 33(3), 2019, S203–S211.
- Maltby, Ann E., Belinda C. Odhiambo, Eliud Akama, Jennifer A. Pellowski, Craig R. Cohen, Sheri D. Weiser & Amy A. Conroy, *‘I Found Out I Was Pregnant & I Started Feeling Stressed’: A Longitudinal Qualitative Perspective of Mental Health Experiences Among Perinatal Women Living with HIV*, **AIDS and Behavior**, 25(12), 2021, 4154–4168.
- Martawinarti, RTS Netisa, Nursalam Nursalam & Setya Wahyudi Andri, *Lived Experience of People Living with HIV/AIDS Undergoing Antiretroviral Therapy: A Qualitative Study*, **Jurnal Ners**, 15(2), 2020, 157163.
- Matsuda, Yui, Todd A. Schwartz, YunKyung Chang, & Linda S. Beeber. *A Refined Model of Stress–Diathesis Relationships in Mothers with Significant Depressive Symptom Severity*. **Journal of the American Psychiatric Nurses Association**, 27(3), 2021, 240–250.
- Maulide Cane, Réka, Dessalegn Y. Melesse, Nkomba Kayeyi, Adom Manu, Yohannes Dibaba Wado, Aluisio Barros, & Ties Boerma. *HIV Trends and Disparities by Gender and Urban–Rural Residence Among Adolescents in Sub-Saharan Africa*. **Reproductive Health**, 18(1), 2021, 120.

Mayer, Kenneth H, Allison Agwu & David Malebranche, *Barriers to the Wider Use of Pre-Exposure Prophylaxis in the United States: A Narrative Review*, **Advances in Therapy**, 37(5), 2020, 1778–1811.

Do Not Copy, Lead City University, Nigeria

- Mazambara, Fine, Dexter Chagwena, Tinashe Mudzviti, Samantha Sithole, Tsitsi Monera-Penduka, Charles C. Maponga & Gene D. Morse, *Utility of HIV Support Groups in Advancing Implementation Research in Resource-Limited Settings: Experiences from an Urban-Setting HIV Support Group in Zimbabwe*, **AIDS Research and Therapy** 19(1), 2022, 7.
- Mbatha, Nontokoza Lilian, Kebogile Elizabeth Mokwena & Sphiwe Madiba, *Clinical and Obstetric Risk Factors for Postnatal Depression in HIV Positive Women: A Cross Sectional Study in Health Facilities in Rural KwaZulu-Natal*, **International Journal of Environmental Research and Public Health**, 17(22), 2020, 8425.
- Mbatha, Trusty L & Adiele Dube, *HIV Positive Pregnant Mothers' Perceptions and Experiences Regarding the Prevention of Mother-to-Child Transmission, Option B+ Program*, **Journal of Patient Experience**, 8, 2021, 23743735211065270–23743735211065270.
- McMillan, Karen, Heather Worth & Patrick Rawstorne, *Usage of the Terms Prostitution, Sex Work, Transactional Sex & Survival Sex: Their Utility in HIV Prevention Research*, **Archives of Sexual Behaviour**, 47(5), 2018, 1517–1527.
- Meyer, Dixie, Joanne Salas, Stephanie Barkley & Tony W Buchanan, *In Sickness and in Health: Partner's Physical and Mental Health Predicts Cortisol Levels in Couples*, **Stress**, 22(3), 2019, 295–302.
- Mkandawire, Annie Kalibwe, Vincent Jumbe, & Alinane Linda Nyondo-Mipando. *To Disclose or Not: Experiences of HIV Infected Pregnant Women in Disclosing their HIV Status to their Male Sexual Partners in Blantyre, Malawi*, **BMC Public Health**, 22, 2022, 1552.
- Momplaisir, Florence M, Kathryn Fortune, Hervette Nkwihoreze, Allison K Groves, Erika Aaron & John B Jemmott, *Outcome Expectancies toward Adherence to Antiretroviral Therapy for Pregnant and Postpartum Women with HIV*, **Women's Health**, 17, 2021, 17455065211061094.
- Momplaisir, Florence, Mustafa Hussein, Deborah Kacanek, Kathleen Brady, Allison Agwu, Gwendolyn Scott, Ruth Tuomala & David Bennett, *Perinatal Depressive Symptoms, Human Immunodeficiency Virus , HIV, Suppression and the Underlying Role of Antiretroviral Therapy Adherence: A Longitudinal Mediation Analysis in the IMPAACT P1025 Cohort*, **Clinical Infectious Diseases**, 73(8), 2021, 1379–1387.
- Moseholm, Ellen, Inka Aho, Åsa Mellgren, Gitte Pedersen, Terese L. Katzenstein, Isik S. Johansen, Diana Bach, Merete Storgaard & Nina Weis, *Psychosocial Health in Pregnancy and Postpartum among Women Living with – and without HIV and Non-Pregnant Women Living with HIV Living in Nordic Countries – Results from a Longitudinal Survey Study*, **BMC Pregnancy and Childbirth**, 22(1), 2022, 20.
- Moseholm, Ellen, Inka Aho, Åsa Mellgren, Isik S Johansen, Merete Storgaard, Gitte Pedersen, Ditte Scofield, Terese L Katzenstein & Nina Weis, *The Experience of Pregnancy among Women Living with HIV in Nordic Countries: A Qualitative Narrative Enquiry*, **Women's Health**, 18, 2022, 174550652110686.
- Moshoeshe, Malerato & Sphiwe Madiba, *Parenting the Child with HIV in Limited Resource Communities in South Africa: Mothers with HIV's Emotional Vulnerability and Hope for the Future*, **Women's Health**, 17, 2021, 17455065211058564.

Do Not Copy, Lead City University, Nigeria

- Mtshali Andile, Sinaye Ngcapu, Adrian Mindel, Nigel Garrett & Lenine Liebenberg, *HIV Susceptibility in Women: The Roles of Genital Inflammation, Sexually Transmitted Infections and the Genital Microbiome*, **Journal of Reproductive Immunology**, 145, 2021, 103291.
- Musarandega, Reuben, Solwayo Ngwenya, Grant Murewanhema, Rhoderick Machekano, Thulani Magwali, Lennarth Nystrom, Robert Pattinson & Stephen Munjanja, *Changes in Causes of Pregnancy-Related and Maternal Mortality in Zimbabwe 2007-08 to 2018-19: Findings from Two Reproductive Age Mortality Surveys*, **BMC Public Health**, 22(1), 2022, 1–11.
- Myo, Theigi, Seo Ah Hong, Bang-On Thepthien, & Nate Hongkraitert. *Prevalence and Factors Associated with Postpartum Depression in Primary Healthcare Centres in Yangon, Myanmar*, **The Malaysian Journal of Medical Sciences: MJMS**, 28(4), 2021, 71.
- Nalukwago, Judith, Rik Crutzen, Bart van den Borne, Paul Mukisa Bukuluki, Leonard Bufumbo, Holly McClain Burke, Samuel Field, Amos Zikusooka, Anne Akia Fiedler & Jane Alaii, *Gender Norms Associated with Adolescent Sexual Behaviours in Uganda*, **International Social Science Journal**, 69(231), 2019, 35–48.
- Ngocho, James Samwel, Melissa H. Watt, Linda Minja, Brandon A. Knettel, Blandina T. Mmbaga, Petal P. Williams & Katherine Sorsdahl, *Depression and Anxiety among Pregnant Women Living with HIV in Kilimanjaro Region, Tanzania*, **PLOS ONE**, 14(10), 2019, e0224515.
- Nisar, Anum, Juan Yin, Ahmed Waqas, Xue Bai, Duolao Wang, Atif Rahman & Xiaomei Li, *Prevalence of Perinatal Depression and Its Determinants in Mainland China: A Systematic Review and Meta-Analysis*, **Journal of Affective Disorders**, 277, 2020, 1022–1037.
- Nkosi, Busisiwe, & Paul C Rosenblatt, *From ‘Death Sentence to Hope’, HIV and AIDS in South Africa: Transforming Shame in Context*, **The Bright Side of Shame: Transforming and Growing Through Practical Applications in Cultural Contexts**, 2019, 77-87
- Nyamukoho, Eugenia, Walter Mangezi, Bazondlile Marimbe, Ruth Verhey & Dixon Chibanda, *Depression among HIV Positive Pregnant Women in Zimbabwe: A Primary Health Care Based Cross-Sectional Study*, **BMC Pregnancy and Childbirth**, 19(1), 2019, 53.
- Odiachi, Angela, Salome Ereka, Llewellyn J. Cornelius, Christopher Isah, Habib O. Ramadhani, Laura Rapoport & Nadia A. Sam-Agudu, *HIV Status Disclosure to Male Partners among Rural Nigerian Women along the Prevention of Mother-to-Child Transmission of HIV Cascade: A Mixed Methods Study*, **Reproductive Health** 15(1), 2018, 36.
- Odinka, Paul, Jaelyn Odinka, Mark Ezeme, Appolos Ndukuba, Kennedy Amadi, Rosemary Muomah, Stanley Nwoha & Ujunwa Nduanya, *Socio-Demographic Correlates of Postpartum Psychological Distress among Apparently Healthy Mothers in Two Tertiary Hospitals in Enugu, South-East Nigeria*, **African Health Sciences** 19(3), 2019, 2515–2525.
- Odugbesan, Jamiu Adetola & Husam Rjoub, *Evaluating HIV/AIDS Prevalence and Sustainable Development in Sub-Saharan Africa: The Role of Health Expenditure*, **African Health Sciences** 20(2), 2020, 568–578.
- Oforum, Ifeoma Chinyere, *Sexual Behaviour, Needs and Concerns Regarding Sexual and Reproductive Health among Adults Living with HIV in Sub-Saharan Africa-A Systematic Review*, **Journal of Advances in Medicine and Medical Research**, 2021, 113–132.

Oginni, Monisola Omoyeni, Olayinka Olaitan Aremu, Adekemi Eunice Olowokere, Sunday Joseph Ayamolowo & Abiola Olubusola Komolafe, *Adherence to HIV Care among HIV-Positive Pregnant Women in Nigeria*, **African Journal of Midwifery and Women's Health**, 12(1), 2018, 28–34.

Do Not Copy, Lead City University, Nigeria

- Ogueji, Ifeanyichukwu Anthony, *Experiences and Predictors of Psychological Distress in Pregnant Women Living with HIV*, **British Journal of Health Psychology**, 26(3), 2021, 882–901.
- Ogundare, Temitope, Senait Ghebrehiwet, Benjamin L. Harris, Babawale Ojedin, Alison M. Duncan, Haniya S. Syeda, David C. Henderson & Christina P. C. Borba, *Risky Sexual Behaviors and Substance Use among Youths in Post-Conflict Liberia*, **Journal of Public Health and Epidemiology** 12(2), 2020, 114–127.
- Oh, Eke & Onyenyirionwu Ug, *Psycho-Social Predictors of Peripartum Depression among Nigerian Women*, **Journal of Women's Health and Development**, 2(2) , 2019.
- Ojikutu, Bisola O, Laura M Bogart, David J Klein, Frank H Galvan & Glenn J Wagner, *Neighborhood Crime and Sexual Transmission Risk Behavior among Black Men Living with HIV*, **Journal of Health Care for the Poor and Underserved**, 29(1), 2018, 383.
- Oladunni, Amos Abimbola, Ayomide Busayo Sina-Odunsi, Boyiga Bodinga Nuga, Yusuff Adebayo Adebisi, Obasanjo Afolabi Bolarinwa, Adesina Adetoun Adeola & Don Eliseo Lucero-Prisno, *Psychosocial Factors of Stigma and Relationship to Healthcare Services among Adolescents Living with HIV/AIDS in Kano State, Nigeria*, **Heliyon**, 7(4), 2021, e06687.
- Olawore, Oluwasolape, Aaron A.R. Tobian, Joseph Kagaayi, Jeremiah M. Bazaale, Betty Nantume, Grace Kigozi & Justine Nankinga, *Migration and Risk of HIV Acquisition in Rakai, Uganda: A Population-Based Cohort Study*, **The Lancet. HIV** 5(4), 2018, e181–e189.
- Olza, Ibone, Patricia Leahy-Warren, Yael Benyamini, Maria Kazmierczak, Sigfridur Inga Karlsdottir Andria Spyridou, & Esther Crespo-Mirasol, *Women's Psychological Experiences of Physiological Childbirth: A Meta-Synthesis*, **BMJ Open**, 8(10), 2018, e020347.
- Ongeri, Linnet, Valentine Wanga, Phelgona Otieno, Jane Mbui, Elizabeth Juma, Ann Vander Stoep & Muthoni Mathai, *Demographic, Psychosocial and Clinical Factors Associated with Postpartum Depression in Kenyan Women*, **BMC Psychiatry**, 18(1), 2018, 318.
- Otten, Daniëlle, Mareike Ernst, Ana N Tibubos, Elmar Brähler, Toni Fleischer, Georg Schomerus, Philipp S Wild, Daniela Zöllner, Harald Binder & Johannes Kruse, *Does Social Support Prevent Suicidal Ideation in Women and Men? Gender-Sensitive Analyses of an Important Protective Factor within Prospective Community Cohorts*, **Journal of Affective Disorders**, 306 , 2022, 157–166.
- Otu, Akaninyene, Carlo Handy Charles, & Sanni Yaya. *Mental Health and Psychosocial Well-Being During The COVID-19 Pandemic: The Invisible Elephant in The Room*. **International Journal of Mental Health Systems**, 14, 2020, 1-5.
- Owora, Arthur H, *Major Depression Disorder Trajectories and HIV Disease Progression: Results from a 6-Year Outpatient Clinic Cohort*, **Medicine**, 97(12), 2018, e0252.
- Owusu, Adobea Yaa, *Experiences of New Diagnoses among HIV-Positive Persons: Implications for Public Health*, **BMC Public Health**, 22(1), 2022, 538.
- Payán, Denise Diaz, Kathryn Pitkin Derose, María Altagracia Fulcar, Hugo Farías & Kartika Palar, *It Was as Though My Spirit Left, Like They Killed Me': The Disruptive Impact of an*

HIV- Positive Diagnosis among Women in the Dominican Republic, **Journal of the International Association of Providers of AIDS Care** , **JIAPAC**, 18 , 2019, 232595821984904.

Payne, Jennifer L, & Jamie Maguire. *Pathophysiological Mechanisms Implicated in Postpartum Depression*. **Frontiers in Neuroendocrinology**, 52, 2019, 165-180.

Do Not Copy, Lead City University, Nigeria

- Peltzer, Karl, Violeta J. Rodriguez & Deborah Jones, *Prevalence of Prenatal Depression and Associated Factors among HIV-Positive Women in Primary Care in Mpumalanga Province, South Africa*, **SAHARA-J: Journal of Social Aspects of HIV/AIDS**, 13(1), 2016, 60–67.
- Pierce, Leslie J., Susan Regan, Ifeoma Idigbe, Juliet Adeola, Zaidat Musa, Oliver Ezechi & Bibilola Oladeji, *Psychological Distress Increases 30-Fold Among People with HIV in the First Year on ART in Nigeria—A Call for Integrated Mental Health Services*, **International Journal of Behavioral Medicine**, 30(1), 2023, 38–48.
- Proudfoot, Denise, *Frozen in a Moment in Time: The Experiences of Mothers Being Diagnosed With HIV Infection*, **Journal of the Association of Nurses in AIDS Care**, 29(2), 2018, 323–329.
- Qin, Shouxue, Yanping Tan, Bingyan Lu, Yuqing Cheng & Yanli Nong, *Survey and Analysis for Impact Factors of Psychological Distress in HIV-Infected Pregnant Women Who Continue Pregnancy*, **The Journal of Maternal-Fetal and Neonatal Medicine**, 32(19), 2019, 3160–3167.
- Remien, Robert H, Michael J Stirratt, Nadia Nguyen, Reuben N Robbins Andrea N Pala & Claude A Mellins, *Mental Health and HIV/AIDS: The Need for an Integrated Response*, **AIDS**, 33(9), 2019, 1411.
- Rendina, H Jonathon, Laurel Weaver, Brett M Millar, Jonathan López-Matos & Jeffrey T Parsons, *Psychosocial Well-Being and HIV-Related Immune Health Outcomes among HIV-Positive Older Adults: Support for a Biopsychosocial Model of HIV Stigma and Health*, **Journal of the International Association of Providers of AIDS Care** , **JIAPAC**, 18 , 2019, 2325958219888462.
- Rosenstock, Irwin, *The Health Belief Model and Preventive Health Behavior*. **Health Education Monographs**, 2, 1974, 354-386.
- Saag, Michael S, *HIV Infection—Screening, Diagnosis & Treatment*, **New England Journal of Medicine**, 384(22), 2021, 2131–2143.
- Sahn, David E, *The Socioeconomic Dimensions of HIV/AIDS in Africa: Challenges, Opportunities & Misconceptions*, 2018.
- Sajadipour, Mansour, Satar Rezaei, Seyed Fahim Irandoost, Mohammadreza Ghaumzadeh, Mohamadreza Salmani nadushan, Mohammad Gholami, Yahya Salimi & Zahra Jorjoran Shushtari, *What Explains Gender Inequality in HIV Infection among High-Risk People? A Blinder-Oaxaca Decomposition*, **Archives of Public Health**, 80(1), 2022, 2.
- Sakyi, Kwame S., Margaret Y. Lartey, Julie A. Dension, Caitlin E. Kennedy, Luke C. Mullany, Prince O. Gyebi, Awewura Kwara & Pamela J. Surkan, *Low Birthweight, Retention in HIV Care & Adherence to ART among Postpartum Women Living with HIV in Ghana*, **AIDS and Behavior**, 23(2), 2019, 433–444.
- Santomauro, Damian F, Ana M Mantilla Herrera, Jamileh Shadid, Peng Zheng, Charlie Ashbaugh, David M Pigott, Cristiana Abbafati, Christopher Adolph, Joanne O Amlag, & Aleksandr Y Aravkin. *Global Prevalence and Burden of Depressive and Anxiety Disorders in 204 Countries and Territories in 2020 Due to the COVID-19 Pandemic*, **The Lancet**, 398(10312), 2021, 1700-1712.

Sarna, Avina, Roopal J Singh, Mona Duggal, Prabha Chandra & Nancy Reynolds, *The Prevalence and Determinants of Depression among HIV Positive Perinatal Women Receiving Antiretroviral Therapy in India*, **Archives of Women's Mental Health**, 22(3), 2019, 399–404.

Do Not Copy, Lead City University, Nigeria

- Saunders, Benjamin, Julius Sim, Tom Kingstone, Shula Baker, Jackie Waterfield, Bernadette Bartlam, Heather Burroughs & Clare Jinks, *Saturation in Qualitative Research: Exploring Its Conceptualization and Operationalization*, **Quality and Quantity**, 52(4), 2018, 1893–1907.
- Schnoll, Jordan G, Brian Tamsamrit, Daniel Zhang, Hongjun Song, Guo-li Ming & Kimberly M Christian, *Evaluating Neurodevelopmental Consequences of Perinatal Exposure to Antiretroviral Drugs: Current Challenges and New Approaches*, **Journal of Neuroimmune Pharmacology**, 16(1), 2021, 113–129.
- Scorgie, Fiona, Nomhle Khoza, Sinead Delany-Moretlwe, Jennifer Velloza, Nomvuyo Mangxilana, Millicent Atujuna, Miria Chitukuta, Kudzai V Matambanadzo, Sybil Hosek, & Lerato Makhale. *Narrative Sexual Histories and Perceptions of HIV Risk among Young Women Taking Prep in Southern Africa: Findings from A Novel Participatory Method*. **Social Science & Medicine**, 270, 2021, 113600.
- Scully, Eileen P, *Sex Differences in HIV Infection*, **Current HIV/AIDS Reports**, 15(2), 2018, 136–146.
- Sebele-Mpofu, Favourate Y, *Saturation Controversy in Qualitative Research: Complexities and Underlying Assumptions. A Literature Review*, **Cogent Social Sciences**, 6(1), 2020, 1838706.
- Seffren, Victoria, Itziar Familiar, Sarah M. Murray, Jura Augustinavicius, Michael J. Boivin, Noeline Nakasujja, Robert Opoka & Judith Bass, *Association between Coping Strategies, Social Support & Depression and Anxiety Symptoms among Rural Ugandan Women Living with HIV/AIDS*, **AIDS Care**, 30(7), 2018, 888–895.
- Shah, Sayed Shah Nur Hussein, Ahmed Laving, Violet Caroline Okech-Helu & Manasi Kumar, *Depression and Its Associated Factors: Perceived Stress, Social Support, Substance Use and Related Sociodemographic Risk Factors in Medical School Residents in Nairobi, Kenya*, **BMC Psychiatry**, 21, 2021, 444.
- Shayo, Festo K. & Mariam H. Kalomo, *Prevalence and Correlates of Sexual Intercourse among Sexually Active In-School Adolescents: An Analysis of Five Sub-Sahara African Countries for the Adolescent's Sexual Health Policy Implications*, **BMC Public Health**, 19(1), 2019, 1285.
- Sikweyiya, Yandisa, Adolphina Addoley Addo-Lartey, Deda Ogum Alangea, Phyllis Dako-Gyeke, Esnat D. Chirwa, Dorcas Coker-Appiah, Richard M. K. Adanu & Rachel Jewkes, *Patriarchy and Gender-Inequitable Attitudes as Drivers of Intimate Partner Violence against Women in the Central Region of Ghana*, **BMC Public Health**, 20(1), 2020.
- Slomian, Justine, Germain Honvo, Patrick Emonts, Jean-Yves Reginster & Olivier Bruyère, *Consequences of Maternal Postpartum Depression: A Systematic Review of Maternal and Infant Outcomes*, **Women's Health**, 15, 2019, 1745506519844044.
- Soares, Leila Cristina, Fernanda Lehrer Turbae Amaral Braz, Amanda Rodrigues Araujo & Marco Aurélio Pinho Oliveira, *Association of Sexually Transmitted Diseases with Cervical Ectopy: A Systematic Review*, **Sexually Transmitted Diseases**, 46(7), 2019, 452–457.
- Sockol, Laura E, *A Systematic Review and Meta-Analysis of Interpersonal Psychotherapy for Perinatal Women*, **Journal of Affective Disorders**, 232, 2018, 316–328.
- Spain, Pascalle, Sanne van Luenen, Nadia Garnefski & Vivian Kraaij, *Psychosocial Interventions*

Do Not Copy, Lead City University, Nigeria

- Ssewanyana, Derrick, Patrick N Mwangala, Anneloes Van Baar, Charles R Newton & Amina Abubakar, *Health Risk Behaviour among Adolescents Living with HIV in Sub-Saharan Africa: A Systematic Review and Meta-Analysis*, **BioMed Research International**, 2018.
- Stardust, Zahra, Carla Treloar, Elena Cama & Jules Kim, *'I Wouldn't Call the Cops If I Was Being Bashed to Death': Sex Work, Whore Stigma and the Criminal Legal System*, **International Journal for Crime, Justice and Social Democracy**, 10(3), 2021, 142–157.
- Stewart, Joanne, Gillian Douglas, Tammy O'Rourke & Carolyn Gammel, *Promoting Safer Sex in the Context of Heterosexual Anal Intercourse: A Scoping Review*, **Journal of Clinical Nursing**, 30(15–16), 2021, 2111–2130.
- Sufredini, Francieli, Christine Catling, Joel Zugai, & Sungwon Chang. *The Effects of Social Support on Depression and Anxiety in the Perinatal Period: A Mixed-Methods Systematic Review*, **Journal of Affective Disorders**, 2022.
- Sullivan, Tami. *The Intersection of Intimate Partner Violence and HIV: Detection, Disclosure, Discussion, and Implications for Treatment Adherence*, **Topics in Antiviral Medicine**, 27(2), 2019, 84–87.
- Tareke, Minale, Fikir Addisu & Andargie Abate, *Depression among Patients Attending Antiretroviral Treatment Program in Public Health Facilities in Bahir Dar City, Ethiopia*, **Journal of Affective Disorders**, 232, 2018, 370–374.
- Thiruvalluvan, E, *Major Depression Among Pregnant Mothers with HIV: Correlates and Suggested Interventions*, **SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS**, 14(1), 2017, 40–45.
- Thom, Robyn, David A Silbersweig & Robert J Boland, *Major Depressive Disorder in Medical Illness: A Review of Assessment, Prevalence & Treatment Options*, **Psychosomatic Medicine** 81(3), 2019, 246–255.
- Tooley, Len, *Detecting HIV Earlier: Advances in HIV Testing*, **Prevention** , 2010.
- Tran, Bach Xuan, Roger C. M. Ho, Cyrus S. H. Ho, Carl A. Latkin, Hai Thanh Phan, Giang Hai Ha, Giang Thu Vu, Jiangbo Ying, & Melvyn W. B. Zhang. *Depression among Patients with HIV/AIDS: Research Development and Effective Interventions (GAPRESEARCH)*, **International Journal of Environmental Research and Public Health**, 16(10), 2019, 1772.
- Trindade, Lidiane de Nazaré Mota, Laura Maria Vidal Nogueira, Ivaneide Leal Ataíde Rodrigues, Angela Maria Rodrigues Ferreira, Gracileide Maia Corrêa, & Natasha Cristina Oliveira Andrade. *HIV Infection in Pregnant Women and Its Challenges for the Prenatal Care*, **Revista Brasileira de Enfermagem**, 74, 2021.
- Tuthill, Emily L., Ann E. Maltby, Belinda C. Odhiambo, Eliud Akama, Jennifer A. Pellowski, Craig R. Cohen, Sheri D. Weiser & Amy A. Conroy, *'I Found Out I Was Pregnant & I Started Feeling Stressed': A Longitudinal Qualitative Perspective of Mental Health Experiences Among Perinatal Women Living with HIV*, **AIDS and Behavior**, 25(12), 2021, 4154–4168.
- Tuthill, Emily L., Jennifer A. Pellowski, Sera L. Young & Lisa M. Butler, *Perinatal Depression Among HIV-Infected Women in KwaZulu-Natal South Africa: Prenatal Depression Predicts*

Lower Rates of Exclusive Breastfeeding, AIDS and Behaviour, 21(6), 2017, 1691–1698.

Ukaegbu, Enyinnaya, Raushan Alibekova, Syed Ali, Byron Crape & Alpamys Issanov, *Trends of HIV/AIDS Knowledge and Attitudes among Nigerian Women between 2007 and 2017 Using Multiple Indicator Cluster Survey Data*, **BMC Public Health**, 22(1), 2022, 440.

Do Not Copy, Lead City University, Nigeria

- Vasileiou, Konstantina, Julie Barnett, Susan Thorpe & Terry Young, *Characterising and Justifying Sample Size Sufficiency in Interview-Based Studies: Systematic Analysis of Qualitative Health Research over a 15-Year Period*, **BMC Medical Research Methodology**, 18(1), 2018, 1–18.
- Visalli, G, B Cosenza, F Mazzù, MP Bertuccio, P Spataro, GF Pellicanò, A Di Pietro, I Picerno & A Facciola, *Knowledge of Sexually Transmitted Infections and Risky Behaviours: A Survey among High School and University Students*, **Journal of Preventive Medicine and Hygiene**, 60(2), 2019, E84.
- Vos, Theo, Stephen S Lim, Cristiana Abbafati, Kaja M Abbas, Mohammad Abbasi, Mitra Abbasifard, Mohsen Abbasi-Kangevari, Hedayat Abbastabar, Foad Abd-Allah & Ahmed Abdelalim, *Global Burden of 369 Diseases and Injuries in 204 Countries and Territories, 1990–2019: A Systematic Analysis for the Global Burden of Disease Study 2019*, **The Lancet** 396(10258), 2020, 1204–1222.
- Waldron, Elizabeth M, Emily S Miller, Victoria Wee, Anne Statton, Judith T Moskwitz, & Inger Burnett-Zeigler. *Stress, Coping and the Acceptability of Mindfulness Skills among Pregnant and Parenting Women Living with HIV in the United States: A Focus Group Study*, **Health & Social Care in the Community**, 2022.
- Waldron, Elizabeth M., Inger Burnett-Zeigler, Victoria Wee, Yiukee Warren Ng, Linda J. Koenig, Aderonke Bamgbose Pederson, Evelyn Tomaszewski & Emily S. Miller, *Mental Health in Women Living With HIV: The Unique and Unmet Needs*, **Journal of the International Association of Providers of AIDS Care**, 20(1), 2021, 232595822098566.
- Walker, Annika L., Priya H. Peters, Susanne R. de Rooij, Jens Henrichs, Anke B. Witteveen, Corine J. M. Verhoeven, Tanja G. M. Vrijkotte & Ank de Jonge, *The Long-Term Impact of Maternal Anxiety and Depression Postpartum and in Early Childhood on Child and Paternal Mental Health at 11–12 Years Follow-Up*, **Frontiers in Psychiatry**, 11, 2020, 562237.
- Wang, Wei, Chenchang Xiao, Xing Yao, Yinmei Yang, Hong Yan & Shiyue Li, *Psychosocial Health and Suicidal Ideation among People Living with HIV/AIDS: A Cross-Sectional Study in Nanjing, China*, **PLOS ONE**, 13(2), 2018, e0192940.
- Wang, Yuan-Yuan, Jin Zhao, Qinge Zhang, Yan Zhang, Baolian Bai, Chee H Ng, Gabor S Ungvari, Fu-Jun Jia & Yu-Tao Xiang, *Prevalence of Depressive Syndrome and Their Association with Demographic and Clinical Characteristics in Chinese HIV Patients*, **AIDS Care**, 30(11), 2018, 1388–1392.
- Wang, Ziyi, Jiaye Liu, Huan Shuai, Zhongxiang Cai, Xia Fu, Yang Liu & Xiong Xiao, *Mapping Global Prevalence of Depression among Postpartum Women*, **Translational Psychiatry**, 11(1), 2021, 543.
- Wiyeh, Alison B, Ruth KB Mome, Phetole W Mahasha, Eugene J Kongnyuy & Charles S Wiysonge, *Effectiveness of the Female Condom in Preventing HIV and Sexually Transmitted Infections: A Systematic Review and Meta-Analysis*, **BMC Public Health**, 20(1), 2020, 1–17.
- Woollett, Nataly, Shenaaz Pahad & Vivian Black, *'We Need Our Own Clinics': Adolescents' Living with HIV Recommendations for a Responsive Health System*, **PLOS ONE**, 16(7), 2021, e0253984.





Xie, Jinzhao, Zixin Wang, Quanmin Li, Qiangsheng He, Guohong Xu, Yonghong Li, Kai Zhou, Linghua Li & Jing Gu, *Associations between Antiretroviral Therapy-Related Experiences and Mental Health Status among People Living with HIV in China: A Prospective Observational Cohort Study*, **AIDS Research and Therapy** 18(1), 2021, 60.

Do Not Copy, Lead City University, Nigeria

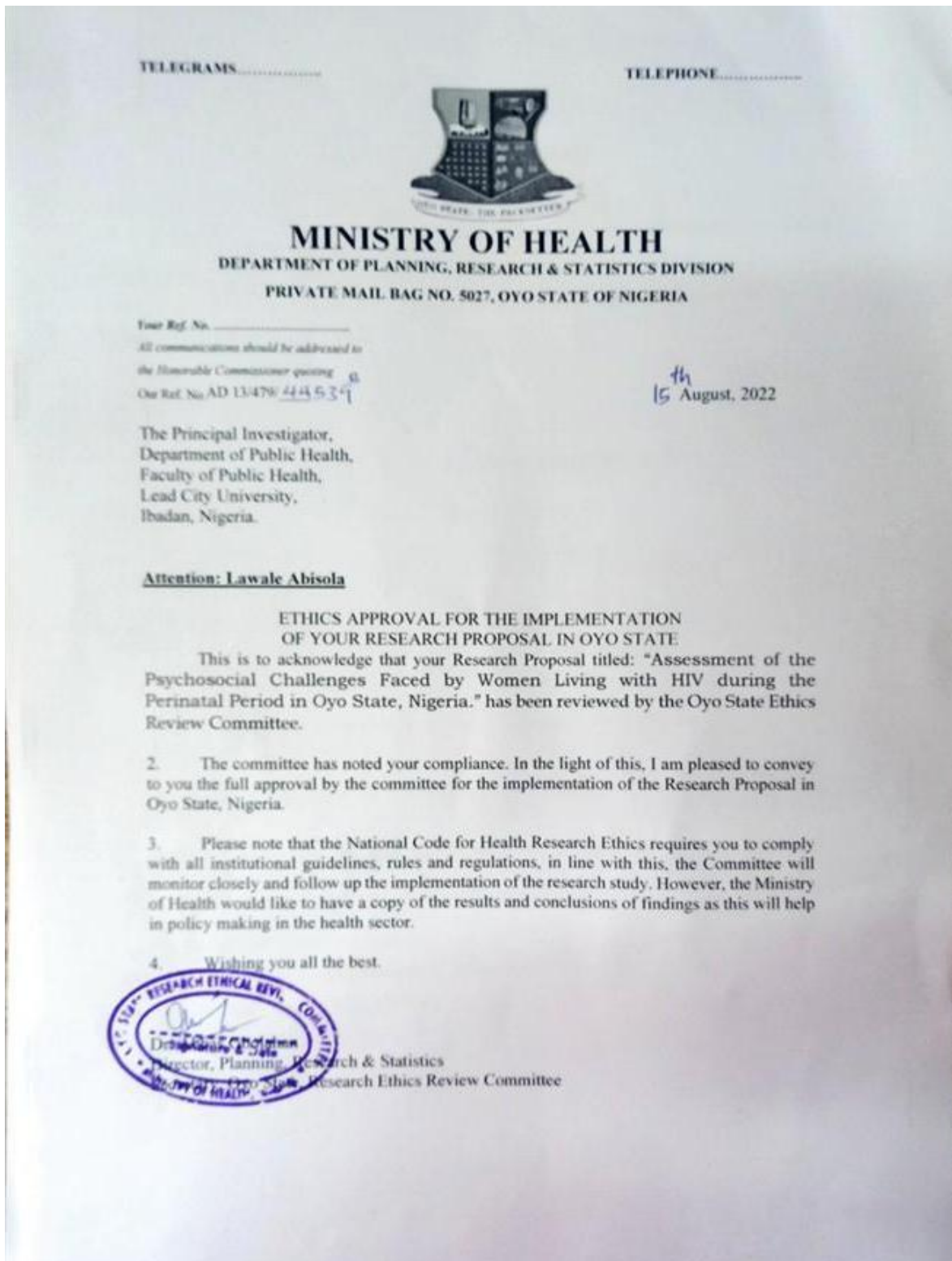
- Yator, Obadia, Muthoni Mathai, Tele Albert & Manasi Kumar, *Burden of HIV-Related Stigma and Post-Partum Depression: A Cross-Sectional Study of Patients Attending Prevention of Mother- to-Child Transmission Clinic at Kenyatta National Hospital in Nairobi*, **Frontiers in Psychiatry**, 11, 2021, 532557.
- Yin, Xiaoxv, Na Sun, Nan Jiang, Xing Xu, Yong Gan, Jia Zhang, Lei Qiu, Chenhui Yang, Xinwei Shi, & Jun Chang. *Prevalence and Associated Factors of Antenatal Depression: Systematic Reviews and Meta-Analyses*, **Clinical Psychology Review**, 83, 2021, 101932.
- Yousuf, Abdilahi, Ramli Musa, Muhammad Lokman Md. Isa & Siti Roshaidai Mohd Arifin, *Anxiety and Depression Among Women Living with HIV: Prevalence and Correlations*, **Clinical Practice and Epidemiology in Mental Health**, 16(1), 2020, 59–66.
- Yousuf, Abdilahi, Siti Roshaidai Mohd Arifin, Ramli Musa & Muhammad Lokman Md. Isa, *Depression and HIV Disease Progression: A Mini-Review*, **Clinical Practice and Epidemiology in Mental Health : CP and EMH**, 15, 2019, 153–159.
- Zakeyo, Karin & Mathew Nyashanu, *Exploring the Potential Causes of HIV Prevalence among Young Women in South Africa: A Critical Literature Review*, **International Journal of Human Rights in Healthcare**, 2021.
- Zhang, Han, Qi Zhang, Tingting Gao, Yixi Kong, Zeying Qin, Yueyang Hu, Ruilin Cao & Songli Mei, *Relations between Stress and Quality of Life among Women in Late Pregnancy: The Parallel Mediating Role of Depressive Symptoms and Sleep Quality*, **Psychiatry Investigation**, 16(5), 2019, 363–369.
- Zhu, Qi-Yu, De-Sheng Huang, Jian-Da Lv, Peng Guan & Xing-Hua Bai, *Prevalence of Perinatal Depression among HIV-Positive Women: A Systematic Review and Meta-Analysis*, **BMC Psychiatry** 19(1), 2019, 330.
- Zotova, Natalia, Itziar Familiar, Bienvenu Kawende, Fidele Lumande Kasindi, Noro Ravelomanana, Angela M. Parcesepe and Adebola Adedimeji, *HIV Disclosure and Depressive Symptoms among Pregnant Women Living with HIV: A Cross-sectional Study in the Democratic Republic of Congo*. **Journal of the International AIDS Society** 25, 2, 2022

Appendices

Appendix One: Ethical Approval from Lead City University Research Ethics Committee

	Lead City University (LCU) <i>Motto: Knowledge for Self-reliance</i> <i>Lagos - Ibadan Expressway, Toll Gate Area, Ibadan, Oyo State, Nigeria</i> <i>Email: lcu.hrec@lcu.edu.ng</i>	 NHREC
University Research Ethics Committee		
PROJECT TITLE:	ASSESSMENT OF THE PSYCHOSOCIAL CHALLENGES FACED BY WOMEN LIVING WITH HIV DURING THE PERINATAL PERIOD IN OYO STATE	
PROJECT NUMBER:	LCU-REC/22/125.	
<u>APPROVAL LETTER</u>		
<p>The above named proposal has been adequately reviewed; the protocol and safety guidelines satisfy the conditions of LCU-REC policies regarding experiments that use human subjects.</p> <p>Therefore, the study under its reviewed state is hereby approved by the LCU - Research Ethics Committee.</p>		
<i>Prof. Olusola Ladokun</i>	
<i>Name of LCU-REC Chairman</i>	<i>Signature of LCU-REC Chairman</i>	
Dr. Folahanmi Akinsolu	
<i>Name of LCU-REC Secretary</i>	<i>Signature of LCU-REC Secretary</i>	
This approval is given with the investigator's Declaration as stated below;		
By signing below I agree/certify that:		
<ol style="list-style-type: none">1. I have reviewed this protocol submission in its entirety and that I am fully cognizant of, and in agreement with all submitted statements.2. I will conduct this research study in strict accordance with all submitted statements except where a change may be necessary to eliminate apparent immediate hazard to a given research subject.<ul style="list-style-type: none">• I will notify the REC promptly of any change in research procedures necessitated in the interest of the safety of a given research subject.• I will request and obtain REC approval of any proposed modification to the research protocol or informed consent document(s) prior to implementing such modifications.		

Appendix Two: Ethical Approval from Oyo State Ministry of Health Research Ethics Committee



Appendix Three: Information Sheet and Consent Form



Lead City University (LCU)

Faculty of Public Health

Department of Public Health

Motto: Redefining Health

Lagos-Ibadan Express way, Toll Gate Area.

P.O. Box 30678, Secretariat, Ibadan Oyo State Nigeria. Tel: 02-7510682



INFORMED CONSENT FORM

This informed consent form is for women living with HIV aged 18 years and above, that are pregnant or have been pregnant within the last two years participating in the research titled “Assessment of the psychosocial challenges faced by women living with HIV during the perinatal period in Nigeria.”

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

.....
.....
.....

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

PART 1: INFORMATION SHEET

My name is And presently, I am an MPH student from the Department of Public Health, Lead City University, Ibadan. I am conducting a study to explore the Psychosocial challenges and experiences of Women Living with HIV during their perinatal period in Ibadan, Nigeria.

The study requires you to complete a demographic sheet as well as questionnaires (Edinburgh Postnatal Depression Scale for measuring depressive symptoms and Perceived Stress Scale for measuring perceived stress questionnaire). You would also take part in an in-depth (one-to- one) interview to discuss your psychosocial experiences as a woman living with HIV during pregnancy and early motherhood. The interview will last for about one hour and will be recorded if permitted in order for me to have a record of what has been discussed.

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 and I will definitely take my time to explain to the best of your understanding.

PURPOSE OF THE RESEARCH

The purpose of this study is to gain an understanding of the mental health and social needs of Women living with HIV/AIDS by exploring their psychosocial challenges and experiences; and also, by examining how sociodemographic factors (i.e., age, religion, occupation, annual income, educational status, and marital status) affect the relationship between perceived stress and depression in women living with HIV during the perinatal period.

PARTICIPANT SELECTION

I am inviting Women who are pregnant or have been pregnant within the last 2 years, HIV-positive and aged 18 years and above attending antenatal clinics that provide antiretroviral therapy (ART) services for prevention of mother to child transmission (PMTCT) of HIV located in Ibadan, Nigeria.

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.

DURATION

The research takes place over a period of 2 months in total. During that time, you will be required to answer a questionnaire survey after which you may be required to participate in the one-on-one in-depth interview.

RISKS

There are no known physical risks to participating in the study. Emotional upset while completing the questionnaires or in-depth interview might be a possibility.

BENEFITS

There may not be any immediate and direct benefit for you but your participation is will hopefully help to provide valuable information to public health policy makers in Ibadan which can bring about improvement in the healthcare given to women living with HIV in Ibadan, Nigeria. This study has the potential of bringing about development of public health initiatives aimed at improving the mental health of women living with HIV which will hopefully bring about improvement in their general wellbeing.

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.

SHARING THE RESULTS

The result of the questionnaires and transcripts will be reported in my MPH thesis which will be submitted to the Lead City University. A short summary leaflet of the result will be made available for participants who are interested in receiving it. Only what is permitted by law and research ethics will be shared. In any sort of report that might be published, I will not include any information that will make it possible to identify a participant.

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 either myself or my supervisor with your questions or concerns. Our telephone numbers are listed below. Ask questions as often as you want

.....

.....

.....

Do Not Copy, Lead City University, Nigeria

**INFORMED CONSENT FORM FOR STUDY PARTICIPANTS ON
PSYCHOSOCIAL CHALLENGES AND EXPERIENCES OF WOMEN LIVING
WITH HIV DURING THEIR PERINATAL PERIOD 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

Do Not Copy, Lead City University, Nigeria

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. Participants will be asked to fill a questionnaire survey to explore their challenges as perinatal women living with HIV.
2. There will be in-depth interview to explore their individual experiences
3. The interview 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

Do Not Copy, Lead City University, Nigeria

Appendix Four: Study Questionnaire

LEAD CITY UNIVERSITY, IBADAN DEPARTMENT OF PUBLIC HEALTH QUESTIONNAIRE SUREVEY

Dear Respondents,

I am an MPH student from the Department of Public Health, Lead City University, Ibadan. I am conducting a study to explore the psychosocial challenges and experiences of women living with HIV during their perinatal period in Oyo State, Nigeria. All information provided within the questionnaire will be treated with the utmost confidentiality. **Section A: Socio-demographic Information**

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 () Casual () None ()
 7. Do you know your partners status: Yes () No ()
 8. If yes: Positive () Negative ()
 9. Employment status: Unemployed () Employed ()
 10. What is your monthly income?
 <20,000
 20,000 – 30,000
 31,000 – 40,000
 41,000 – 50,000
 >51,000
 11. In what year did you first **test positive** for HIV?
 12. Are you taking antiretroviral drugs? Yes () No ()
 13. How long have you been on ARVS:.....
 14. Number of Children after learning about HIV Status _____
-

Section B: Psychological Assessment

Edinburgh Depression Scale

15. 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
16. 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
17. I have blamed myself unnecessarily when things went wrong
- Yes, most of the time
 - Yes, some of the time
 - Not very often
 - No, never
18. I have been anxious or worried for no good reason
- No, not at all
 - Hardly ever
 - Yes, sometimes
 - Yes, very often
19. I have felt scared or panicky for no very good reason
- Yes, quite a lot
 - Yes, sometimes
 - No, not much
 - No, not at all
20. 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
21. 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

22. I have felt sad or miserable
- Yes, most of the time
 - Yes, quite often
 - Not very often
 - No, not at all
23. I have been so unhappy that I have been crying
- Yes, most of the time
 - Yes, quite often
 - Only occasionally
 - No, never
24. The thought of harming myself has occurred to me
- Yes, quite often
 - Sometimes
 - Hardly ever
 - Never

Perceived Stress Scale

The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.

For each question choose the most appropriate of the alternatives.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
25. In the last month, how often have you been upset because of something that happened unexpectedly?					
26. In the last month, how often have you felt that you were unable to control the important things in your life?					
27. In the last month, how often have you felt nervous and stressed?					
28. In the last month, how often have you felt confident about your ability to handle your personal problems?					
29. In the last month, how often have you felt that things were going your way?					
30. In the last month, how often have you found that you could not cope with all the things that you had to do?					
31. In the last month, how often have you been able to control irritations in your life?					

32.	In the last month, how often have you felt that you were on top of things?					
33.	In the last month, how often have you been angered because of things that					
	happened that were outside of your control?					
34.	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

Section C: Lifestyle/Behavioral

Alcohol Use

- 35. Have you ever consumed any alcohol such as Beer, wine and spirits? Yes Currently () Yes Stopped () Never ()
- 36. Have you consumed any alcohol within the past 12 months Yes () No ()
- 37. If yes(Currently), indicate how often you consume alcohol Always () Often () Sometimes () Rarely () Never ()
- 38. If yes but stopped, state how often you consumed alcohol prior. Always () Often () Sometimes () Rarely () Never ()

Tobacco Use

- 39. 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:.....
- 40. During the past one month did someone smoke in your home, workplace or surrounding. Yes () No ()

Section D: Social Support and Obstetric Factors

- 41. How do you relate with your sexual partner?
 - a. He is caring
 - b. He supports my baby with everything
 - c. He does not provide food
 - d. Does not stay with me
- 42. Status disclosure to partner Yes () No ()
- 43. if yes to 42, did you have conflict with partner Yes () No ()
- 44. Receives adequate support from family and friends Yes () No ()
- 45. Are you pregnant Yes () No ()
- 46. If yes to 45, is a planned pregnancy Yes () No ()
- 47. If yes to 45, Gestational age
 - 5-13 weeks

- 14-28 weeks
- 29-40 weeks
- >40 weeks

48. Have you faced problems in previous pregnancy Yes () No ()

THANK YOU FOR YOUR HELP.

Do Not Copy, Lead City University, Nigeria

Appendix Five: Interview Guide

LEAD CITY UNIVERSITY, IBADAN

DEPARTMENT OF PUBLIC HEALTH

INTERVIEW TOPIC GUIDE

Introduction to research

Hello. My name is _____ and I am doing a study looking at what problems affect a woman's mind and emotional health during and after pregnancy for my MPH Thesis at Lead City University. Big changes in life can be hard for some people, and some women go through changes in how they think, feel, or look. I want to know about how you felt during and after your pregnancy. The information from this study will be used to help HIV-positive women have healthy pregnancies. I have a lot of questions, but I'm especially interested in what you think, so anything you say will help. This interview is casual, like a conversation, and everything you say to me will stay between us. There is no right or wrong answer; we just want to hear about your own experiences. As we discussed, our interview will be audio recorded. This way, we can speak freely and I will not forget the things you tell me. No one other than the myself and my supervisor will be able to listen to the recording, and it will be deleted when we have finished the study.

As a reminder, you are not required to answer the questions and may skip any questions that you do not want to answer.

Do you have any questions before we begin the interview?

Now, I would like to ask you some questions about your experiences. Specifically, I would like to hear about your most recent pregnancy.

Topics and Main Questions	Probes
1. Please think back to before you got pregnant – what were your thoughts about getting pregnant at that time?	Plans for pregnancy, desires for pregnancy, expectations will be explored
2. How do you think your partner felt about your getting pregnant?	Her perceptions of his plans for pregnancy, desires for pregnancy and expectations will be explored

	<i>Whether partner knew her HIV status around the time she got pregnant and how HIV may have affected his thinking will be explored. The partner's HIV status will be explored as well.</i>
3. After you discovered you were pregnant, how did you feel about the pregnancy?	How did your thoughts and feelings about the pregnancy change over time?
4. How did you feel during your most recent pregnancy? I am interested in things that affected your mind.	<p>Feelings (both positive and negative) and experiences will be explored</p> <p><i>If relevant to depression, the participant will be probed further for emotional & somatic symptoms.</i></p> <p><i>Symptoms of depression may include fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty</i></p> <p>The participant will be asked, -what were some of the challenges you faced?!</p> <p>For each feeling, the participant will be probed further (if needed):</p> <ul style="list-style-type: none"> • Can you tell me more about this? • Why do you think you felt this way? • How did this affect your daily life? • <i>If symptoms were problematic</i>, How did you try to fix or get help for this problem? • How was this different from your other pregnancies?

Now I'm going to ask questions about the first six months after your most recent pregnancy. Again, I am interested in your emotional experiences and thoughts or things that affected your mind.

<p>5. <i>[For women who have had a livebirth. This question will be skipped for women with other pregnancy outcomes.]</i> Tell me a little about your child and how he/she is doing.</p>	<p>Has your child been tested for HIV?</p> <p><i>If yes, Can you tell me a little about that?</i></p> <p>How did you feel about going for testing?</p> <p>What was the result?</p> <p>How did it feel to learn this result?</p> <p>Did you tell anyone else about this result?</p> <p><i>If not, explore why not.</i></p>
<p>6. How did having this [pregnancy outcome] affect your life?</p>	<p>Explore at personal level, family level and perceptions of community.</p> <p>Explore for positive changes and experiences and negative experiences as well</p>

Thank you so much for sharing this information about your life, I know many of these questions are personal, but everything you share is confidential.

So, I understand... *(Summary of major points of what she has said).*

As a reminder, we're interested in learning about the changes in women's thoughts, emotions, and body that occur during and after pregnancy. We are almost done with our interview. Before we finish, is there anything else you believe is important for me to know?

After a response from the participant:

Thank you for your time and honesty. Your participation is a big help to us.

Biodata

A Personal Data

Name: Lawale Abisola Adedamola
Home Address: 2, Soremekun Close, Adigbe, Abeokuta, Ogun State
Email Address: abisola.lawale@gmail.com
Phone Number: 09136895401, 07066786768
Date of Birth: November 10th, 1999,
Place of Birth: Ogun State
Nationality: Nigerian
Marital Status: Single
Next of Kin: Lawale Ayomide Adedolapo
Address of Next of Kin: 2, Soremekun Close, Adigbe, Abeokuta, Ogun State

B. Educational Background with Dates

Educational Institutions Attended with Dates and Qualifications:

Primary School Leaving Certificate Lawson International Private School, Abeokuta.	2004-2009
West African Senior School Certificate Alaba Lawson Royal College, Abeokuta.	2009-2015
Bachelor of Science; (Biochemistry) Bowen University, Iwo.	2015-2019
Master of Public Health Lead City University, Ibadan.	2021-Present

C. Work Experience with Dates

Lead City University **April 2021 – Present**
Laboratory Technologist

- Supporting the work of instructors in classes and laboratory sessions and giving technical advice to staff and students.
- Running trials of experiments prior to classes and demonstration of techniques for experiments.

- Working with individual students and supporting them on research projects.
- Ensuring all health and safety procedures are understood and enforced

Anadach Consulting Limited, Lagos

January 2021- June 2021

Consultant (Part Time)

- Anadach Team Representative For USAID/Nigeria Tuberculosis Local Organization Network (TB-LON) Project in Ogun State.
- Conducted meetings with clients to determine project intent, requirements and budgets.
- Compiled research data and gave professional presentations highlighting finds and recommended optimizations.
- Provided outstanding service to clients to maintain and extend relationships for future business opportunities.

De United Food Industries Limited, Ota

January 2020- October 2020

Quality Assurance Intern

- Identified and tracked defects in products and supported in resolving problems by completing additional tests contributing to a decrease in defective products.
- Created and achieved product quality objectives and met product specifications.
- Gathered data on product issues and vulnerabilities and reported all findings including improvement recommendations

FUNAAB Biotechnology Centre, Abeokuta

May 2018-September 2018

Student Laboratory Assistant

- Cleaned and sanitized equipment and workstation in compliance with health and safety regulations.
- Demonstrated competence in collecting lab samples for testing.
- Properly calibrated and adjusted equipment to achieve precise test results.
- Created and updated record of all supplies and equipment to monitor inventory.

D. Publications

Nil

Dissertations

- Effect of Acetic Acid-Induced Ulcerative Colitis on the Cognitive Behaviour of Wistar rats. (B.Sc. thesis), an unpublished B.Sc. dissertation submitted to the Department of Biochemistry, Bowen University, Iwo. July 2019.

Conference Presentations

- **LAWALE A. Adedamola**, BANKOLE A. Samuel, ADEOYE Enitan, ADEGBITE O. Zainab, RASHEED Abdul Aziz, BULUS-EJOGA Afiniki, ADEWOLE E. Ifeoluwa, AKINSOLU T. Folahanmi Psychological Challenges experienced by Women Living with HIV during the perinatal period in Ibadan, Nigeria. Faculty of Natural and Applied Science

Abstracts. Poster presentation delivered at the FASCON 3rd international conference, Lead City University Ibadan, Ibadan, Oyo State. November 2022.

- BANKOLE A. Samuel, **LAWALE A. Adedamola**, ADEOYE Enitan, ADEGBITE O. Zainab, ADEWOLE E. Ifeoluwa, RASHEED Abdul Aziz, BULUS-EJOGA Afiniki, AKINSOLU T. Folahanmi Psychological Well-being and Adherence to Antiretroviral Therapy Among Women Living with HIV in Ibadan, Nigeria. Faculty of Natural and Applied Science Abstracts. Poster presentation delivered at the FASCON 3rd international conference, Lead City University Ibadan, Ibadan, Oyo State. November 2022.
- ADEGBITE O. Zainab, BANKOLE A. Samuel, ADEWOLE E. Ifeoluwa, **LAWALE A. Abisola**, RASHEED Abdul Aziz, ADEOYE Enitan, BULUS-EJOGA Afiniki, ADEGBITE B. Saidat, AKINSOLU T. Folahanmi Contraceptive Use among Sexually Active Women living with HIV in Ibadan, Oyo State, Nigeria. Faculty of Natural and Applied Science Abstracts. Poster presentation delivered at the FASCON 3rd international conference, Lead City University Ibadan, Ibadan, Oyo State. November 2022.

Conferences Attended-

- Attended and completed the Faculty of Natural and Applied Science (FASCON) 3rd International Conference at Lead City University, Ibadan. Themed: Translation Research in Science and Technology for Sustainable Development Circa COVID-19 Era

Extra-Curricular Activities:

Reading and Writing.

Name and Address of Referee:

Prof. Adewale Dipeolu

Federal University of Agriculture Abeokuta

+234 8033181553

Signature

Date

The University Compliance Certification

This is to certify that this thesis by Abisola Adedamola LAWALE, with Matric No. LCU/PG/002234 in the Department of Public Health, Faculty of Basic Medical and Health Sciences, Lead City University , Ibadan is in full compliance with the approved University format.

Signature

Date

Do Not Copy, Lead City University, Nigeria

ORIGINALITY REPORT

23% SIMILARITY INDEX	22% INTERNET SOURCES	10% PUBLICATIONS	8% STUDENT PAPERS
--------------------------------	--------------------------------	----------------------------	-----------------------------

PRIMARY SOURCES

1	hdl.handle.net Internet Source	6%
2	uobrep.openrepository.com Internet Source	4%
3	www.mdpi.com Internet Source	2%
4	Rada K. Dagher, Hannah E. Bruckheim, Lisa J. Colpe, Emmeline Edwards, Della B. White. "Perinatal Depression: Challenges and Opportunities", Journal of Women's Health, 2021 Publication	2%
5	aidsrestherapy.biomedcentral.com Internet Source	1%
6	bmcpregnancychildbirth.biomedcentral.com Internet Source	1%
7	journals.plos.org Internet Source	1%
8	theses.whiterose.ac.uk Internet Source	