



**THE UNIVERSITY OF ZAMBIA
SCHOOL OF NURSING SCIENCES
DEPARTMENT OF MIDWIFERY, WOMEN'S AND CHILD HEALTH**

**HIV DIAGNOSIS DURING PREGNANCY: STRESS, COPING STRATEGIES AND
EXPERIENCES OF WOMEN AT SELECTED HEALTH FACILITIES IN LUSAKA
DISTRICT, ZAMBIA**

BY

BRENDA NAMBALA SIANCHAPA (MSc, BSc, RM, RN)

**Thesis submitted in fulfilment of the requirements for the award of a Doctor of
Philosophy in Midwifery Degree of the University of Zambia**

UNIVERSITY OF ZAMBIA

LUSAKA

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Declaration

I, Brenda Nambala Sianchapa, hereby declare that the work presented in this study for the Doctor of Philosophy Degree in Midwifery has not been presented for any other Degree, in whole or in part, and is not currently being submitted for any other Degree.

Signed: _____ Date: _____

Candidate

Approved

Signed: _____ Date: _____

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Certificate of Approval

This thesis by Brenda Nambala Sianchapa has been approved as partial fulfilment of the requirement for the award of the Doctor of Philosophy in midwifery of the University of Zambia.

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Abstract

Background: A diagnosis of HIV usually causes stress in the affected individual because of its lack of cure. In an effort to eliminate mother-to-child transmission (eMTCT) of HIV, pregnant women have to undergo HIV testing during antenatal care. Pregnancy is a sensitive and stressful state as the body of the pregnant woman has to make adjustments throughout in order to maintain the pregnancy and prepare for labour and delivery; and the puerperium. A diagnosis of HIV during pregnancy therefore adds on to this stress. A pregnant woman who is diagnosed HIV positive requires assistance in order to cope positively with the HIV diagnosis and its effects. When positive coping strategies are used, the levels of stress begin to dissipate.

Study aim: The study aimed to ascertain the stress levels, coping strategies and experiences of women diagnosed HIV positive during pregnancy at selected Health facilities in Lusaka district, Zambia

Methods: A longitudinal mixed methods design was used to collect panel data in 3 stages. Stage 1 of the study was done during the participants's second antenatal visit at around 14-20 weeks gestation, stage 2 was done at around 28-32 weeks' gestation and stage 3 was done at six weeks postdelivery. The quantitative arm used a longitudinal analytical design, while the qualitative arm used a descriptive cross-sectional design. The study population were pregnant women who tested HIV positive for the first time during their current pregnancy, and 100% enumeration was used to select 110 participants for the quantitative data, and out of these, purposive sampling was employed to select 17 participants, for the qualitative data collection. The Perceived Stress Scale (PSS) and Coping Strategy Indicator (CSI) were used to collect quantitative data on the levels of stress and the coping strategies used respectively. The stress levels were measured during all the 3 stages of the study and the coping strategies were categorised during stage 2 and 3 of the study. Stress levels were categorised into high, moderate or low, while coping strategies were either problem focused or emotion focused. The problem focused coping was subdivided into problem focused (problem solving) and problem focused (seeking social support). Quantitative data analysis was conducted using the Statistical Package for Social Sciences (SPSS) Version 26. Descriptive statistics were used to report participants' demographic characteristics as well as the levels of stress and coping strategies that they used at each assessment period. A Wilcoxon matched pairs signed rank test tested for differences in stress levels at Stages 1 and 2 of the study, and Kruskal-Wallis test determined the relationship between the coping strategy used and the stress levels. Post hoc comparisons were conducted

using Mann-Whitney tests to compare the differences in stress levels among the coping strategies that were used. Qualitative data were collected using a semi structured interview schedule during stage 3 of the study and were analysed manually, using the Braun and Clarke 6-phase coding framework for thematic analysis, which included; familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up.

Findings: The major findings revealed that 57.3%, 65.6%, and 37.5% of the participants had moderate levels of stress at stages 1, 2 and 3 of the study respectively. This was followed by those who had high levels of stress (26.4%, 14.4 and 12.5%) at stages 1, 2 and 3 of the study respectively. Over half (54.5 and 62.5%) of participants utilised problem focused (problem solving) coping strategy at stages 2 and 3 of the study respectively. There was a statistically significant median difference between the perceived stress scale (stage 1) and perceived stress scale (stage 2). We therefore rejected the null hypothesis and concluded that the difference between the rank totals of 34.91 (A), 30.71 (B) and 46.43 (C) were significant, $H(2, n=73)=6.75, p=.034$. There was a statistically significant association between the coping strategy and the levels of stress at stage 2 of the study ($p=.001$). Post hoc comparisons were conducted using Mann-Whitney tests with a Bonferroni adjusted alpha level of .016 (0.05/3). The difference between the Problem solving group and the seeking social support group was statistically significant ($z=-21.252, p=.002$), Problem solving group and Emotion focused group ($z=-33.327, p=.001$). Kruskal Wallis test revealed a statistically significant association between stress levels and Health facility at Stage 1 ($p=.038$). Post hoc comparisons using Mann-Whitney tests with a Bonferroni adjusted alpha level of .016 (0.05/3) were conducted and revealed a statistically significant difference between the Kanyama and the George group ($z=24.638, p=.038$). There was also a statistically significant association between participant's age and stress levels at both stage 1 and 2 of the study ($U=627.000, p=.012$ at stage 1 and $U=498.500, p=.015$ at stage 2). Thematic analysis was conducted on qualitative data and 8 themes emerged which explained the participants' experiences. Among them were; stress of an HIV diagnosis, ART adherence, disclosure of an HIV diagnosis, staff behaviour, mother baby interaction, and resilience and moving on.

Conclusion: The study revealed that women who are diagnosed with HIV during pregnancy experience stress, and the coping strategy that they utilise determines the increase or reduction of the stress levels. The study recommends the use of the Perceived Stress Scale, and Coping Strategy Indicator at every antenatal and postnatal visit for women diagnosed HIV positive during pregnancy. This will help to identify those who are stressed and enable individualised

care to help them to cope; and those using maladaptive coping, to help them employ coping strategies that can help them deal with the stress.

Key words: stress, HIV diagnosis in pregnancy, coping strategy, mother-baby bonding

Dedication

This work is dedicated to my late parents, Mr Elijah Maabu Nambala, and Mrs Rebecca Maabu who inculcated in me the principles of honesty and hard work for excellency in life, my husband, Josephat Sianchapa and children; Choolwe, Lweendo, Luyando and Mutinta who have been my support and source of inspiration, the Midwifery profession and women who have experienced obstetrical conditions and complications.

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Apart from my supervisors, I extend my gratitude to all the Lecturers in the School of Nursing Sciences for their encouragement and advice at various stages of my study. I sincerely thank Dr. Sebean Mayimbo, Dr. Maureen Masumo, Dr. Marjorie Kabinga-Makukula, and Dr. Dorothy Chanda for the encouragement to forge ahead. I thank my fellow PhD candidates for their support, for listening to my presentations at various stages and for encouraging me; Mr Emmanuel Musenge, Mrs. Mwaba Siwale, Mr. Fabian Chapima and Ms Mutinke Zulu. I thank Mr Michael Kanyanta for his input during my presentations.

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Table of Contents

Declaration.....	i
Copyright.....	ii
Certificate of Approval.....	iv
Abstract.....	v
Dedication	viii
Acknowledgement	ix
List of Figures.....	xiv
List of Tables	xv
List of Abbreviations	xvi
Preface.....	xviii
Scope of the study.....	xviii
Structure of the thesis.....	xix
Motivation for the study	xx
CHAPTER ONE: INTRODUCTION	1
1.1 Overview	1
1.2 Background	1
1.3 Problem statement	4
1.4 Study Justification	5
1.5 Theoretical Framework.....	6
1.6 Research Questions.....	10
1.7 Research objectives.....	10
1.7.1 General objective.....	10
1.7.2 Specific Objectives	10
1.8 Research hypotheses	10
1.9 Definitions of Variables	11
1.9.1 Conceptual definition of variables.....	11
1.9.2 Operational Definition of variables	11
1.10 Variables and cut-off points.....	12
CHAPTER TWO: LITERATURE REVIEW	13
2.1. Introduction.....	13
2.2 Overview of HIV diagnosis during pregnancy and Coping Strategies used by Women	13
2.3 Stress, ART adherence, mother-baby bonding and IPV in women diagnosed with HIV during pregnancy	15
2.3.1 Stress in women diagnosed with HIV during pregnancy	15
2.3.2 ART Adherence in women diagnosed with HIV during pregnancy.....	19

2.3.3 Mother Baby Bonding in women diagnosed HIV positive during pregnancy	23
2.3.4 Intimate Partner Violence (IPV) and coping with an HIV diagnosis during pregnancy	24
2.4 Coping Strategies used by Women Diagnosed with HIV during Pregnancy.....	27
2.4.1 The effect of psychosocial, spiritual and medical support on women’s coping with an HIV diagnosis	30
2.4.2 Physiological Health and its Effects on Coping with an HIV Diagnosis during Pregnancy	33
2.5 Conclusion	34
CHAPTER THREE: METHODOLOGY	35
3.1 Introduction	35
3.2 Research paradigm	35
3.3 Research design.....	41
3.4 Stages of the study.....	43
3.5 Study setting	44
3.6 Study population	44
3.6.1 Target population.....	45
3.6.2 Accessible population.....	45
3.7 Sample selection	45
3.8 Sample size.....	46
3.8.1 Inclusion criteria	47
3.8.2 Exclusion criteria	47
3.9 Data collection tool.....	47
3.9.1 Quantitative data.....	48
3.9.2 Qualitative data	49
3.10 Data collection technique.....	50
3.10.1 Quantitative data.....	50
3.10.2 Qualitative data	51
3.11 Validity and reliability of quantitative data	52
3.11.1 Validity	52
3.11.2 Reliability.....	53
3.12 Trustworthiness of the qualitative data and the ensuing analysis	53
3.12.1 Credibility of the data and their conclusions.....	53
3.12.2 Dependability.....	54
3.12.3 Confirmability	55
3.12.4 Transferability	55
3.13 Pre-test of the study	55

3.14 Data processing and analysis	56
3.14.1 Quantitative data.....	56
3.14.2 Qualitative data	57
3.15 Ethical and cultural consideration	60
CHAPTER FOUR: RESULTS	63
4.1 Introduction.....	63
4.2 Quantitative results.....	63
4.2.1 Demographic characteristics of the participants	63
4.2.2 Levels of stress at stages 1 to 3 of the study	65
4.2.3 Coping strategies utilised by the participants	66
4.2.4 Relationship between coping strategy and levels of stress.....	68
4.2.5 Relationship between levels of stress and demographic variables.....	70
4.3 Qualitative results	73
4.3.1 Demographic characteristics of the participants	74
4.3.2 Stress levels for stage 3	75
4.3.3 Coping strategies for stage 3	76
4.3.4 Experiences of women diagnosed HIV positive during pregnancy	76
4.4 Summary.....	101
CHAPTER FIVE: DISCUSSION OF RESULTS	103
5.1 Introduction.....	103
5.2 Demographic characteristics.....	104
5.3 Stress in women diagnosed with HIV during pregnancy	109
5.4 Coping strategies used by women diagnosed HIV positive during pregnancy.....	113
5.5 Experiences of women diagnosed HIV positive during pregnancy	116
5.6 Experiences with mother baby bonding.....	125
5.7 Strengths of the study	128
5.8 Limitations of the study	129
CHAPTER SIX: IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS	130
6.1 Contributions of the current study	130
6.2 Implications of the study	130
6.3 Conclusions.....	131
6.4 Recommendations	132
6.4.1 Recommendations for future research.....	133
6.5 Dissemination and utilisation of the study findings.....	134
6.6 Reflection on my Doctoral journey.....	134
Appendix 1: Research Budget.....	137

Appendix 2: References	139
Appendix 3: Participant Information Sheet	165
Appendix 4: Statement of Consent/Assent.....	170
Appendix 5: Data Collection Instruments	171
Appendix 6: Translated Tools.....	189
Appendix 7: Permission Letters.....	206
Appendix 8: National Health Research Authority researcher registration certificate.....	208

List of Figures

Figure 1: Conceptual framework	9
Figure 2: Mixed methods triangulation design: convergence model (Creswell and Plano -Clarke, 2007)	43
Figure 3: 6 -step thematic analysis (adapted from Clarke and Braun, 2013)	59
Figure 4: Independent samples Kruskal Wallis test	72
Figure 5: Pairwise comparisons of health facility	73

List of Tables

Table 1: Variables and cut-off points	12
Table 2: Research paradigms, adapted from Crotty, 1998, Scotland, 2012, Dawadi, 2021	38
Table 3: The Major Mixed Methods Design Types, adapted from Creswell, 2007	42
Table 4: Demographic characteristics of participants	65
Table 5: Levels of stress	66
Table 6: Coping strategies utilized stage 2 and 3 of the study	67
Table 7: Cross tabulation between levels of stress at stage 1 and stage 2	68
Table 8: Relationship between coping strategy and stress levels	69
Table 9: Pairwise comparisons of coping strategy.....	69
Table 10: Summary Kruskal Wallis Test Results on Demographic Variables	71
Table 11: Pairwise comparisons of Health Facility.....	72
Table 12: Relationship between age and levels of stress	73
Table 13: Demographic characteristics of participants at stage 3.....	75
Table 14: Stress levels for participants at stage 3.....	76
Table 15: Coping strategies utilised at stage 3	76
Table 16: Thematic framework	77
Table 17: Gantt chart	136

List of Abbreviations

AIDS- Acquired Immunodeficiency Syndrome

ANC- Antenatal care

APA- American Psychological Association

ARV- antiretroviral medication

ART- Antiretroviral therapy

CDC- Centres for Disease Control and Prevention

CRH- Corticotrophin Releasing Hormone

CSI- Coping Strategy Indicator

CSO- Central Statistics Office

eMTCT- elimination of Mother –to-Child Transmission of HIV

HIV- Human Immunodeficiency Virus

HIMS- Health Information Management systems

IPV- Intimate Partner Violence

LDHO- Lusaka District Health Office

MCH- Maternal and Child Health department

MoH- Ministry of Zambia

NHRA- National Health Research Authority

PMTCT- Prevention of Mother-to-Child Transmission of HIV

PPTCT- Prevention of Parent –to-Child Transmission of HIV

PSS- Perceived Stress Scale

SDGs- Sustainable Development Goals

SES- Socioeconomic Status

UNZABREC- University of Zambia Biomedical Research Ethics Committee

VCT- Voluntary Counselling and Testing

VL- Viral load

WHO- World Health Organization

ZSA- Zambia Statistical Agency

Preface

Scope of the study

This study measured the levels of stress in women who were diagnosed with the Human Immunodeficiency (HIV) virus during their pregnancy, and also categorised the coping strategies that they used. The study further explored the experiences that these women went through as a result of their HIV diagnosis during pregnancy, and their experiences with mother-baby bonding. Data were collected during the women's Antenatal and Postnatal care visits for a period of eleven months from March, 2022 to January, 2023 at Chilenje and Kanyama Level 1 Hospitals and also at George clinic. The women who were enrolled into the study were followed up at intervals until their sixth week postnatal care visit. Data were always collected after all the examinations and investigations of the particular clinic visit had been completed. The women were accorded their full package of antenatal and postnatal care services which included checking of their vital signs, laboratory investigations which included Full Blood Count and Viral Load estimation, and the antenatal and postnatal physical examinations.

The Perceived Stress Scale was used to measure the levels of stress that the women were experiencing, and the Coping Strategy Indicator was used to categorise the strategies that women used to cope with the stress and other effects of being diagnosed with HIV during pregnancy.

The conceptual framework was obtained from literature and explained the primary and secondary appraisal of the challenging reality of being diagnosed with HIV during pregnancy, further explaining how the women attempted to cope with the challenge, and the resistant resources that were employed in trying to cope with the situation.

Structure of the thesis

This report consists of six chapters which cover the effects of an HIV diagnosis made during pregnancy and the coping strategies that were used at selected Health facilities in Lusaka District.

Chapter one is the introduction to the study which details the background, problem statement, study justification and the theoretical framework that guided the study. In this same chapter, the research question, the study objectives for which the study was conducted are also mentioned, as well as what the study hypothesised. The variables are listed and defined in the same chapter.

Chapter two reviews literature on the similar studies that had already been conducted. All studies from the local, regional, and global contexts were considered. Both printed and online resources were used.

The third chapter explains the research paradigm and methodology that were employed in the study. The research setting was described in detail to ensure transferability of the qualitative part of the study. The data collection instruments and technique are detailed in this chapter, as well as the Ethical considerations that were made during the study.

Chapter 4 analyses and discusses the study findings for both the quantitative and qualitative parts of the study. The quantitative and qualitative parts were analysed and presented separately.

In chapter five, the study findings are discussed and meaning is attached to them, by also comparing them to the findings of other similar studies. In this chapter, the quantitative and qualitative findings are triangulated, with the qualitative findings providing meaning and explanations for the stress levels and coping strategies that women used.

Chapter six provides the conclusions that were made having conducted, analysed and discussed the findings. The implications of the study are discussed as well as the necessary recommendations to assist women to cope with an HIV diagnosis made during pregnancy and hence reduce their stress levels and the other effects of an HIV diagnosis that is made during pregnancy. Recommendations for future research to improve these study findings are also highlighted.

Motivation for the study

I am a nurse midwife who is also a mother of four. I suffered from an obstetrical complication during one of my pregnancies, and this gave me an understanding of the stress that women go through when they suffer from difficult conditions and situations during pregnancy and the postpartum.

I am currently lecturing at the University of Zambia, and my work involves conducting Community Based Education supervision when students are having their rural and clinic based allocations. Many times, I would speak with women, some of them who had been diagnosed with HIV during their current pregnancy, I saw their fear and some of them talked about their uncertainty with life thereafter. One of the women, seemingly filled with fear, confided in me that her husband had forbidden her to inform anyone else about the diagnosis, and yet he was not supporting her. She yearned to inform her parents, but she could not, for fear of the repercussions from her husband's disapproval.

I also wondered whether being diagnosed with HIV during pregnancy would affect the way that mothers would bond with their unborn babies and new-borns, failure of which could have negative, and far reaching consequences for the babies.

Hence I decided to conduct this study to ascertain the levels of stress that women experience once they receive an HIV positive diagnosis during pregnancy, and find out how they cope with the stress that comes with it. I hoped that my study results will help to find ways of helping these women to cope and bond adequately with their new-borns.

CHAPTER ONE: INTRODUCTION

1.1 Overview

The Human Immune-deficiency Virus (HIV) is a blood-borne virus that is spread, largely, through unprotected sexual intercourse, and to a child from an infected mother. The virus seeks and destroys CD4⁺ cells, a type of T-lymphocyte which is critical to the immune system and is responsible for warding off infections and diseases. Without treatment, the immune system gets badly compromised and the individual then develops Acquired Immunodeficiency Syndrome (AIDS) (WHO, 2021; Pietrangelo, 2020; AAMFT, 2002-2021). A diagnosis of HIV infection in pregnancy may be stressing to the pregnant woman as it may come unexpectedly during a routine antenatal care visit, and has a number of effects. While many people have been diagnosed and lived with chronic medical conditions, HIV diagnosis can lead to social problems because it is usually associated with stigmatisation, of the victims by society, and sometimes, self-stigmatisation. The HIV patients have to deal with both the illness and society's reaction to it (HRSA, 2021; Avert, 2019; Geter et al, 2018; US Health Resources & Services Administration, 2017). A pregnant woman who is diagnosed HIV positive requires assistance in order to cope positively with the HIV diagnosis and its effects.

1.2 Background

A diagnosis of HIV usually causes stress in the affected individual because of its lack of cure (Peirce, 2019, NAM publications, 2017). People who would like to know their HIV status usually undergo Voluntary Counselling and Testing (VCT), and may postpone the VCT to a time when they are more prepared for the test and results. However, in an effort to eliminate mother-to-child transmission (eMTCT) of HIV, pregnant women have to undergo HIV testing during antenatal care. Pregnancy is a stressful state as the body of the pregnant woman has to make adjustments throughout in order to maintain the pregnancy and prepare for labour and delivery; and the puerperium. Additionally, pregnancy is a sensitive moment, as the woman going through it is in a specific stage of her biological, psychological, and social development, in which she is generally preoccupied with bearing a healthy child. Therefore, many women find coping with the physiological adaptation to pregnancy, antenatal screening and advice emotionally draining, and this can culminate in pregnancy and the postpartum being a fragile time of physical, social and psychological upheavals associated with depression and anxiety (Engidaw et al, 2019; Marshall and Raynor, 2014). A diagnosis of HIV infection may be made during a routine antenatal care visit, when the woman may not have prepared adequately for the test and results. Receiving an HIV positive diagnosis can lead to stress (Kotze et al, 2014)

and other effects, and may add on to the stress that the woman is already experiencing due to pregnancy. An antenatal diagnosis of HIV may lead to personal conflicts, as well as feelings of indignation or even indifference, since many women do not think of themselves as vulnerable to HIV until their diagnosis is revealed by a health professional. An HIV diagnosis during pregnancy leads to high levels of psychological distress, including depression and anxiety (Nakazwe, 2019, Kotze et al, 2014). Psychological distress associated with an HIV diagnosis has been found to have negative effect on the health of the woman, including poor antiretroviral treatment adherence, poor attendance at health care and faster disease progression. Optimal adherence to ART is a universal challenge, which is also apparent during pregnancy and the postpartum period, with reported barriers that include depression, a new HIV diagnosis for the first time during pregnancy, drug side effects and pill burden (Morojele, 2021; Mukosha et al, 2020; Benson et al, 2020; Gonah & Mukwirimba, 2016; Okawa et al, 2015; Paredes, 2013).

With a diagnosis of HIV infection during pregnancy, the woman is faced with the constant fear of infecting her baby, and the dilemma of disclosing her diagnosis to the spouse or family members. Disclosure is cardinal for her social support, adhering to antiretroviral (ARVs) medication, and making a radical choice about infant feeding in an effort to eliminate Mother to Child Transmission of the infection. However, disclosure sometimes leads to Intimate Partner Violence (IPV). The Zambia Demographic and Health survey reported that 85% of ever married women disclosed their diagnosis to their partner, and 10 % of ever married women aged 15 to 49 years have experienced physical violence from the husband during pregnancy in 63% of cases (ZSA, MoH, ICF 2019, CSO, MoH, and ICF 2014). Some of this IPV could be resulting from disclosing an HIV positive diagnosis made during antenatal screening.

Further, the earliest experiences of a human baby have a lifelong impact on their mental and emotional health (Rossen et al, 2019; Leadsom, 2012). The stress of a diagnosis of HIV during pregnancy can affect the development of the bond between the mother and her baby, both during pregnancy and after delivery. Mother-baby bonding, which sets the stage for the growing child to enter healthy relationships with other people throughout life and to appropriately experience and express a full range of emotions, can become unsuccessful due to the stress that the mother may be experiencing as a result of the HIV diagnosis (Oyetunji & Chandra, 2020; Muzik et al, 2013; Harmon, 2010). The mother's emotional state during pregnancy can affect the development of her baby's brain and can cause emotional and behavioural problems; and congenital malformations (Hiremath, 2016). Under normal circumstances, once the baby is born, a bond quickly occurs between mother and baby just

hours after delivery. However, this bonding process is disturbed when a mother is stressed, or incapacitated after delivery and does not feel like interacting with her new-born. Securing early bonding is essential for the baby to grow up into a secure, emotionally capable adult, while lack of it makes babies grow into depressive, anxious children, who will not cope well with life's ups and downs. Unsuccessful bonding leads to poor mental health in the mother and can have adverse and long-lasting effects on the child such as long-term mental health problems as well as reduced overall potential and happiness in the child (Steinfeld, 2017; Winston & Chicot, 2016). In the most difficult cases, these babies are more likely to later experience criminality, substance abuse or depressive problems. Psychological distress and anxiety in the pregnant woman has also been associated with behavioural problems in the offspring and hyperactivity in boys (Leadsom, 2012).

The effects of an HIV positive diagnosis during pregnancy can be made bearable when the affected woman is assisted to cope with her condition. All antenatal clinics are equipped to offer post-test counselling to women who have tested positive for HIV during pregnancy. They are informed of the HIV resources available to them and are usually enrolled in HIV care. The Health facilities in Lusaka District also offer post-HIV test counselling. When a mother diagnosed with HIV infection during pregnancy utilizes effective coping strategies, the outcome is usually good with decreased levels of internalized stigma and depression, and increased self-esteem (Kotze et al, 2014). Those who employ negative ways of coping may resort to harmful behaviours, like substance abuse, continuing to have unsafe sexual intercourse, not getting treatment, or simply denying that they have the virus (Akaturukwasa et al, 2021; Weiss et al, 2017).

Governments around the world have been working tirelessly to find solutions to the problem of HIV. Moreover, the Global Fund and UNAIDS all, have global HIV strategies which are aligned with the Sustainable Development Goal target 3.3 of ending the HIV pandemic by the year 2030. By 2025, 95% of all people living with HIV should have a diagnosis, 95% of them should be taking antiretroviral medication and 95% of those on treatment should be virally suppressed for the benefit of their own health and for reducing onward HIV transmission (WHO, 2023). It is crucial, therefore that pregnant women are diagnosed during antenatal care, receive treatment and support to cope to prevent vertical transmission of the virus to their unborn or breastfeeding baby, and hence contribute to the achievement of the SDGs.

Many studies have been conducted on HIV which have led to a lot of discoveries and successes in handling HIV infected individuals. As a result, new approaches have been introduced to manage HIV infections and a number of studies have been made in antiretroviral medications which have improved the quality of life for HIV infected individuals. However, even if there have been important medical advances in the treatment of HIV as well as the prevention of its spread, there are still emotional and social problems that can be as hard to deal with as the illness itself. For many people, it is a stigmatizing condition which makes the burden of illness more difficult to bear. Additionally, studies have also been conducted on prevention and elimination of Mother-to-Child transmission of HIV, but fewer studies have been conducted on effects of an antenatal diagnosis of HIV on mother-baby bonding (Irshad et al, 2023; Vijayan et al., 2021).

This study therefore aimed to ascertain the stress levels, classify the coping strategies and explore the experiences of women who are diagnosed with HIV during pregnancy at selected Health facilities in Lusaka District, in order to provide guidelines for caring for them, including their families, in view of their stressful diagnosis in a stressful state.

1.3 Problem statement

The HIV has been known among human populations for over 25 years, and each day, the disease affects more people (WHO, 2018; UNAIDS, 2017). An estimated 39.0 million people were living with HIV at the end of 2022 globally, and of these, 25.6 million were in Africa (WHO, 2023). Globally, 1.2 million pregnant women were living with HIV, with 82% of them receiving antiretroviral medication for prevention of mother to child transmission of the virus (WHO, 2023). In Zambia, 11.1 % of adults aged 15 to 49 years are HIV positive, with 14.2 % prevalence among women and 11.9 % of pregnant women living with HIV (ZSA et al, 2019; CSO et al, 2014). In Lusaka District, the HIV prevalence in adults is 15.1% (ZSA, et al, 2019). Chilenje Hospital, Kanyama Hospital and George Health centre have an HIV prevalence ranging from 4.9 to 8.3.% among antenatal women and most of them start antiretroviral treatment (ART) at diagnosis (Chilenje monthly returns Register, 2020; Kanyama Hospital monthly returns register, 2020; George Health Centre monthly returns, 2020, Mukosha et al, 2020)).

Pregnant women are required to undergo testing for HIV in an effort for elimination of Mother-to-Child transmission (eMTCT) of the virus, and if found to be positive, suffer a number of effects (MoH, 2020; Gonzalez et al, 2017; Vann, 2016, Marshall and Raynor, 2014). Pregnancy

is a state which can be stressful as anatomical and physiological adaptations occur in the body of the pregnant woman to support foetal growth and prepare for birth and motherhood (Marshall and Raynor, 2014). Women can also develop minor or major disorders of pregnancy which can add to their already stressful state (Fraser & Cooper, 2003; Nambala & Ngoma, 2013). A diagnosis of HIV infection is stress inducing in many people and leads to changes and adjustments in lifestyle; and when made during pregnancy, it can have a number of effects like IPV; poor ART adherence; and poor mother-baby bonding, (Vann, 2009; Peters, 2016). When a woman diagnosed HIV positive during pregnancy employs positive coping strategies, her anxiety and stress begin to dissipate. However, other women may use negative coping strategies like turning to alcohol, denial and continuing to practice unsafe sex.

Following the Ministry of Health, Zambia guidelines, Health facilities in Lusaka District offer post-HIV test counselling to pregnant women and links them to the antiretroviral treatment clinic for treatment (MoH, 2020). Most of the women are commenced on antiretroviral therapy at diagnosis, but some of them decline and it is not known why they decline. Other women who are commenced do not adhere to treatment (Chilenje Level 1 Hospital monthly returns 2019, 2020; Mukosha et al, 2020, Kanyama Hospital monthly returns 2019, 2020; George Health centre monthly returns, 2019, 2020).

Search engines used and anecdotal data found no study conducted in Zambia on HIV positive diagnosis during pregnancy with regard to the stress levels, coping strategies and experiences that women go through once they are diagnosed. Further, in spite of having the ‘test and treat’ guidelines for management of HIV infection, there are no guidelines for caring for women diagnosed with HIV infection during pregnancy, and their families at Chilenje Level 1 hospital, Kanyama Level 2 Hospital and George Health centre (MoH, 2020).

This study aims to ascertain the levels of stress, coping strategies that women use, and the experiences that they go through in order to provide guidelines for care of the women and their families.

1.4 Study Justification

A diagnosis of HIV infection is stressing to any individual as HIV is a disease with no known cure, and stigmatization attached to it. When made during pregnancy, it has a number of effects and might add to the stress that the woman already has as a result of pregnancy.

In spite of availability of ‘test and treat’ guidelines for eMTCT, mental health factors could potentially undermine its effective delivery and affect the woman’s quality of life and wellbeing. The coping strategies used by women are important determinants of whether the woman adapts or fails to adapt to the diagnosis of HIV infection during pregnancy. Women who are diagnosed positive during pregnancy might require deliberate effort to provide medical, social and spiritual assistance that is appropriate for them in order to help them cope with their condition. It is difficult to plan the care without knowing the effects of an HIV diagnosis made during pregnancy, and the coping strategies that women use. This study therefore aimed to determine the stress levels, classify the coping strategies and explore the experiences of women who are diagnosed with HIV during routine antenatal care. The study results revealed the levels of stress, the coping strategies and the experiences that women underwent after receiving an HIV positive diagnosis during pregnancy, including their experiences with mother baby bonding. It is hoped that these results will be used to guide the management of women diagnosed with HIV during pregnancy, together with their families. It is further hoped that the study results will be used by Midwives to provide antenatal and postnatal care that is directed to the needs of the women diagnosed HIV positive during pregnancy, and also to foster mother-baby bonding. It is envisaged that the results will be used by HIV counsellors to have a broader understanding of the experiences of women diagnosed HIV positive during pregnancy and be able to provide counselling services appropriately.

1.5 Theoretical Framework

Lazarus and Folkman stress and coping model (1984) was used to guide this study. The theory rests on three major concepts: stress, appraisal and coping. Lazarus and Folkman state that stress is a condition or feeling experienced when a person perceives that the “demands exceed the personal and social resources the individual is able to mobilize”. This is called the transactional model of stress and coping, because individuals constantly are interacting with their environment and making decisions based on personal and situational factors. The theory states that neither the environmental event nor the people’s response defines stress, rather the individual’s perception of the psychological situation is the critical factor. In this study, the pregnant woman’s perception of a diagnosis of HIV infection is the critical factor.

According to Lazarus and Folkman, the effect that stress has on a person is based more on that person’s feeling of threat, vulnerability and ability to cope than on the stressful event itself. A pregnant woman diagnosed with HIV infection may feel vulnerable about her ability to cope

with her diagnosis, the stigmatization that may be associated with it, and the constant fear of infecting her baby.

Lazarus and Folkman define psychological stress as a “particular relationship between the person and environment that is appraised by the person as taxing or exceeding his or her resource and endangering her wellbeing.” A pregnant woman diagnosed with HIV infection may feel that her diagnosis exceeds her resources to cope and endangers her wellbeing. Lazarus and Folkman stated that cognitive appraisal occurs when a person considers two major factors that contribute in the person’s response to the stress. The factors are the threatening tendency of the stress to the individual, and the assessment of resources required to minimize, tolerate or eradicate the stressor and the stress it produces. Primary appraisal is when the person asks herself/himself what the stressor means and how it influences them and usually the answers are; this is not important, this is good or this is stressful. For example, the woman may view a diagnosis of HIV during pregnancy as stressful and a threat as it may be associated with social stigma and the burden of taking drugs for her entire lifetime. Secondary appraisal involves feelings related to dealing with the stressor or the stress it produces. A diagnosis of HIV cannot be reversed but the woman can be said to have positive secondary appraisal if they look for ways to relieve their stress, like asking questions about the condition. Sometimes, they can have negative secondary appraisal when they do not even try to relieve the stress, but already feel to be overcome by it.

Lazarus and Folkman further defined coping as a process of constantly changing cognitive and behavioural efforts to manage specific external and /or internal demands that are appraised as taxing or exceeding the resources of the person. Problem focused coping is when one feels they have control over the situation and thus can manage its source while emotion focused coping is one used when an individual feels that they cannot manage the source of the problem and involves gaining strategies for regulating stress. It involves such strategies as avoiding, distancing, and acceptance, seeking medical support and turning to alcohol. The coping effort is usually enhanced by resistance resources, like psychosocial support from family and community, material resources and the woman’s socio economic status which are helpful in managing the infection, like accessing medical care; and physiological health which can give the woman hope that she can live.

Lazarus and Folkman (1984), suggested that to adequately measure coping, individuals must be assessed at several points over time. The present study measured coping in women

diagnosed with HIV during pregnancy at the second antenatal visit, at 32nd to 36th week of pregnancy and at the sixth week post-natal visit; and had questions that encompassed their coping from the time they were diagnosed during pregnancy up to the time they were interviewed at six weeks post-delivery.

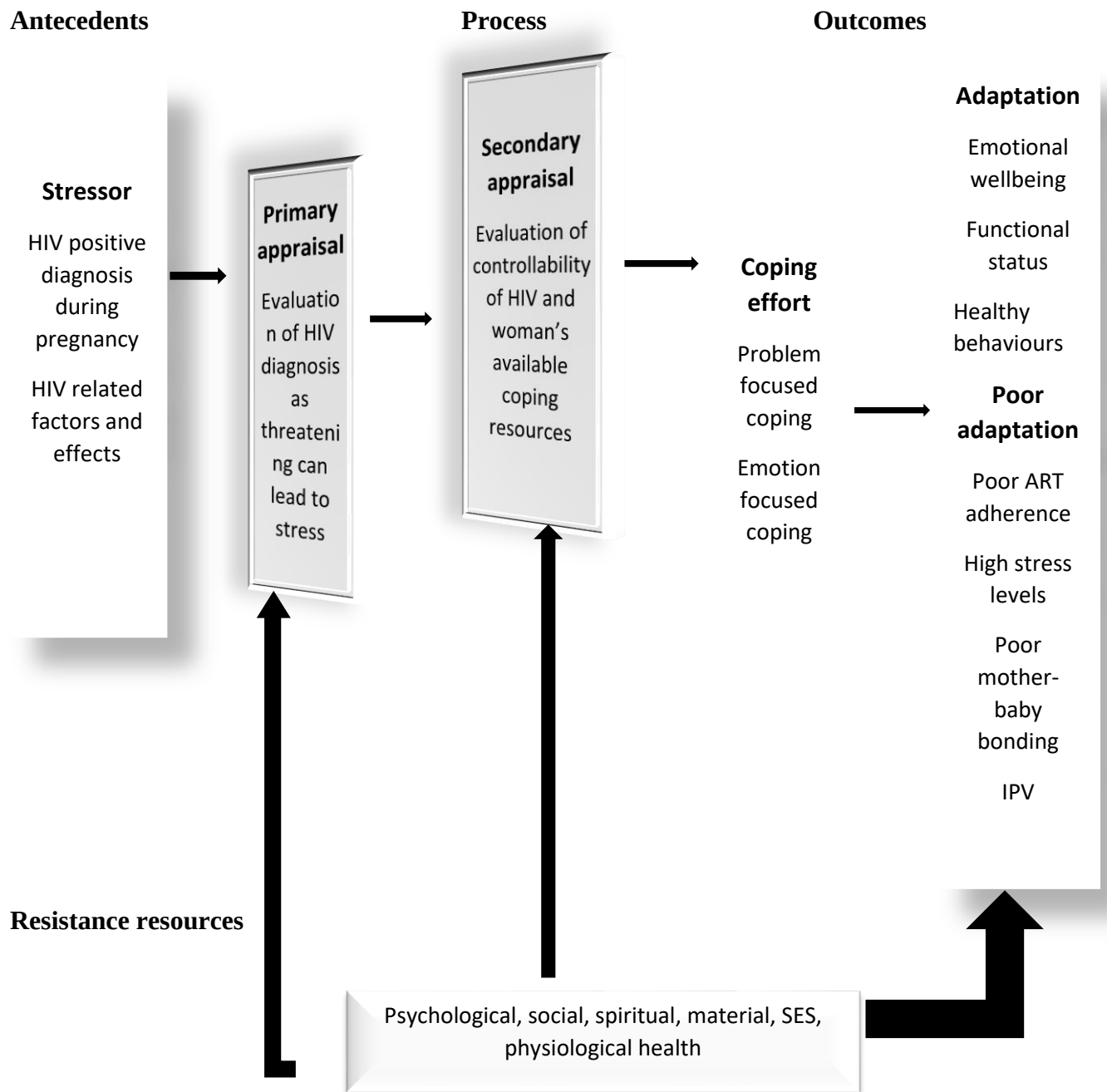


Figure 1: Conceptual framework

Stress and coping model adapted from Lazarus and Folkman (1984)

1.6 Research Questions

This study was guided by the following research questions:

1. What are the stress levels and coping strategies used by women diagnosed with HIV during pregnancy at selected Health facilities of Lusaka district?
2. What are the experiences of women diagnosed HIV positive during pregnancy at selected Health facilities of Lusaka district?

1.7 Research objectives

1.7.1 General objective

The general objective of this study was to ascertain the stress, coping strategies and experiences of women diagnosed HIV positive during pregnancy at selected Health facilities in Lusaka district Zambia.

1.7.2 Specific Objectives

The specific objectives of this study were to:

1. Measure the levels of stress in women diagnosed with HIV infection during pregnancy at selected Health facilities of Lusaka district
2. Categorize the coping strategies used by women diagnosed HIV positive during pregnancy at selected Health facilities of Lusaka district.
3. Explore the experiences of women diagnosed HIV positive during pregnancy at selected Health facilities of Lusaka district
4. Explore mother-baby bonding in women diagnosed with HIV during pregnancy at selected Health facilities of Lusaka district
5. Test for associations between dependent and independent variables

1.8 Research hypotheses

The following hypotheses were tested;

Null hypothesis: There is no association between stress levels and coping mechanisms used by women diagnosed with HIV during pregnancy.

Alternative hypothesis: There is an association between stress levels and coping mechanisms used by women diagnosed with HIV during pregnancy.

Null hypothesis: There is no association between the stress levels and the participants' demographic variables (age, residence, level of education).

Alternative hypothesis: There is an association between the stress levels and the participants' demographic variables (age, residence, level of education).

1.9 Definitions of Variables

1.9.1 Conceptual definition of variables

Stress: – particular relationship between the person and environment that is appraised by the person as taxing or exceeding his or her resource and endangering her wellbeing (Lazarus and Folkman, 1984)

Coping strategies: - a process of constantly changing cognitive and behavioural efforts to manage specific external and /or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus and Folkman, 1984)

Emotion focused/avoidant coping: - a stress management strategy in which a person focuses on regulating his or her negative emotional reactions to a stressor involving physical or psychological withdrawal, eg through distraction or fantasy (APA Dictionary of Psychology, 2021)

Problem focused/active coping:-a stress management strategy in which the person directly confronts a stressor in an attempt to decrease or eliminate it (APA Dictionary of Psychology, 2021)

Problem focused (problem solving)-a direct assault strategy, involves an instrumental, problem oriented approach to active management of stressors (APA Dictionary of Psychology, 2021)

Problem solving (seeking social support) - need for human contact in times of duress and manifests through a process of actively turning to others for comfort, help and advice (APA Dictionary of Psychology, 2021)

1.9.2 Operational Definition of variables

Stress:—the ever-present anxious feeling that the pregnant woman is HIV positive and causes her not to function normally in life. In this study, stress levels were either low, moderate or high.

Coping strategies: – the effort that a woman diagnosed HIV positive during pregnancy takes in order to overcome the stress associated with the diagnosis and live functionally. In this study, women coped either by utilising the problem focused or emotion focused coping.

Emotion focused/avoidant coping: - maladaptive coping which does not relieve the stress of an HIV positive diagnosis which was used by some of the study participants.

Problem focused/active coping: – adaptive coping which seeks solutions to live functionally with an HIV positive diagnosis and leads to reduction in the stress of an HIV positive diagnosis. It includes strategies that involve acting on the environment, like seeking support from others to solve the problem.

1.10 Variables and cut-off points

The dependent variable for this study was stress, and the independent variable was coping strategies (Problem focused, emotion focused)

Table 1: Variables and cut-off points

Variable	Indicator	Cut-off point	Type of variable	Question no.
Coping strategies	Emotion focused	Higher scores on emotion focused coping questions	Nominal	Qn 1-33 on CSI
	Problem focused	Higher scores on problem focused coping questions		
Stress	High levels of stress	Stress score of 27-40	Ordinal	1-10 on PSS
	Moderate levels of stress	Scores of 14-26		
	Low levels of stress	Stress Scores of 0-13		

The next chapter will discuss the literature that was reviewed, encompassing the global, regional and local perspectives. The literature will be reviewed according to the study variables, and experiences of women diagnosed with HIV during pregnancy.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

In chapter one, the background information to the study was discussed. This chapter discusses the reviewed literature on the stress, coping strategies and experiences of women diagnosed with HIV during pregnancy, including the resistance resources that they used. The literature reviewed is from the local, regional and global perspectives. The sources of literature included text books and web searches using Google search as well as manual searches of hard copies of journals and research publications that were not available online. The search engines that were used to access relevant articles were: Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed and Hinari, Scopus, Midwifery Information and Resource Service (MIDIRS), MEDLINE, Science Direct, Psych info, Social Sciences Index and AMED. The key words that were used to identify articles were: HIV, pregnancy, stress of an HIV positive diagnosis, effects of an HIV diagnosis made during pregnancy, coping strategies used by women diagnosed with HIV during pregnancy, support for HIV positive pregnant women and experiences of women diagnosed HIV positive during pregnancy. The study attempted to review articles that were published not more than five years from the current study, though if there were no follow up articles on that phenomena, older articles were referred to.

2.2 Overview of HIV diagnosis during pregnancy and Coping Strategies used by Women

An estimated 37.7 million people were living with HIV worldwide in 2020. Of these, 1.7 million were children under 15 years of age and about 53% of all people living with HIV were women and girls (WHO, 2021). Approximately 1 500 000 million people were newly infected with HIV and approximately 680 000 people died from AIDS-related causes in 2021(WHO, 2021). However, new HIV infections among children are declining rapidly to approximately 70 per cent since 2001, and this can be attributed to the scaled-up efforts to prevent mother-to-child transmission of the virus. The toll of HIV and AIDS continues to be harsh, especially in sub-Saharan Africa. In 2020, the African region accounted for the vast majority of the world's people living with AIDS (25.4 million), new HIV infections and AIDS-related deaths. In that region, HIV is spread primarily through heterosexual sex. ZAMPHIA reported an annual incidence of HIV among adults aged 15+ years in Zambia to be 0.31%, which corresponds to approximately 28,000 new cases of HIV per year among adults. HIV incidence was 0.56% among women and 0.06% among men. The prevalence of HIV among adults aged 15+ years in Zambia was 11.0%, with 8.0% prevalence among men (PEPFAR et al, 2021). According to

the Zambia Demographic Health Survey (2019) 11.9 % of pregnant women were HIV positive, and HIV prevalence among women in Zambia is 14.2%. Previous research has shown that many women continue to have an ongoing risk of infection with HIV during pregnancy. HIV viral load is very high during seroconversion, meaning that women infected with HIV during pregnancy could have a significant risk of transmitting HIV to their unborn baby (Carter, 2015). HIV infection also continues to be associated with significant maternal morbidity and poor neonatal health outcomes (Gonzalez et al, 2017).

While a number of studies attest to the psychological squeal regarding a diagnosis of HIV for both mother and child, there is limited literature on how these feelings could affect accessing ART and adhering to the treatment, and how mother baby bonding can be affected. High levels of maternal stress due to diverse psychosocial factors have a direct impact on the mothers' wellbeing during pregnancy and both direct and indirect effects on the foetus. In most cases, psychosocial risk factors present during pregnancy will not disappear after delivery and might influence the parent-child relationship, which can affect the healthy development of the offspring in the long run (Spyridou et al, 2014). The strategy that a woman uses to cope with her diagnosis is of prime importance in the way she handles the stress and adjusts her life to live positively even with a distressing diagnosis.

A study by Lingen-Stallard et al (2016) revealed that women experienced shock and disbelief, anger and turmoil, stigma and confidentiality issues and acceptance and resilience. It was found that women had extreme reactions to their diagnosis, compounded by the cultural belief that they would die. There was initial disbelief of their unexpected result which developed into sadness over loss of their old self. The diagnosis was a tumultuous situation where some women considered terminating their pregnancy, harm themselves or commit suicide. The strategies they used to cope included keeping their diagnosis a secret and making their child (ren) the focus of their lives. The study concluded that midwives have a crucial role in improving the experiences of women diagnosed with HIV during pregnancy.

It is therefore essential to determine the levels of stress, coping strategies utilised and experiences of women diagnosed with HIV during pregnancy, if health care providers should be equipped adequately to offer comprehensive treatment, care and support to these women.

2.3 Stress, ART adherence, mother-baby bonding and IPV in women diagnosed with HIV during pregnancy

2.3.1 Stress in women diagnosed with HIV during pregnancy

Stress is a normal consequence of daily life, with the top concerns being over money, work, family responsibilities and health concerns according to an annual survey conducted by the American Psychological Association (APA, 2020). Individuals who may be facing a new diagnosis of HIV, challenges related to disclosure, or health concerns, may experience even higher levels (Newman, 2016).

Pregnancy is a time of many changes in the body, emotions and family of the pregnant woman and it leads to new stresses in life which is commonly caused by discomforts of pregnancy, like nausea, and changes in the levels of hormones which leads to mood swings. A degree of stress during pregnancy is normal and essential and assists in the psychological adjustment to the emotional demands and changes of pregnancy. However, elevated levels of stress hormones and anxiety can stretch coping reserves and prove disabling. Too much stress can make the pregnant woman uncomfortable, and can lead to problems, like sleep and eating problems (Marshall and Raynor, 2014; March of Dimes, 2018). A diagnosis of HIV infection during pregnancy may be stressing to the pregnant woman as she will have to deal with the stresses of pregnancy and also the stressing diagnosis of HIV, an incurable and stigmatised condition.

A study conducted by Bailey found that a quarter of them were found to have depression and the study suggested the need for proactive strategies to identify depressive symptoms so as to provide mental health support in HIV positive women during the perinatal period (Bailey et al, 2016). Similarly, Nyamukoho et al in 2019 conducted a study to determine the factors associated with depression among HIV positive pregnant women in Zimbabwe. The study revealed that women experienced antenatal depression, and the factors that were associated with the depression were IPV and a previous history of depression. These studies explored depression, which usually is a sequel of stress, but the current study aimed at providing information on the levels of stress and how women coped with the stress of an HIV diagnosis during pregnancy by using mixed methods design, to bridge this methodological gap. Knowing the stress levels and coping strategies can help identify women who are experiencing high stress levels, which could complicate into depression if they are not assisted to cope positively, and hence prevent depression.

An HIV diagnosis during pregnancy can have various effects in the life of the pregnant woman. Subramaniyan et al found that women faced discrimination from Health staff which included; avoidance of physical examination, rude behaviour like throwing of records on the face, discriminatory comments, unnecessary referrals and even refusal to provide intra-partum services. The negative attitude of the staff made a few mothers to deliver in some other institution without disclosing their HIV status. The study concluded that stigma among health care providers towards HIV positive pregnant women acts as a barrier for improving access to Prevention of Parent to Child Transmission of HIV (PPTCT) services in India and it poses high risk to the mothers, babies and also the health care providers. They recommended that access to quality PPTCT services especially during the intranatal period, should be improved (Subramaniyan et al in 2013). It is unfortunate that the women in India faced such discrimination from Health care workers which led to them experiencing stress. The current study used mixed methods to measure the actual levels of stress among women who were diagnosed with HIV at the study settings, which was authenticated during the qualitative interviews. The Indian study did not elicit information on how women coped with the stress, or how they eventually bonded with their newborns, but the current study addressed these areas and hence built upon the existing body of knowledge.

An HIV diagnosis made during routine screening in pregnancy can lead to symptoms of depression in women, as their lives are filled with a lot of uncertainties. Kapetanovic et al (2014) reviewed publications from 53 countries to determine the mental health of HIV-Seropositive women during pregnancy and postpartum Period. This study concluded that psychiatric symptoms, particularly depression, and mental health vulnerabilities (like inadequate coping skills) are widespread among pregnant HIV+ women globally and that they have a potential to affect psychological well-being, quality of life and salient clinical outcomes. The study recommends developing and evaluating clinical and structural interventions aimed at improving mental health outcomes and their clinical correlates in pregnant HIV+ women. In as much as this study concluded that psychiatric symptoms were widespread among pregnant HIV positive women, there was still a gap that needed to be addressed on the coping strategies that women use to try and cope with the stress of being HIV positive, and also on whether mother baby bonding is affected when the mother is depressed. Equally, Moseholm et al (2022) in a longitudinal survey to assess differences in psychosocial health outcomes between pregnant and non pregnant women with HIV and pregnant women without HIV, found that the prevalence of depression was high among both

pregnant and non-pregnant women with HIV. Though it was a longitudinal study, just like the current study, this study did not measure the stress levels, classify the coping strategies used by the women, or assess mother baby bonding in view of the depression. There was need to address the areas that were not included in this study, hence the need to conduct the current study.

A study was conducted to explore the experiences of women diagnosed with HIV during pregnancy by Netshimbupfe (2017) which revealed that being diagnosed with HIV infection during pregnancy has become one of the greatest complications of pregnancy in South Africa. The study found that the HIV diagnosis has a complex mix of emotional, psychosocial, relationship, economic and even legal issues that arise directly from the HIV diagnosis. It was found that HIV diagnosis provides concrete evidence that being HIV positive and pregnant at the same time is not a good experience as women are filled with mixed emotions and uncertainties. The findings also indicated that women were sad, anxious, felt guilty and isolated, and in addition, had difficulties with family dynamics. Women were also sad and feared that they would not live to see their children grow up. The study therefore recommends a multidisciplinary team, which involves a psychiatrist and social workers to take care of the affected women. This study did not measure the levels of stress in women, nor did it categorise their coping strategies, hence the need to conduct the current study to measure the stress levels and provide a basis for saying that women are stressed by an antenatal diagnosis of HIV. It was also necessary to conduct the current study to categorise the coping strategies that women used to cope with the stress that comes with an antenatal diagnosis of HIV. It was important to explore the experiences of women diagnosed with HIV during pregnancy with regards to bonding with their babies, thereby addressing the knowledge gap.

In Zambia, a study was conducted to determine the effects of pregnancy in HIV infected women by Kwalombota (2002) who explored the mental health of pregnant HIV-infected women. It was revealed that the majority of women (85%) showed major depressive episodes and had significant suicidal thoughts, and 60% of the women whose HIV was diagnosed during their pregnancy showed signs of somatic illness. Those who knew their HIV status before becoming pregnant did not show severe depressive episodes, but showed anxiety about the HIV status of their babies. This suggests that women who discover their HIV status during the course of their pregnancy are more liable to developing major depressive illness and somatic disorders. Kwalombota (2002) suggested that physicians dealing with these women need to be cognizant of the strain HIV can add to pregnancy and of the psychological and psychiatric support they

may require. This study provided valuable information from Zambian women, and has not been replicated, hence there was need to conduct the current study to provide latest findings on HIV positive diagnosis during pregnancy in selected Health facilities in Lusaka district, especially that the study by Kwalombota was conducted before the use of ARVs became widespread. The study by Kwalombota found that women who already knew their HIV positive status before pregnancy did not show severe depression, compared to those who were diagnosed during pregnancy. The current study aimed to measure the stress levels, categorise the coping strategies and explore the experiences that women underwent after receiving an HIV positive diagnosis during pregnancy to add to the existing body of knowledge.

The stress experienced by mothers during pregnancy can also affect the health of their baby both prenatally and after birth. Glover (2011) and Hobil (2005), found that when women experience stress particularly in the first trimester, the placenta increases production of corticotrophin-releasing hormone (CRH) which regulates the duration of pregnancy and foetal maturation. The higher the levels, the more likely preterm the delivery will be. It has also been found that stress in the uterus can affect baby's temperament and neurobehavioral development, with infants of mothers who experienced stress showing signs of depression and irritability. Epidemiological studies also suggest that babies who experience stress in utero are more likely to develop chronic health problems as adults like heart disease and diabetes mellitus (Glover, 2011, Hobil, 2005). Glover found that if a mother is stressed while pregnant her child is more likely to show a range of symptoms, such as those of attention deficit, hyperactivity disorder, aggression or anxiety, and that prenatal stress exposure can increase the risk for later psychopathology. High stress levels experienced in utero program the foetus to prepare for a dangerous environment and as the child grows up they become aggressive with the ability to fight intruders (Glover, 2011). The study by Hobil, (2005) found that high levels of stress, especially during the first trimester, might affect the duration of pregnancy and foetal maturation. To provide more information to the study by Glover, the current study aimed to provide information on mother baby bonding which is equally important for the normal growth and development of the baby (Oyetunji & Chandra, 2020; Muzik et al, 2013; Harmon, 2010).

New evidence from neuro science shows that development of the unborn baby is affected not only by genetic heritage, the efficiency of the placenta, the quality of the mother's diet, whether she smokes, the use of alcohol and prescribed or street drugs, but also by her mental and emotional wellbeing (Marshall and Raynor, 2014). A meta-analysis of studies looking at the relationship between maternal mental health, babies' development in utero and their progress

during the first years of life, concluded that maternal stress in pregnancy makes substantially more likely that children will have emotional, cognitive and physical problems (Marshall and Raynor, 2014). Neuro science also explained how the architecture of the brain is shaped by new babies' earliest experience with their primary caregivers and suggested that during antenatal care, equal emphasis should be placed on helping parents understand on how their new-born babies are primed to enter into a relationship with them and how they invite interaction through a variety of cues (Marshall and Raynor, 2014). A woman diagnosed HIV positive during pregnancy may experience prenatal stress which can influence the birth weight and gestational age at birth of her baby. If she delivers too early, caring for a premature baby might also add to the stress of her diagnosis which she might already be experiencing. As seen from the above studies, maternal prenatal stress might affect the brain development of her infant, affecting the child's brain development and later have emotional, cognitive and physical problems.

The above studies demonstrate that, challenging situations in an individual's life often lead to psychological stress which has various effects on the affected person. A diagnosis of HIV infection during pregnancy is a challenging situation in a woman's life and may lead to stress and all the problems that accompany stress as discussed above. Stress, in turn, may worsen the disease and lead to symptoms being experienced by the affected persons, including a reduction in the CD4 count.

It was necessary to conduct the current study to measure the stress levels experienced by women who were diagnosed with HIV during pregnancy, classify the coping strategies that they utilised and explore women's experiences to add to the body of existing knowledge and further explore the reasons for the stress that women experienced once they were diagnosed HIV positive during pregnancy.

2.3.2 ART Adherence in women diagnosed with HIV during pregnancy

Among women with HIV infection, pregnancy is a time when maintenance of maternal health and reduction of vertical transmission of HIV are of primary concern. Poor adherence to ART is associated with HIV disease progression, and during pregnancy, an increased risk of Mother to Child Transmission of HIV. A study that was conducted by Bailey et al found that missed doses of ARVs were associated with young age, unplanned pregnancy and staying with extended family, but did not find any association with diagnosis during pregnancy and missed doses. The study concluded that there were unmet needs for counselling and support of women

with HIV (Bailey et al, 2014). The current study therefor aimed to explore adherence to ART among women at selected Health facilities in Lusaka District to provide information on adherence by women in Lusaka district. Sometimes, women may be non-adherent to ART due to drug side effects. Another study evaluated the adverse effects of antiretro viral therapy in pregnant women infected with HIV and found that the adverse effects that were observed included; anaemia, thrombocytopenia, and liver function test abnormalities, among others, which would compromise adherence to the ART regimen. (Delicio et al, 2018). More studies have been conducted on ART adherence within the region, and Tesfaye et al (2019) concluded that overall adherence to option B+ was suboptimal. Some women stopped taking the medications during first trimester due to experiencing side effects and other women reported non adherence due to difficulty adopting to the schedule. The study found that pregnant women who started ART at the time of HIV diagnosis and who had five or more ANC visits were more likely to adhere to option B+ ART. The study concluded that there was need for follow up visits and counselling on ART benefits to improve adherence. With these results, it was necessary to conduct the current study to provide information on medication adherence among women diagnosed with HIV in Lusaka district.

In their systemic review, Omonaiye et al (2018) indicated that stigma, cost of transportation, food deprivation and women's disclosure and non-disclosure of her HIV status to the partner, family and community could limit or define the extent of her adherence to prescribed ART during pregnancy. The study further revealed that women who knew their status before pregnancy demonstrated good adherence unlike those diagnosed during pregnancy, and concluded that enhanced effort is needed to facilitate women's knowledge of their HIV status before pregnancy and to support women and their partners to deal with their fear, stigma and discrimination. Adherence to the medication regimen is more cardinal in pregnant women to reduce the chances of transmission of the virus to the unborn baby. This study by Omonaiye found greater non adherence among women who were diagnosed during pregnancy. Therefore, the current study aimed to explore medication adherence among women who were diagnosed during pregnancy to understand their experiences with ART at selected Health facilities in Lusaka district, and add to the existing body of knowledge in order to enhance adherence to ART among the affected women.

Within the region, a case control study conducted in Malawi found that among the 82% of the respondents who initiated ART during pregnancy, 91% of them defaulted by three months postpartum. HIV disclosure to primary sex partner was more common among women retained

in care, and PreART education and knowledge were significantly correlated. Multivariate analysis, showed that awareness of partner HIV status and option B+ knowledge remained associated with adherence. The study concluded that interventions that address partner disclosure and strengthen preART education around the benefits of ART for maternal and child health should be evaluated to improve retention in Malawi's option B+ (Hoffman et al 2017). Social support is important in ART adherence, but if women experience IPV after disclosure to their sex partners, they might fear to disclose and this might affect their adherence to medication. The Malawi study was a case control study which revealed non adherence to ART in women who were initiated on ART during their pregnancy, indicating problems with ART adherence in women who are diagnosed with HIV during pregnancy. Therefore, the current study aimed to explore ART adherence among women who were diagnosed during pregnancy, in order to provide more in-depth data on the experiences of women diagnosed with HIV during pregnancy with regards their adherence to ART over a longer period of time. Another study found that only 53% of women achieved ART adherence greater than 80% during the postpartum period (Paredes, 2013), further indicating challenges with optimal adherence to ART, and that women who started ART in the context of Option B+ were five times more likely to be lost to follow up, compared to those who started treatment for their own health (Centre for Disease Control and Prevention, 2016).

Sometimes, women who are diagnosed HIV positive may hesitate to even begin taking the antiretroviral medication. Morojele (2021) conducted a study to understand the concerns that pregnant women had about starting antiretroviral treatment to limit risks of mother-to-child HIV-transmission during the implementation of 'test and treat' protocol. The results showed that women had concerns on how they would access treatment and adhere to it, and were also concerned on how they would disclose their diagnosis to significant others. The study concluded that these concerns stemmed from the fear that women had on being stigmatised about their HIV status. This study shows the role that stigmatisation plays in decisions that are made by HIV positive individuals and also the dilemmas experienced by women who are diagnosed with HIV in accessing treatment and the possibility of adhering to the treatment regime. Data that were collected from the research settings in developing the research proposal for the current study indicated that some newly diagnosed women refused to be commenced on ART, and some got lost to follow up during their course of ART (Mukosha et al, 2020). The current study therefore aimed at exploring the experiences of women diagnosed with HIV at selected Health facilities in Lusaka District in order to provide information about their ART

adherence and guide in the provision of care guidelines for these women and their families so as to reduce the risk of vertical transmission of the virus.

Locally, a study conducted on ART adherence revealed that adherence rate kept decreasing from 82.5% during pregnancy to 70.5% at 24 months postpartum with a probability of continuing with ART at 0.06 by 300 days post-delivery. Among others, a new diagnosis of HIV during pregnancy compared to a known status before pregnancy was a risk factor for non-adherence (Okawa et al, 2015). To provide more information on ART adherence among HIV positive perinatal women, the current study sought to explore the experiences of women who were diagnosed HIV positive during their current pregnancy, with their ART adherence with the view of providing qualitative information on what facilitated their adherence, as well as the challenges that they faced with adherence to ART. However, the current study followed up women up to six weeks postdelivery, unlike the study by Okawa which followed up the women for up to 300 days postpartum. Hence there is still need to conduct another study which will follow up women for longer periods of time.

Mukosha et al (2020) also studied adherence to ARVs among HIV infected women in public health sector and found that adherence to ARVs was a challenge. Women younger than 30 years, and those on separation were less likely to adhere to medication, and recommended that more effort needs to be put in place to help younger women and those on separation to adhere to medication. With these findings by Mukosha, and especially that women younger than 30 years who are in their most sexually active and reproductive period were less likely to adhere to their ART regimen, and owing to the importance of ART adherence in prevention of vertical transmission of the virus, the current study focused on pregnant and postpartum women, to provide in depth information on their experiences with ART, and what facilitated or posed as challenges to their adherence. The study setting for the current study also included one of the settings that was used by Mukosha, and hence was important in providing explanations on the challenges that women faced with adherence from the same setting.

The above studies show that adherence to ART is challenging to women due to physical, economical and emotional stresses, postpartum depression, alcohol and pill burden. This study aimed to determine ART adherence in women commenced on ART in order to guide on formulating the guidelines for the care of women who are diagnosed with HIV during pregnancy to help them with medication adherence, which is cardinal for their good health and that of their infants.

2.3.3 Mother Baby Bonding in women diagnosed HIV positive during pregnancy

Women can experience a period of psychological vulnerability following antenatal HIV diagnosis which can affect their feelings both about the pregnancy and motherhood. Willcocks et al (2015) explored the impact of being diagnosed HIV positive during pregnancy on mother-infant bonding. Grounded theory was used to assess perceived challenges and facilitating factors for mother-infant bonding for 10 mothers given an HIV diagnosis in pregnancy. Data analysis led to a model of mother-infant bonding composed of four theoretical codes (facing barriers to bonding, feeling disconnected from the baby, developing a special bond, strengthening and moving on). Challenges with bonding emerged primarily during early stages after diagnosis and birth, with maternal resilience and positivity about the future developing as the infant HIV testing process progressed. The study recommended more timely information regarding vertical transmission and more targeted psychological support along with greater promotion of services to support women diagnosed with HIV antenatally (Willcocks et al, 2015). The diagnosis of HIV is usually made during the 1st trimester, as women are encouraged to book for antenatal care as soon as they suspect that they are pregnant. The diagnosis, and the stress that may result from it may lead to poor bonding between the mother and her unborn baby, as bonding usually begins during pregnancy, and poor bonding may continue even after the baby is born (Rossen et al, 2019). To add to the knowledge that was generated by Willocks et al (2015) study, the current study aimed at following up women diagnosed with HIV from pregnancy to six weeks post delivery, in order to provide the stress levels and coping strategies that they used to cope, with qualitative information on the bonding behaviours and how the stress and coping affected the development of the bond with their babies. Another study on Australian women found that early mother-baby bonding enhanced later bonding than did the mother's mental health and substance use, and suggested establishing a strong bond between mother and baby in the early postpartum period, which is crucial in maintaining the mother-baby bond (Rossen et al, 2019). The current study therefore aimed to focus on postnatal women who were diagnosed with HIV during their recent pregnancy to determine bonding at six weeks postdelivery, which might have a bearing on the maintenance of the mother baby bond in the months to follow. A woman diagnosed HIV positive in pregnancy, may, due to stress, not be able to establish the bond with her baby in the immediate postpartum period. The current study aimed to assess mother baby bonding during pregnancy, as bonding begins during pregnancy (Çınar et al, 2022, Rossen et al, 2017), and also influences the maintenance of that bond.

Daglar and Nur (2018) equally assessed the level of mother-baby bonding and influencing factors during pregnancy and postpartum period, and found that 50.7% of the women experienced prenatal depression while 36.6% experienced postnatal depression. Both prenatal and postnatal depression were negatively associated with mother baby bonding. This study revealed the effect of maternal depression on mother baby bonding in a cross sectional study. Therefore the current study sought to enhance these findings by conducting a longitudinal mixed methods study to elicit information on mother baby bonding.

The above studies show the challenges that women may encounter in bonding with their babies as a result of antenatal stress or depression, if they do not use effective coping mechanisms. The current study sought to provide information on mother baby bonding in women who were diagnosed HIV positive during pregnancy, to provide guidelines in helping women to cope and thereby enhance mother baby bonding, because lack of, or poor bonding has long lasting effects on the psychosocial development of the baby.

2.3.4 Intimate Partner Violence (IPV) and coping with an HIV diagnosis during pregnancy

HIV disclosure is a central strategy in HIV prevention, especially prevention of Mother to Child Transmission of the disease since HIV viral load may be higher if the woman seroconverted during pregnancy. However, there are challenges to HIV positive test result disclosure due to fear of the consequences, one of them being Intimate Partner Violence. Women may fear to be physically and psychologically abused after disclosing their diagnosis and this may lead to keeping HIV a secret, and pose as a threat to PMTCT and ART adherence.

IPV is a prevalent vice worldwide, especially to women during pregnancy. Matseke et al (2016) determined prevalence of IPV and associated factors among pregnant HIV infected women in primary health care facilities in South Africa, and found that 56.3% women reported experiencing psychological or physical IPV. In logistic multivariate regression analyses, higher levels of depressive symptoms and greater perceived stigma were associated with combined physical and psychological IPV. Physical and psychological IPV were individually associated with greater perceived stigma and higher levels of depressive symptoms. The researchers concluded that there was need to design and implement evidence informed interventions to empower and protect HIV –infected pregnant women from IPV which is essential to manage their health-related quality of life. In as much as this study found the prevalence of IPV, the current study sought to provide further information on the women's experiences of IPV after

disclosure of an antenatal HIV positive diagnosis in the Zambian setting. The current study further aimed to understand how IPV affected the ability of a woman to cope with the stress that comes with an antenatal HIV positive diagnosis.

Another South African study found that among women who have not had a history of IPV, those who were diagnosed with HIV were twice as likely to suffer intimate partner violence afterwards compared to those who are not diagnosed. It was also found that IPV negatively affected women's ability to adhere to their medication and to engage in care, both of which can affect their health and wellbeing as well as the wellbeing of their infants. The study suggested that domestic violence interventions should be targeted at women who have not already experienced it, and that the efforts towards this could be built into already existing programs on PMTCT (Groves, 2017). These were important findings, hence, it was necessary to conduct a study on women who were diagnosed HIV positive during pregnancy, since the South African study found that they were more likely to experience intimate partner violence, to ascertain the occurrence of IPV once they disclosed their HIV positive status to their intimate partners. The findings of the current study could guide in developing care guidelines for women diagnosed HIV positive during pregnancy, which can probably be incorporated in already existing programs in order to give better care to affected women. Screening for IPV can deliberately be incorporated in the ANC package for HIV positive women.

However, another South African study found that disclosure to their partners eased the stress from young and adolescent women who were diagnosed HIV positive during pregnancy and they received support to adhere to medication and clinic attendance. Partners also provided emotional support to them to deal with being HIV positive and pregnant (Madiba and Putsoane 2020). This study was conducted on adolescent and young women who might experience disclosure problems differently. The current study therefore sought to establish IPV in women of child bearing age after they disclosed their HIV positive status to their intimate partners to provide information on their experiences. This could add to the existing body of knowledge by providing the perspective of all women in the child bearing years. Contrary to women experiencing violence at disclosure of an HIV positive diagnosis, Mwamba et al (2020) assessed the willingness to disclose an HIV positive diagnosis among pregnant women and their partners who were awaiting testing during antenatal care in Tanzania and found that 93% were willing to disclose to at least one person. Disclosure may help clients to obtain the support which they need to cope. The current study further aimed to explore the actual experiences

with disclosure of their diagnosis, unlike the study by Mwamba which assessed willingness to disclose, in order to add to the existing body of knowledge. The findings can be used to strengthen the support to women to help them disclose their diagnosis which is cardinal for their social support.

Sometimes, women who disclosed their HIV status may be stigmatised by those to whom they disclose, leading to stress. Zotova et al (2022) cross sectionally assessed the association between HIV disclosure and depressive symptoms among HIV positive pregnant women and found that disclosure was higher among participants diagnosed prior to their current pregnancy relative to those diagnosed during the current pregnancy. This study by Zotova found that newly diagnosed women were hesitant to disclose their HIV positive diagnosis. In an effort to understand why newly diagnosed women found it difficult to disclose their HIV positive status, the current study aimed to explore the experiences of women diagnosed with HIV during their current pregnancy, with disclosure of an HIV positive diagnosis in order to add more knowledge to the study by Zotova. The findings would be used to address the problems found, and enhance disclosure which is necessary for the women's social support.

As seen above, violence mostly surrounds HIV infection in pregnant women. This may make women not to disclose their HIV diagnosis made during pregnancy. In Harare, Zimbabwe, Shamu et al (2014) conducted a study on IPV after disclosure of HIV test results among pregnant women in a cross sectional study, and found that over 93% women disclosed their status to their spouse and 32.8% reported IPV. HIV status was associated with IPV and reported negative reactions by male partners immediately after disclosure. Factors found to be associated with IPV were gender inequality, past IPV, risky sexual behaviour and living with relatives. The study concluded that health services should provide women with skills on how to determine and respond to risks associated with disclosure and scale up male involvement in antenatal care. Replicating this study in Zambia in a mixed methods longitudinal study was necessary to obtain indepth information on how women experienced the IPV, and could be helpful in strengthening male involvement programmes in the antenatal care of women.

Zambian researchers have also researched on IPV in HIV positive women. A 2016 study found that experiencing IPV was associated with decreased odds of adherence to PMTCT during and after pregnancy. Physical violence had a less pronounced effect on non-adherence than emotional and sexual violence. The study concluded that IPV is associated with non-adherence and deserves increased attention in an effort to eliminate mother to child transmission of HIV

(Hampande, in 2016). This study, like the current study, was conducted in Lusaka district in Zambia, but it was a cross-sectional study conducted on HIV positive women. The findings revealed non adherence by women who experienced intimate partner violence, hence the current study aimed to explore intimate partner violence among women who were diagnosed with HIV during pregnancy, to broaden the knowledge base on IPV in HIV positive perinatal women, which can help to strengthen the development of guidelines for care that is specific to their needs.

Most of the studies cited above revealed IPV after disclosing an HIV positive diagnosis and demonstrated the role of IPV in emotion-focused coping which does not help the woman to adjust her life to living with the virus. The current study aimed to explore IPV in women diagnosed HIV positive during pregnancy, and the findings will be used in suggesting care guidelines to help reduce the occurrence of intimate partner violence when women disclose their HIV positive status to their partners. This is likely to enhance ART adherence, and hence reduce the risk of vertical transmission of the virus.

2.4 Coping Strategies used by Women Diagnosed with HIV during Pregnancy

An HIV diagnosis during pregnancy can have various effects in the life of the pregnant woman. Women who have received an HIV positive diagnosis during pregnancy face a lot of challenges and may experience stress due to possible stigmatisation and fear of infecting their baby. If a pregnant woman uses an appropriate coping strategy, the stress levels will begin to reduce and she will most likely be able to live a normal life. However, sometimes the woman may use inappropriate coping strategies which has negative effects on how she will handle the stress. Lazarus and Folkman (1984) suggest that problem focused coping is the ideal coping strategy to help in reduction of stress and allowing to live a normal life. Coping is a potential buffer against negative outcomes. In a study that was conducted on United Kingdom-based African women following an HIV diagnosis during pregnancy in 2014, Treisman et al found that the aspect of HIV these women reported finding most distressing was their inability to breastfeed, which seemed central to their cultural identity as mothers. According to the theoretical model of Lazarus and Folkman (1984) which was used to guide this study, coping strategy is assisted by resistance resources, which in this case would be breastfeeding. Zambian women equally value breastfeeding as they are socialised that breast milk is the best feed for their baby, therefore, the current study was conducted to explore mother baby bonding among recently diagnosed women, which included questions on breastfeeding. This helped in providing

country specific data which can be used to assist women to cope positively with the stress of an HIV positive diagnosis during pregnancy.

Lingen-Stallard et al explored women's experiences of receiving an HIV positive test during antenatal screening. The results revealed the emergent phenomenon as transition and transformation of "being" as women accepted HIV as part of their lives. Paired themes supported the phenomena: shock and disbelief, anger and turmoil; stigma and confidentiality issues; acceptance and resilience. Women had extreme reactions to their positive HIV diagnosis, compounded by the cultural belief that they would die. The initial disbelief of the unexpected result developed into sadness at the loss of their old self. Turmoil was evident as some women considered termination of pregnancy, self-harm and suicide. Coping strategies included keeping HIV a secret and making their child (ren) the prime focus of life, which are both emotion focused coping strategies and may lead to poor health behaviours. The study concluded that midwives were given unique understanding of the complexities and major implications for women who test for HIV, and that midwives are crucial in improving the experience of women who test positive (Lingen-Stallard et al in 2016). The above study used phenomenology and did not classify the coping strategies that women used, hence the need to conduct the current study which aimed at providing longitudinal, mixed methods data on the categories of coping strategies that were used, and how women managed to cope. The findings of the current study can be used to provide enhanced guidance to Midwives as they plan the individualised care for the women who have an antenatal HIV diagnosis at selected Health facilities in Lusaka district.

The coping strategy that an individual employs to cope with stress can either help to reduce the stress levels or increase them. A study conducted among Brazilian pregnant women identified some coping predictors which included being employed, reporting religious practice and higher CD4 count that were associated with problem-focused coping. Lower educational level was associated with emotion focused coping. Relationship support strategies were more likely to be reported by those who had good social support, who had disclosed HIV positive status to baby's father and who knew their infection before pregnancy (de Faria et al, 2014). These findings underlie the need for HIV interventions focused on social support. This study, used a quantitative cross sectional survey which did not measure the levels of stress but focused on the coping strategies. To address the knowledge gap that existed, the current study aimed at measuring the stress levels and sought associations between stress levels and the coping

strategy that was utilised. These findings are useful in addressing the stress levels by providing women with information which can assist them to utilise effective coping strategies, encourage disclosure and encourage social support for women who are diagnosed with HIV during pregnancy.

Another qualitative study was conducted in Uganda to understand coping strategies during pregnancy and the postpartum period on women living with HIV which identified five coping strategies within a socio ecological framework. Some of the coping strategies used included acceptance of self and HIV status, coping through support from others, coping through HIV related health care delivery and system supports, and coping through support from church. The conclusions are that more emphasis should be placed on psychosocial care and incorporate strategies that address psychosocial challenges in the HIV care package in order to optimize wellbeing (Ashaba et al 2017). These are important findings which helped to understand the levels of coping that women utilised, but to address the methodological gap that existed, the current study aimed at categorising the coping mechanisms and exploring the resistant resources that assisted women to cope.

Sometimes, individuals need support, in its various kinds, to cope with the stress of an HIV antenatal diagnosis. Kotze et al (2014) in Tswane, South Africa explored the psychosocial factors associated with coping among women recently diagnosed HIV-positive during pregnancy and assessed two coping styles; active and avoidant coping. The study revealed that increases in active coping were associated with decreasing levels of internalised stigma and depression, increasing self-esteem and positive social support, knowing someone who is living with HIV, being physically healthy and living above the poverty line. Increases in avoidant coping were associated with increasing internalised stigma and depression, lower levels of self-esteem, HIV-knowledge and lower levels of education. Recommendations are made for psychological support services to strengthen women's ability to cope in order to enhance their health and that of their infants. This study focused on psychosocial variables associated with coping, so there was need to conduct a study which would categorise coping strategies used by women diagnosed with HIV during pregnancy, and also explore their coping strategies with regards to the resistance resources which assisted them to cope. There was also need to test for associations between the coping strategies utilised and the levels of stress, hence the current study was conducted to address this knowledge gap. The findings would enable more focused recommendations after identifying the associations between coping strategies and stress levels.

Coping styles can also be associated with intimate partner violence and HIV risk behaviours. In their 2017 study on intimate partner violence and HIV risk behaviours, Weiss and others evaluated avoidant coping as a moderator. Findings were that avoidant coping moderated the relations between both physical and psychological IPV severity and HIV-risk behaviours. They found that the severity of IPV, both physical and psychological were significantly associated with HIV-risk behaviours when avoidant coping was high. This study shows the relationship between the coping strategies used by women and the occurrence and severity of IPV and also the HIV risk behaviour that the women would have.

From the above literature review on coping with an HIV positive diagnosis, most of the studies were qualitative, hence there was need to conduct the current mixed methods study which measured the stress levels and categorised the coping strategies, and also tested for associations between the coping strategy utilised and the levels of stress. This helped in making appropriate recommendations which would help in reducing the stress levels among the women.

2.4.1 The effect of psychosocial, spiritual and medical support on women's coping with an HIV diagnosis

According to Lazarus and Folkman stress and coping model (Figure 1), there are resistance resources that are used to assist in coping with stressful situations. Women diagnosed HIV positive during pregnancy equally use some resistance resources to cope with the stress that comes with their diagnosis, and some of these resources are; psychosocial, spiritual and medical support. Support, is cardinal if the woman diagnosed HIV positive during pregnancy is to cope with the stress. A study on Experiences, Needs and Internet use of women recently diagnosed with HIV by Walsh et al (2012) found that many women were surprised by their diagnosis because they did not fit the profile of people at risk of HIV and obtaining social support immediately after diagnosis was a primary need. To replicate this study in a developing nation, the current study aimed to measure the stress levels and explore the experiences of women diagnosed with HIV during pregnancy.

Women who are diagnosed HIV positive during their pregnancy may experience stress and other problems as a result of their diagnosis, and may therefore require support to cope. In their study, Remien et al in 2019 found that rates of mental health problems are higher among people living with HIV, and recommended that mental health screening and care be integrated in all HIV screening and treatment centres to ease access to mental health services among people living with the virus. This study pointed out the need for medical support of people living with HIV, but did not specifically conduct the study on pregnant women. If the general population

needed mental health services to cope with HIV, the pregnant women who are already experiencing the stress of pregnancy when they are diagnosed HIV positive would require even more mental health support (Engidaw et al, 2019; Marshall and Raynor, 2014). Therefore, the current study aimed to explore the experiences of women who are diagnosed with HIV during pregnancy, in order to, among others, find out what resistance resources were available to them to help them cope. In Ibadan, Oyinlola et al (2017) studied the impact of psychosocial support on wellbeing of HIV infected older adults and established that there was significant impact of counselling services on the general wellbeing of HIV infected older adults, and there was also significant impact of financial support from the clinic on the general wellbeing of HIV infected adults. This study therefore demonstrated the impact of counselling and financial support in helping HIV infected adults to live with their condition. Equally, this study was conducted on the general population, hence there was need to conduct the current study to provide information on support of pregnant women to cope with the stress of an HIV positive diagnosis which is critical in reducing the risk for vertical transmission of the virus.

Medical support, in the form of linking women diagnosed HIV positive to HIV care, is an important aspect of helping them to cope with the stress that may result from their diagnosis. This was proved in a study conducted by Turan et al (2014) in Kenya who studied on linkage to HIV care, postpartum depression and HIV related stigma in newly diagnosed pregnant women living with HIV in Kenya. The study found that at 6 weeks after delivery, women who had not linked to HIV care after testing positive at their first antenatal visit had higher levels of depression and internalized stigma compared to women who had linked to care, and they stressed the importance of linkage to care as it has physical and mental health benefits on the woman. In Zambia, most women diagnosed HIV positive are immediately linked to care, though informal interviews with some psychosocial counsellors revealed that some of the women decline to be linked to care. Therefore, the current study sought to explore their experiences after they received an HIV positive diagnosis in order to provide information that would help in reducing stress and encouraging women to enrol and remain on HIV care for the sake of their health and that of their babies.

Psychosocial and spiritual support have been associated with positive coping among HIV infected people. Spirituality also helps people living with HIV to cope with their illness (Cotton, Puchalski and Tsevat, 2009). A study conducted on spirituality and religion in patients with HIV/AIDS found that 75 % of the respondents said that their illness had strengthened their faith at least a little and patients used positive religious coping strategies like seeking God's

love and care more than negative ones, like wondering whether God had abandoned them. The study concluded that most patients belonged to an organized religion and used their religion to cope with their illness. Coping by spirituality to predict survival of the HIV victim was also explored by Ironson and others in their longitudinal study which found that overall, positive spiritual coping significantly predicted greater survival over 17 years (Ironson, Krener and Lucette, 2016). The above studies found that spirituality helps people cope with the stress of an HIV positive diagnosis and even lengthens the survival rates of the individuals. However, these studies were conducted on the general population and so there was need to conduct this study on perinatal women who were diagnosed with HIV infection during their pregnancy to classify their coping, which is critical in reducing the stress levels as stress can have adverse effects on the pregnancy and the developing foetus. Additionally, it was important to explore spiritual support in dealing with the stress of an HIV positive diagnosis, especially because Zambia is a Christian nation (Phiri, 2003), to find out how spiritual support affected women's coping with an HIV positive diagnosis.

The study cited above by Ashaba et al (2017) conducted in Uganda revealed that participants reported coping through support from partners, family and friends. At organizational level, women reported coping through HIV related Health care delivery and system supports. At community level, they reported coping through support from church and spirituality and at individual level, they reported coping through acceptance of self and HIV status, and self-reliance (Ashaba et al, 2017). Even if this study was conducted within the region, there was need to conduct the current study as there could be cultural differences between the Ugandan and Zambian women which could affect the way that they cope.

Supporting women to cope with the stress that may result from a diagnosis of HIV during pregnancy can have a number of benefits which can better the quality of life of the affected woman. A South African study by Mundell et al (2014) studied the impact of structured support groups for pregnant South African women recently diagnosed HIV positive in which the authors evaluated a 10 session psychosocial support group intervention for newly diagnosed women which revealed that at follow up, the rate of disclosure was higher, levels of active coping were higher, and levels of avoidant coping were lower. The current study sought to identify other coping resources that women used, apart from psychosocial support, to assist them to cope. The additional information from the current study can therefore be used to strengthen those other coping resources which would be identified in making recommendations to help women to cope.

Support, in its various kinds is therefore important in helping women diagnosed HIV positive to cope with their condition, therefore, the current study was aimed at exploring women's experiences with coping from the time they were diagnosed during pregnancy, to the 6th week postdelivery in order to recommend coping support for them.

2.4.2 Physiological Health and its Effects on Coping with an HIV Diagnosis during Pregnancy

Physiological health plays an important role in coping with the stress that may result from a diagnosis of HIV. Other studies have demonstrated that stress and other psychosocial variables such as hopelessness and depression can have an impact on viral load and CD4 count. A prospective study by Ironson et al (2015) found that higher life event stress tended to predict viral load increases in men and women, even when adherence to antiretrovirals was controlled for. Following these results, the current study sought to longitudinally measure the stress levels among pregnant women who were diagnosed with HIV during their pregnancy, as pregnancy is one of the life events which is stressful. The study further explored the experiences of the women with the stress of an antenatal diagnosis of HIV. The findings added to the knowledge on the stress levels that women experienced overtime, and so could be used to determine the risk of increased viral load.

In addition, depression, hopelessness and negative coping styles were strongly related to declines in CD4 count (Newman, 2016). When viral load increases, the woman may begin to experience poor physiological health which is one of the resistant resources that helps women to cope with an HIV positive diagnosis. Women diagnosed with HIV during pregnancy need to be managed holistically in order to enhance their physiological health. Huang et al (2020) explored the HIV-related stressors that people living with HIV (PLWH) commonly experience and express as stressful at the time of diagnosis and 1 year later and found that, among others, presence of HIV symptoms, was associated with higher levels of stress and recommended more attention to be given to people with presence of HIV symptoms to help them cope and bring down the stress levels. It was therefore necessary to replicate this study in Zambia to ascertain the physiological health of pregnant women diagnosed with HIV, as poor health could affect their stress levels and coping with that stress. As demonstrated from studies cited above, high stress levels during pregnancy could have negative consequences on the pregnant woman and the baby in utero. The current study therefore aimed at measuring the stress levels, categorising the coping strategies utilised by the women, and exploring their experiences in order to make

appropriate recommendations on management of women diagnosed with HIV during pregnancy.

2.5 Conclusion

The reviewed literature has demonstrated that women diagnosed HIV positive during pregnancy undergo various experiences, which may even affect the psychological development of their offspring. In order for these women to live healthy lives, Lazarus and Folkman (1984) recommend that such women employ problem focused coping. Sometimes, women may need a lot of support (social, spiritual, psychological and medical) in order to help them cope with their diagnosis. Fewer studies have measured the stress levels experienced by women who are diagnosed with HIV during pregnancy or their experiences with mother-baby bonding. This study sought to measure the stress levels, categorise the coping strategies and explore the experiences that women went through after testing HIV positive during pregnancy, through to their 6th week postnatal visit at selected Health facilities in Lusaka District, in order to suggest care guidelines for women diagnosed HIV positive during pregnancy.

The subsequent chapter presents the methodology that was applied in the study.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

The previous chapter reviewed the studies that have been conducted on the research topic. In this chapter, the research design from a theoretical perspective is described. The guiding research paradigm which informed the research design and the methodological choices to address the research objectives and questions are discussed in detail.

3.2 Research paradigm

Guba and Lincoln (1994) define a paradigm as a set of basic beliefs (or metaphysics) that deals with ultimates or first principles. It represents a worldview that defines, for its holder, the nature of the “world”, the individual’s place in it, and the range of possible relationships to that world and its parts“. Other scholars have defined a research paradigm as a manner of thinking; a basic belief system or worldview; or a basic set of values and assumptions that guide researcher’s inquiries (Sadruddin, 2018, Kivunja, 2017, Marsh and Furlong, 2002, Creswell, 1998). A paradigm contains an investigator’s assumptions, not only about the manner in which an investigation should be performed (in other words, the methodology), but also about how the investigator defines truth and reality (in other words, the research ontology) and how the investigator comes to know that truth or reality (in other words, the research epistemology) (Plack, 2005). Potter (1996) emphasises the importance of the research paradigm and the fundamental difference between qualitative and quantitative approaches to research: The issue of ontology and epistemology are so fundamental to our everyday behavior that we may rarely bother to examine them. For most of our everyday life the words ontology and epistemology do not arise, nor do the questions it poses. Our lack of concern for them derives from axiomatic nature; they require us to take a position based on belief, not proof.

A paradigm is composed of four assumptions or elements; the ontology, epistemology, axiology and methodology (Lincoln and Guba, 1985), which comprise the assumptions, beliefs, norms and values of a chosen paradigm.

1. Ontology of paradigm

Ontology is the “nature of reality” or “nature of being” (Thomson, 2023). Al-Saadi (2014) also defines ontology as the study of ‘being’, which is concerned with ‘what is’, that is the nature of existence and structure of reality as such, or what is possible to know about the world. The ontological stance of this study is that reality is both objective and subjective (Creswell, 2014).

Therefore, the study used measurement instruments to obtain objective information on stress levels and coping strategies that the study participants utilised. Subjective data were also collected which explored the participants' experiences with being diagnosed with HIV during pregnancy, and reported their narratives.

2. Epistemology of a paradigm

Epistemology is one of the fundamental branches of philosophy, which is the study of knowledge that is interested in how reality is assessed and measured. It deals with issues of knowledge acquisition, methods of knowledge generation and production, validity and its limitations (Thomson, 2023). Simply stated, epistemology is a theory of knowledge and it deals with how knowledge is gathered and from which sources. This study is based on the epistemology that knowledge can be acquired both from numeric data to provide a broad picture of what has happened from a larger sample, and also from going deeper and exploring stories and experiences from fewer participants (McChesney, 2017). This helped in understanding the stress levels and coping strategies that women who were diagnosed with HIV during pregnancy utilised, and also in understanding their experiences with regards their stress, coping mechanisms, IPV, ART adherence and mother-baby bonding.

3. Axiology of paradigm

Axiology is the study of "what things are good and how good they are" and is concerned about the study of values and value theory in which a researcher examines their axiological assumptions and concepts that are foundational to an ethical world view (Thompson, 2023). The researcher's axiological assumptions and beliefs helps them determine what knowledge is worth pursuing and how they should conduct their research with human subjects, using a strict code of ethics. This study acknowledged the role of values in research and openly discussed the values of study participants by reporting their narratives and set aside the researchers's beliefs and priori assumptions in order to avoid misrepresenting the participants' intended meanings or experiences.

Once we have recognized our belief, then we can use logic to fashion arguments and practices to follow from it. Two scholars who hold different beliefs of ontology and epistemology may be interested in examining the same phenomenon, but their beliefs will lead them to set up their studies very differently because of their differing views of evidence, analysis and the purpose of the research. It therefore becomes important to highlight the paradigm that was used in this

study in order to place the research design, methodology and approach in context. This study applied pragmatism to underpin it.

Pragmatism values both objective and subjective knowledge, and involves research designs which incorporate operational decisions based on what works best in finding answers to the research questions and objectives (Cresswel, 2007; Nottingham University, 2023). Pragmatism argues that it is possible to work with variations in epistemology. It originated in the United States of America around 1870 as a reaction against existing and opposed views of reality posed by positivists and interpretivist schools of thinking, and is a departure from other worldviews in that it uses whatever methods to understand the research problem (Williams, 2007; Creswell & Creswell, 2018; Bouma et al., 2012; Nottingham University, 2023). In applying pragmatism, this study used both quantitative and qualitative methods which were guided by the research questions and objectives, and had the liberty to choose those research methods that could best answer the research questions (Creswell, 2007). The stress levels and coping strategies used by women who were diagnosed with HIV during pregnancy were measured quantitatively while their experiences were investigated qualitatively. A comparison between different research paradigms is given in Table 2, in order to describe the pragmatism paradigm in more detail by also contrasting it with other paradigms that are not used in this study, namely the positivist, subjectivist, constructivist, interpretivist and critical paradigms.

Table 2: Research paradigms, adapted from Crotty, 1998, Scotland, 2012, Dawadi, 2021

Paradigm	Ontology What is reality?	Epistemology How can one know reality?	Theoretical perspective Which approach can one use to know something?	Methodology How does one go about finding out?	Method What techniques are used to find out?
Positivism	There is a single reality or truth (more realistic)	Reality can be measured and hence the focus is on reliable and valid tools to obtain that	Positivism /postpositivism	•Survey research •Experimental research •Quantitative descriptive studies	Usually quantitative, • Empirical • Structured and replicable observation • Quantification / measurement • Experimental – directly manipulate variables and observe
Constructivism/interpretivism	There is no single reality or truth. Reality is created by individuals in groups (less realistic)	Reality needs to be interpreted. It is used to discover the underlying meaning of events and activities	Interpretivism (reality needs to be interpreted) - phenomenology - symbolic interactionism - hermeneutics Critical inquiry Feminism	Field research conducted in natural settings to collect substantial situational information, like Ethnography Grounded theory Phenomenological research	Usually qualitative. • Unstructured observation • Open interviewing • Discourse analysis • Try to capture “insider” knowledge
Subjectivism	Reality is what we	All knowledge is	Postmodernism	Discourse theory Archaeology	• Autoethnography • Semiotics

	perceive to be real	purely a matter of perspective	Structuralism Post-structuralism	Genealogy	• Literal analysis • Intertextuality
Critical theory	Realities are socially constructed entities that are under constant influence	Reality and knowledge is both socially constructed and influenced by power relations from within society	Marxism Queer theory Feminism	-Critical Discourse analysis -Critical ethnography -Action research -Ideology Critique	• Participatory action research • Dialogical methods
Pragmatism	Reality is constantly renegotiated, debated, interpreted in light of its usefulness in new unpredictable situations	The best method is one that solves problems. Finding out is the means, change is the underlying aim	Deweyan pragmatism Research through design	Mixed methods design based research Action research	Combination of any of the above and more, such as data mining expert review, usability testing, Physical prototype

4. Methodology of paradigm

Research methodology is a description of the techniques and procedures used to identify and analyse information regarding a specific research topic, or the general approach that a researcher takes in carrying out the research project. It involves the system in which one chooses to investigate, measure, and analyze their research's aims and objectives. Answering the "how" questions, it describes how a researcher systematically designs a study to ensure valid and reliable results that addresses the research aims, objectives and questions (Williams, 2007, Jansen and Warren, 2020)). It is the process by which researchers design their study in order to achieve their objectives using the selected research instruments. Common methodological approaches are; quantitative, qualitative and mixed-methods. This study used

the mixed methods approach and collected both quantitative and qualitative data to address the research questions and objectives.

The literature reviewed found that most of the studies used qualitative methods and mostly described the stress that women were experiencing and the coping mechanisms that they used to cope. Therefore, this study chose the mixed methods design in order to provide more information by measuring the actual levels of stress that women were experiencing. Quantitative data were collected at stages 1, 2 and 3 of the study while qualitative data were collected at stage 3 of the study. However, the data were only analysed at the end of stage 3 of the study and the qualitative and quantitative data were given equal weights. Data were merged at discussion. The rationale for the mixed methods research was that the quantitative part measured the stress levels that women were experiencing and classified the coping strategies, while the qualitative part provided the explanations on why women were stressed and how they were coping. The qualitative data also validated and expanded the quantitative data as it explored the participants' stress and its progression, coping strategies in more depth, and other experiences with an HIV positive diagnosis during pregnancy, like IPV and ART adherence. The qualitative data further explored mother-baby bonding which was not measured by the quantitative results.

Careful consideration was given to three major aspects while selecting this design. Firstly, the relative priority of the approaches was considered by considering the importance of the qualitative and quantitative data in answering the research questions and addressing the research objectives (Plano Clark & Ivankova, 2016). A study can have three priority options: quantitative priority (i.e., more emphasis on the quantitative data collection and analysis), qualitative priority (i.e., more emphasis on the qualitative data collection and analysis), or equal priority (i.e., considering both data sets to be equally important to answer the research questions) (Plano Clark & Ivankova, 2016). The study weighed the research purpose and the data that were to be obtained and assigned equal priority to the quantitative and qualitative data. Secondly, the level of interaction between the data sets was considered and the quantitative and qualitative data sets, which were complementary, were kept independent and were only mixed at discussion (Creswell & Plano Clark, 2011). Creswell and Plano Clark (2011) discuss four possible stages for mixing two data sets: at the level of design, during data collection, during data analysis, and during data interpretation, and this study mixed the two data sets at interpretation. Thirdly, the timing of the quantitative and qualitative approaches

was considered in which quantitative and qualitative data were collected and analyzed in parallel and then merged for a complete understanding of the stress, coping strategies and experiences of women who were diagnosed with HIV during pregnancy (Creswell & Plano Clark, 2011).

The mixed-methods design offered a number of benefits as it triangulated qualitative and quantitative data in such a way that the stress, coping and experiences of women who were diagnosed with HIV during pregnancy were meaningfully explained, and helped to answer the research questions with sufficient depth and breadth (Enosh, Tzafrir, & Stolovy, 2014), enabling generalisation of findings.

3.3 Research design

Creswell (2014) explains research design as the specific procedure involved in the research process: data collection, data analysis, and report writing. It is adopted by a researcher before data collection commences so as to achieve the research objective in a valid way. The essence of research design is to translate a research problem into data for analysis so as to provide relevant answers to research questions at a minimum cost. This study utilized a longitudinal concurrent mixed methods study design. There are four major types of mixed methods research designs which include the triangulation, the embedded, the explanatory and the exploratory designs. A comparison between these major types of mixed methods research designs is given in Table 3, in order to describe the concurrent mixed methods design by also contrasting it with the other types that are not used in this study.

Table 3: The Major Mixed Methods Design Types, adapted from Creswell, 2007

Design type	Variants	Timing	Weighting	Mixing	Notation
Triangulation	• Convergence • Data transformation • Validating quantitative data - Multilevel	Concurrent: quantitative and qualitative at same time	Usually equal	Merge the data during the interpretation or analysis	QUAN + QUAL
Embedded	• Embedded experimental • Embedded correlational	Concurrent or sequential	Unequal	Embed one type of data within a larger design using the other type of data	QUAN(qual) or QUAL(quant)
Explanatory	• Follow-up explanations • Participant selection	Sequential: Quantitative followed by qualitative	Usually quantitative	Connect the data between the two phases	QUAN qual
Exploratory	• Instrument development • Taxonomy development	Sequential: Qualitative followed by quantitative	Usually qualitative	Connect the data between the two phases	QUAL quan

This study utilized the triangulation design-convergence model depicted in Figure 2 below (Creswell, et al, 2007). Longitudinal analytical study design was utilized for the quantitative part of the study (Creswell et al, 2003), whereas the qualitative part utilized descriptive cross sectional study design. Panel studies were used to collect data from the same individuals at

three (3) different points in time. This design was helpful in identifying the effects of HIV diagnosis at different phases of the woman's life, and the coping strategies that they used. The qualitative design helped to achieve understanding of the experiences of women diagnosed with HIV during pregnancy, and how they cope. Data were triangulated at discussion, and provided a comprehensive analysis of the research questions. The design was chosen because of the value that midwifery practice places on the meaning that women ascribe to their experiences of pregnancy and childbirth (Thomson, Dykes and Downe, 2011), and hence determined what they go through, and how they cope with an HIV diagnosis made during pregnancy. Information on mother baby bonding was sought as pregnant and postpartum women are usually concerned about their babies, so the study utilised qualitative questions to include the baby in the explanations.

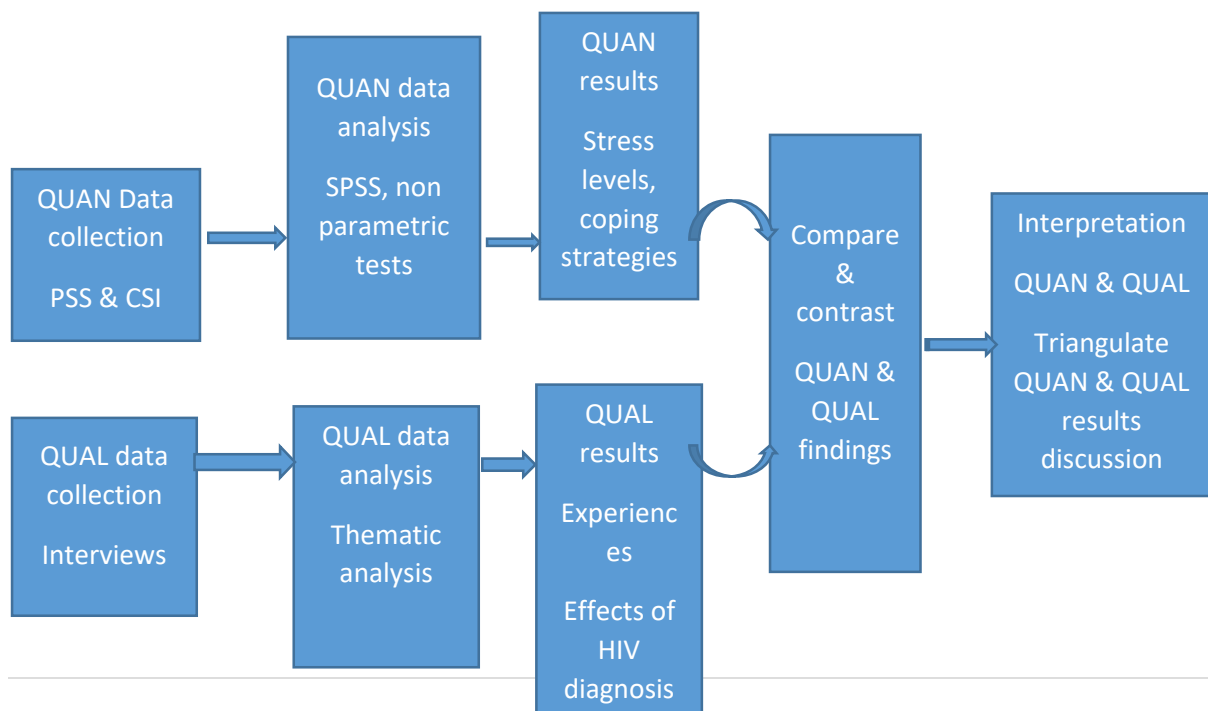


Figure 2: Mixed methods triangulation design: convergence model (Creswell and Plano - Clarke, 2007)

3.4 Stages of the study

The study was conducted in three stages as follows;

Stage 1– this was recruitment and measuring the stress levels of women coming for antenatal revisits who had been diagnosed HIV positive during their booking visit, using descriptive study design. This stage partly addressed objective 1 of the study.

Stage 2 –this involved quantitative data collection from the same study participants from the 32nd to the 36th week’s gestation to measure the stress levels and classify the coping strategies that women had been using to cope with the diagnosis of HIV during pregnancy. This stage addressed research objective 1 and 2 in part.

Stage 3 –this was quantitative and qualitative data collection at 6 weeks post-delivery to measure the stress levels, classify the coping strategies and determine the experiences of women diagnosed HIV positive from the time they were diagnosed up to 6 weeks post-delivery. In depth interviews were used and addressed objectives 3 and 4 of the study. This stage also collected information on mother-baby bonding. After this stage, all research objectives and questions were fully addressed.

3.5 Study setting

The study was conducted at Chilenje Level 1 Hospital, Kanyama Level 2 Hospital and George Health centre in Lusaka District, the capital of Zambia. Kanyama and George compounds are high density areas, while Chilenje is a medium density area which also caters for one rural community under its catchment. The Health facilities offer maternal and child health services, HIV counselling and testing and ART services among others (LDHO, 2019). The study settings were chosen to provide diversity in demographic characteristics of participants, which might have an influence on how they experience the diagnosis of HIV infection made during pregnancy.

3.6 Study population

The study population were women seeking antenatal and postnatal care services at the study settings who tested HIV positive for the first time during their current pregnancy.

3.6.1 Target population

The target population were HIV positive pregnant women from Chilenje Level 1 Hospital, Kanyama Level 2 Hospital and George Health centre.

3.6.2 Accessible population

The accessible population were the target population who were willing to take part in the study and who gave their consent.

3.7 Sample selection

According to Radhakrishnan (2014), sampling is the process of selecting a portion of the population to represent the entire population. The sampling plan may use either probability sampling methods or non probability sampling methods. Probability sampling techniques are primarily used in quantitatively oriented studies, and involve selecting a relatively large number of units from a population, or from specific subgroups of a population in a random manner where the probability of inclusion for every member of the population is determinable (Teddle, 2007). Probability sampling is based on underlying theoretical distributions of observations or sampling distributions, the best known of which is the normal curve, with more representativeness of the general population. Common probability sampling methods include random sampling, systematic sampling, stratified sampling and cluster sampling. Non probability sampling techniques are primarily used in qualitative research in which samples are selected based on the subjective judgement of the researcher, and not randomly (Teddle, 2007). Common non probability sampling methods include convenience sampling, snowball sampling, purposive sampling and quota sampling. Non probability sampling usually involves smaller samples, typically less than thirty to address specific purposes related to research questions, with the researchers selecting cases that she or he can learn the most from.

The health facilities for this study were purposively selected. Chilenje Level 1 Hospital is one of the health facilities which offers MCH and ART services and it was easy to find the target population. Chilenje Township is a medium density area and the facility also caters for some rural population, so it was useful in noting the differences in experiences of women who were diagnosed with HIV during pregnancy from people of different sociodemographic backgrounds. Kanyama Hospital and George Health centre also offer MCH and ART services, and the townships are mostly high density areas. It was easy to find the target population.

The De jure Census Sampling method was used to select women seeking 2nd visit antenatal care services, who tested HIV positive for the first time during their antenatal booking visit and these were also followed up at Stage 2 of the study. The Census sampling method, also known as the complete enumeration or 100% enumeration, or complete survey, is a statistical investigation in which data are collected for each and every element or unit of the population (Turner, 2020). This method is useful when case intensive studies are required, or the area is limited. This study employed the Census sampling as the population of women who are diagnosed with HIV during pregnancy is small, with less than three of them attending antenatal care on each particular day, hence all the women who tested HIV positive during the period of data collection were included in the study in order to intensively study and collect data from each one of them, creating less bias in the results.

Purposive sampling was used to select participants for Stage 3 of the study. In selecting these participants, the stress levels and coping strategies identified among the study participants in stages 1 and 2 of the study were considered. Those who had high, moderate and low stress levels were represented in stage 3 to try and understand why they experienced such stress levels. The coping strategies used were also considered and participants from all the coping strategies subgroups were included, that is, problem focused (problem solving), problem focused (seeking social support) and emotion focused coping, to try and understand why they used the coping strategies as identified. As compared to probability sampling for stage 3, purposive sampling was used to select participants who would provide the information that could address the research objectives.

3.8 Sample size

The sample size for the quantitative part of the study (research objectives 1 and 2) was initially calculated using the Cochran's 1977 formula as indicated below:

- Population size = 1 500
- $n = Z^2 \times P (1-p)$,
- $N = 1.96 \times 1.96 \times 0.072 \times 0.928 / 0.05 \times 0.05 = 103 + 10\% (10.3) \text{ non-response rate} = 113.3 = 114$ for Research objectives 1 & 2.

Cochran's formula was used because the population of women diagnosed with HIV during pregnancy was higher before the COVID 19 pandemic. This study was conducted during the pandemic and the number of women attending antenatal care reduced (Chilenje HMIS data,

2021). Therefore, the sampling plan was changed upon conducting the pre-test where it was noted that the sampling procedures that had been planned would not be successfully used as women diagnosed HIV positive were found to be fewer on a daily basis. Hence, Ethical approval was sought again to use the Census sampling method.

Therefore, the quantitative part of the study selected all the women who met the inclusion criteria as they come for their second antenatal care visit, and 114 participants were enrolled in the study. This was done daily in all the study sites for the eleven month period of data collection

The sample size for the qualitative part of the study (research objectives 3 & 4) was 17 participants who were selected based on the recommendation by Thomson et al (2011) of a sample size of 12 to 20 participants for a doctoral study in order not to have too small a sample which would yield poor results, nor too large a sample which would be difficult to analyse.

3.8.1 Inclusion criteria

Women were eligible for inclusion in the study if they were:

- pregnant and tested HIV positive for the first time at routine antenatal screening during their antenatal booking visit,
- seeking 2nd visit antenatal care services at the selected Health facilities in Lusaka district ,
- Seeking 6th week postnatal care services at the selected Health facilities in Lusaka district.

3.8.2 Exclusion criteria

Women were excluded from the study if they were:

- suffering from other complications or chronic medical conditions during pregnancy,
- experiencing any pregnancy danger sign during their second antenatal visit,
- pregnant with a known HIV positive status prior to the current pregnancy.

3.9 Data collection tool

Data collection, which is an essential phase of all types of research is the process of gathering and measuring information on variables of interest in an established, systematic fashion that enables one to answer stated research questions, test hypotheses and evaluate outcomes (US Department of Health and Human Services, 2023). The data collected can either be primary,

which is first hand information that has never been published, or secondary, which refers to data that is gathered from published sources. The data collection process requires the use of appropriate tools in order to collect valid, reliable and credible data. Some of the commonly used data collection tools include questionnaires, interview guides/schedules, Focus Group Discussion guides, observations and records (Taherdoost, 2021). Records could not be used in this study as few studies have been conducted on the study phenomenon, and hence would not have provided all the information of interest. Focus Group Discussion Guides were not used as focus group discussions require an environment which must be conducive to open and comfortable discussions. HIV is a highly stigmatised condition where participants may not want others to know about their HIV positive status. Further the participants in a Focus Group discussion may give answers which they feel are socially acceptable, and might not have given their honest responses on their experiences with an antenatal HIV diagnosis. This study collected primary data using questionnaires and interview guides. The questionnaires, in the form of measurement scales, were appropriate to collect quantitative data, which allowed for measuring of the stress levels, classification of the coping strategies, and testing for associations between variables. The interview schedules were used to collect qualitative data, and this enabled participants to narrate their experiences with an antenatal HIV positive diagnosis.

3.9.1 Quantitative data

3.9.1.1. The Perceived Stress Scale -10 (PSS-10) adapted from Sheldon Cohen et al (1983) was used to collect quantitative data during all stages of the study and addressed research objective 1. The Perceived Stress Scale (PSS; Cohen, Kamarch, & Mermelstein, 1983), with 5 scales of measurement, is one of the popular tools for measuring psychological stress. It is a self-reported questionnaire that was designed to measure the degree to which individuals appraise situations in their lives as stressful. The tool evaluates the degree to which individuals believe their life has been unpredictable, uncontrollable, and overloaded during the previous month. The assessed items are general in nature rather than focusing on specific events or experiences. This tool was used to measure the stress levels that women were experiencing at different stages of their pregnancy and after delivery. In this study, the tool was adapted and modified by adding the phrase, 'HIV diagnosis during pregnancy' on a number of its items (see attached tool towards the end of the document).

3.9.1.2. The Coping Strategy Indicator (CSI) adapted from Amirkhan, 1990 was used to collect quantitative data during stage 2 and 3 of the study, and addressed research objective 2. The Coping Strategy Indicator is a tool adapted from Amirkhan (1990) and is a 33 item 3 point self-report rating scale designed to assess 3 basic modes of coping which are; Problem solving, Seeking social support and Avoidance, and indicates how people cope with stressful situations in life. Each mode of coping is assigned 11 questions. In this study, Seeking social support, which is also an approach that is used to find solutions to a problem, was categorized under Problem focused coping, and the Avoidance mode of coping was referred to as Emotion focused coping, in relation to the theoretical model. Therefore, the coping strategies in this study were classified as follows;

1. Problem focused (problem solving) or (seeking social support) coping,
2. Emotion focused coping

The tool was adapted by adding the phrase, ‘keeping HIV diagnosis in mind’ in the opening sentence, and was used to classify the coping strategies that women were using to cope with an HIV diagnosis made during pregnancy (see attached CSI in the appendices).

3.9.2 Qualitative data

A self-constructed structured interview schedule was used to conduct in-depth interviews on the experiences of women diagnosed HIV positive during pregnancy, and also collected data on mother-baby bonding during stage 3 of the study. This addressed research objectives 3 and 4. The tool was developed after formulating the research questions and objectives of the study, and was designed to answer those research questions and to meet the objectives. The interview schedule had three (3) sections. Section A comprised questions on understanding HIV, stress, disclosure of the HIV positive status, Intimate Partner Violence and adherence to antiretroviral treatment. This section also had questions on experiences of women diagnosed HIV positive during pregnancy with mother-baby bonding. Section B solicited information on the coping strategies that women used after receiving an HIV positive diagnosis during pregnancy and had questions on the resistance resources that were available to them. The resistant resources included support, which is psychosocial and medical support, and also physiological health. According to the theoretical model that guided this study, Lazarus and Folkman suggest that the way an individual will cope with a stressful situation will be assisted by resistance resources available to them. Section C had questions on the overall experiences of women during pregnancy, labour and delivery, and during the postnatal period.

3.10 Data collection technique

Data were collected within a period of eleven (11) months, from March, 2022 to January, 2023, and catered for the women who booked for antenatal care early, and accorded them a chance to be interviewed at 6 weeks post-delivery. The data collection instruments were administered after all the antenatal or postnatal examinations for the particular visit had been conducted. The participants were identified by the Midwife conducting the antenatal examinations, and thereafter escorted to the interview room by the same midwife. Coloured stickers were put on the participant's antenatal cards at enrolment into the study, for easy identification during the subsequent visits. The researcher began by introducing self and explaining the purpose of the study to each woman diagnosed HIV positive during their current pregnancy. If they agreed to take part, they were then asked to sign a consent form. The study was conducted in private rooms that were provided by the officers in charge at the health facilities, and it was mostly the Sister-In-Charges' offices. The languages that were used during data collection were Chinyanja and English, which are the ones commonly spoken at the study setting. Participants who were able to read and write filled out the measurement scales on their own, while the researcher and research assistants read the questions and filled out the data collection instruments for illiterate participants.

The study engaged 3 research assistants who included 2 qualified Registered Midwives for Kanyama General Hospital and Chilenje Level 1 hospital respectively, and a trained psychosocial counsellor for George Health centre to collect quantitative data. The research assistants were trained for two days and worked under the supervision of the researcher. However, the researcher conducted most of the interviews at Chilenje Hospital due to the busy schedule of the research assistant, and also for the researcher to have first-hand information of the data for all the stages of the study.

3.10.1 Quantitative data

Quantitative data were collected during all the stages of the study. During stage 1, the Perceived Stress scale was used to measure the levels of stress that women were experiencing during antenatal revisits to answer research objective number 1. A maximum of five (5) face-to-face interviews were conducted per day until a sample size of 114 participants was reached. Each interview lasted 20-30 minutes, in which women were asked questions on how often they had felt stressed due to the diagnosis of HIV in the past month. A Likert scale was used with scores ranging from 0 =never, to 5=very often. Afterwards, the ratings were summed up, with the

scores for the positively phrased questions reversed, and translated into the levels of stress which were either low, moderate or high.

The Perceived Stress Scale was again used during stage 2 of the study to measure the levels of stress that women were experiencing at 32-36 weeks gestation. In addition, the Coping Strategy Indicator was used to classify the coping strategies that women had been using since being diagnosed HIV positive at their booking visit. A maximum of ten (10) interviews lasting 30-40 minutes were conducted per day, until all the women enrolled in the study had been interviewed. This stage answered research objectives 1 and 2. Participants were then asked to indicate how they coped by ticking on each of the coping behaviours on a Likert scale which ranged from 1 = not at all up to 3 = a lot. The coping strategies indicated on the CSI were problem focused and emotion focused, with problem focused coping being further classified as either problem solving or seeking social support. The total coping behaviours were thirty-three (33), with eleven (11) behaviours for each of the coping strategies; problem focused-problem solving, problem focused-seeking social support and emotion focused. The scores were then summed up and the coping strategies that women used were classified as either being problem focused or emotion focused coping, according to the coping strategy that got the highest score. Participants were probed further if significant inconsistencies were discovered during data collection and this helped to obtain the correct information from them.

At stage 1 of the study, participants were asked to take part in stages 2 and 3 of the study at 32-36 weeks gestation and at 6 weeks post-delivery respectively. Participants who agreed to take part in the subsequent stages of the study were asked for their names and telephone numbers which were then written on a separate diary that matched with their serial numbers, for easy follow-up.

Field notes were taken during all the stages of data collection to record any other observations or verbalizations of the participants. Each of the data collectors had notebooks for taking field notes

3.10.2 Qualitative data

Qualitative data collection was done during stage 3 of the study and answered research objectives 3 and 4, to explore the experiences of women diagnosed HIV positive during pregnancy and postpartum, with questions on mother-baby bonding too. However, data collection during this stage began by administering the Perceived Stress Scale and Coping Strategy Indicator just like during stages 1 and 2 to measure the stress levels and classify the

coping strategies at stage 3 of the study. Thereafter, face to face in-depth interviews were conducted, each lasting 40 to 80 minutes, in which women were asked to narrate their experiences after receiving an HIV positive diagnosis up to six weeks postdelivery. Most of the interviews were completed within 40 to 50 minutes, with a few exceptions where some participants were overcome with emotions during the interview and these are the ones who took more than 50 minutes to answer the questions. Open ended questions were asked to address each section of the interview schedule and women were encouraged to answer freely without much interference from the researcher. Women were encouraged to narrate their experiences with the necessary probes and prompts. The last question called for women to narrate their overall experiences of having an HIV positive diagnosis during pregnancy, labour and delivery; and the puerperium. A maximum of two (2) interviews were conducted per day, from September, 2022 to January, 2023 whenever participants visited the facility for their 6th week postnatal visit. Saturation, which occurs when researchers begin to observe the same themes and patterns repeatedly, regardless of the number of participants interviewed or observed was reached at the 15th interview. However, two more participants were interviewed to reach the 17 predetermined number of participants as guided by Thomson et al (2011).

The interviews were tape recorded, to provide a backup and to allow information to flow freely without much disturbances which is brought about by so much writing as the participant is talking, and each interview was transcribed verbatim immediately after data collection. At the end of each interview, key points were summarized to the participant in order to verify the data. The participants were thanked at the end of the interview, for their participation and were given a snack owing to the long period that they had spent at the health institution as they took part in the study. Participants at George Health centre were not given any snacks as per advice of the Sister in charge who indicated that participants were suspicious of researchers who gave them food.

3.11 Validity and reliability of quantitative data

3.11.1 Validity

Validity was ensured throughout the study (Burns and Grove, 2009). Internal validity was ensured by constructing the data collection tools in a manner that questions were simple and concise and clearly constructed to avoid ambiguity which can confuse participants and end up bringing responses that are not appropriate. The measurement scales that were used are

validated tools that have been adapted for the study. The questions were asked in the same sequence to all respondents to ensure internal validity.

External validity, which will allow generalization of the study findings beyond the study sample was ensured by including women from different sociodemographic and cultural backgrounds to be enrolled into the study.

3.11.2 Reliability

The consistency of data collected was ensured throughout the study (Burns and Grove, 2009). To ensure reliability, research assistants were trained in data collection for two days to ensure that data were collected in a uniform manner and hence bring out reliable results. The tools that were used to collect quantitative data are validated tools. The psychometric properties of the Perceived Stress Scale were evaluated in 12 articles and found a Cronbach's Alpha of $>.70$ (Lee, 2012) and 0.84 to 0.89 for the Coping Strategy Indicator respectively (Lo, 2017). The principle investigator conducted all the in-depth interviews to ensure consistency in data collection and maintain reliability of the study findings. In addition, the research supervisors, experts in the field of HIV counselling and statistician checked the data collection tools to ensure that reliability is maintained. The data collection instruments were pretested and this brought out some inconsistencies in the data collection instruments, which were attended to before the main study.

3.12 Trustworthiness of the qualitative data and the ensuing analysis

3.12.1 Credibility of the data and their conclusions

Confidence in the truth of the data was ensured by prolonged engagement and persistent observation (Polit et al, 2001), in which sufficient time was invested in data collection. Data were collected over an 11 months period and only a maximum of 2 interviews were conducted per day to allow each participant ample time to narrate their experiences. This helped in creating rapport so that the participants felt at ease to bring out their experiences of being diagnosed HIV positive during pregnancy. Additionally, this was a longitudinal panel study, in which participants had interacted with the researcher in the earlier stages of the study where a rapport had already been created. This in turn helped to bring out quality data which was credible.

Triangulation was used to ensure that the data was credible (Polit et al, 2001). Data source triangulation was done in which women from different sociodemographic backgrounds were

interviewed in order to draw conclusions about what constitutes being diagnosed HIV positive during pregnancy. Method triangulation was used by using interviewing while observing the participants' non-verbal communication as they were interviewed. This helped in improving the credibility of the findings.

External cheeks were also used to establish credibility. Peer debriefing was done by allowing peers to review and explore various aspects of the inquiry. This was done by involving other PhD candidates to ask questions in the phenomenon being studied. Two research assistants who are Professors, with experience in qualitative research examined the inquiry to ensure credibility.

Data were collected by a Midwife, with Masters' Degree and experience in qualitative interviewing. Once the data were collected, key points were summarized to the participants in order to verify the data, Member checks were employed throughout the data collection by paraphrasing and summarizing data to the participants to ensure clarity and accuracy and allow the participants to provide additional insights and information where necessary (Polit et al, 2001).

The credibility of the data set was also enhanced by using purposive sampling of participants which offered conflicting accounts and points of view to strengthen comprehensive description. The participants had different socio demographic characteristics, experienced different levels of stress, and utilised different coping strategies.

Lastly, credibility was ensured by researcher credibility (Patton, 1990 in Polit et al, 2001) in which the researcher provided information about herself and her credentials, and also reported any personal and professional information that may have affected data collection, analysis and interpretation, whether positively or negatively. The researcher engaged in bracketing throughout the process of data collection and analysis in order to stay true to the data.

3.12.2 Dependability

Dependability, was enhanced by having the data scrutinized by the research supervisors and also by member checks (Polit et al, 2001). Data sources were also triangulated by using field notes and verbatim.

3.12.3 Confirmability

This was ensured by having an inquiry auditor, in this case the research supervisors to audit the trustworthiness of the data and the meaning attached to them (Polit et al, 2001).

3.12.4 Transferability

Generalisability of the data was ensured by using thick descriptions which involved a rich description of the research setting, and sociodemographic characteristics of the participants, allowing readers to judge about contextual similarities (Plot et al, 2001).

3.13 Pre-test of the study

The pre-test study was conducted at Kabwata Health facility, which had similar characteristics with the study setting in terms of socio-demographic characteristics of participants and also services offered at the Maternal and Child Health Department. Purposive sampling was used to select 4 participants who were seeking 2nd visit antenatal care services, and having received an HIV positive diagnosis during their booking visit. To test the data collection tool for stage 3 of the study, 2 participants seeking post-natal services at 6 weeks post-delivery were purposively selected to take part in the qualitative data collection using in-depth interviews. The pre-test was conducted over a period of two weeks due to non-availability of the study participants on some days. The pre-test assisted in knowing whether the data collection instruments were suitable to answer the research questions. After conducting the pre-test, it was realized that the random sampling method that was earlier proposed to be used would not be feasible due to the flow of the study population whereby in each day, a maximum of 0 to 3 participants would visit the health facility. Some questions which were found to be unclear on the interview schedule were also rephrased after the pre-test. An example is the questions on mother-baby bonding which initially only elicited information on feeding method and a general question on the relationship between the mother and her baby. At pre-test, it was noticed that these questions did not provide much information, and so more questions on bonding behaviours were added. Some of them included how the mothers took care of the needs of their babies, what other activities they did to the baby while carrying out the caring functions, and how the babies responded to the care. This provided detailed information that could be interpreted for mother-baby bonding. During the pre-test, it was also noticed that collecting demographic information at stage 2 and 3 of the study was unnecessary as these were panel studies, so the questions were removed.

3.14 Data processing and analysis

Data analysis, which is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data, and making sense out of its texts and images, involves preparing it for analysis, conducting different analyses, and moving deeper and deeper into understanding it (Georgetown University Library, 2024, Creswell, 2009). There are several methods of data analysis. Two main statistical methods are used in data analysis; descriptive statistics which summarises data using indexes such as mean and median, and inferential statistics which draw conclusions from data using statistical tests such as student t-test. Qualitative methods of data analysis include; content analysis, narrative analysis, discourse analysis, and thematic analysis. Content analysis, which is the process of categorising verbal or behavioural data to classify, summarise and tabulate it, has the limitation of disregarding the context of the respondent's contexts, which may lead to failure to meet the objectives. Narrative analysis which involves re formulation of stories presented by respondents, taking into account contexts of each case and different experiences of each respondent, has the problem of subjectivity and interpretation that can lead the readers to misunderstand the data generated. Discourse analysis which is analysis of naturally occurring talk and all types of written text, can be subjective and time consuming, and heavily dependent upon the contexts in which the text is used. Thematic analysis identifies patterns in the data in abundance, and offers a deep, nuanced understanding of individuals' experiences and realities. This study therefore used thematic analysis in order provide data which has a deep understanding of the women's experiences with an antenatal HIV positive diagnosis. Quantitative data were analysed using SPSS and inferential statistics to understand the levels of stress that women experienced, the coping strategies that they utilised, and tested for associations to make inferences.

3.14.1 Quantitative data

After data collection, the data collection instruments were checked for completeness, legibility and accuracy, and internal consistency (Gray et al., 2016) and 4 (3.51%), out of 114 incompletely filled questionnaires for stage 1 of the study, were excluded, leaving 96.49% response rate; and at stage 2, twenty (20) of the participants did not turn up for the study, making a response rate of 81.81% for stage 2. Thereafter, the data collection tools were sorted, coded and entered on the computer using SPSS version 26 for Windows for analysis.

Data were tested for normality using the Shapiro-Wilk normality test and continuous variables were found not to be normally distributed. To establish the characteristics of the sample, descriptive and inferential analyses were used, with the latter being used to draw conclusions and make judgments about the population (Cresswell, 2012). Since the Shapiro-Wilk test for normality indicated that data were not normally distributed, the median was reported for continuous variables and non-parametric statistical tests for associations were employed. The Mann Whitney U Test (Wilcoxon Rank Sum Test) was used to compare the medians between two categorical independent groups with continuous outcomes, whereas the Kruskal Wallis test was used where there were three or more groups with continuous outcomes. A p-value ≤ 0.05 was considered statistically significant for all statistical tests.

Descriptive statistics were used to report participants' demographic characteristics as well as the levels of stress and coping strategies that they used at each assessment period. A Wilcoxon matched pairs signed rank test was used to test for differences in stress levels at Stage 1 and 2 of the study, and Kruskal-Wallis test was conducted to determine the relationship between the coping strategy used and the stress level. Post hoc comparisons were conducted using Mann-Whitney tests to compare the differences in stress levels among the coping strategies that were used.

After data analysis, quantitative data were presented on frequency tables and figures.

3.14.2 Qualitative data

After data collection, the interview schedules were checked for completeness and one out of seventeen, in which the participant did not answer all the questions, was excluded, leaving a total response rate of 94.1 %.

Thematic analysis was used to analyse the qualitative data (Figure 3), which was then presented as themes. The 6-phase coding framework for thematic analysis was used to identify themes and patterns in the data (Clarke & Braun, 2013) as follows;

1. Familiarisation of data in which each one of the interview schedules and field notes were read through for a minimum of three times; together with listening to the tape recorded interviews for a minimum of three times too, as an initial step to understand the data and get familiar with it.
2. After reading and re-reading the data, codes were generated from the transcribed verbatim for each of the study participants. The process involved reading each of the

responses and highlighting the text, and getting the meaning out of it, which led to generation of several codes.

3. This was followed by reading through each of the codes that were generated, and then grouping the similar codes and combining them to form themes in a thematic matrix. The themes were then delineated and assigned codes or names which best described the issues identified. After this process, eight main themes emerged, with twenty seven subthemes.
4. The themes and subthemes that emerged in step three were read and re-read, and two subthemes which were overlapping were merged, and after this step, eight themes with twenty five sub themes were identified.
5. This step was followed by rechecking all the themes and subthemes to determine their significance. The step also involved re-listening to the tape-recorded data to verify if the themes reflected the participants' verbatims. Having been satisfied that the themes represented what the participants were saying, and determining their significance, a thematic framework was drawn.
6. After this step, and ensuring that all the participants' information had been captured and represented into the thematic framework, the study findings were reported in writing. However, report writing demanded revisiting the familiarisation with the data to ensure consistency with the participants' verbatims.

A summary of the thematic analysis that was conducted is given in Figure 3 below

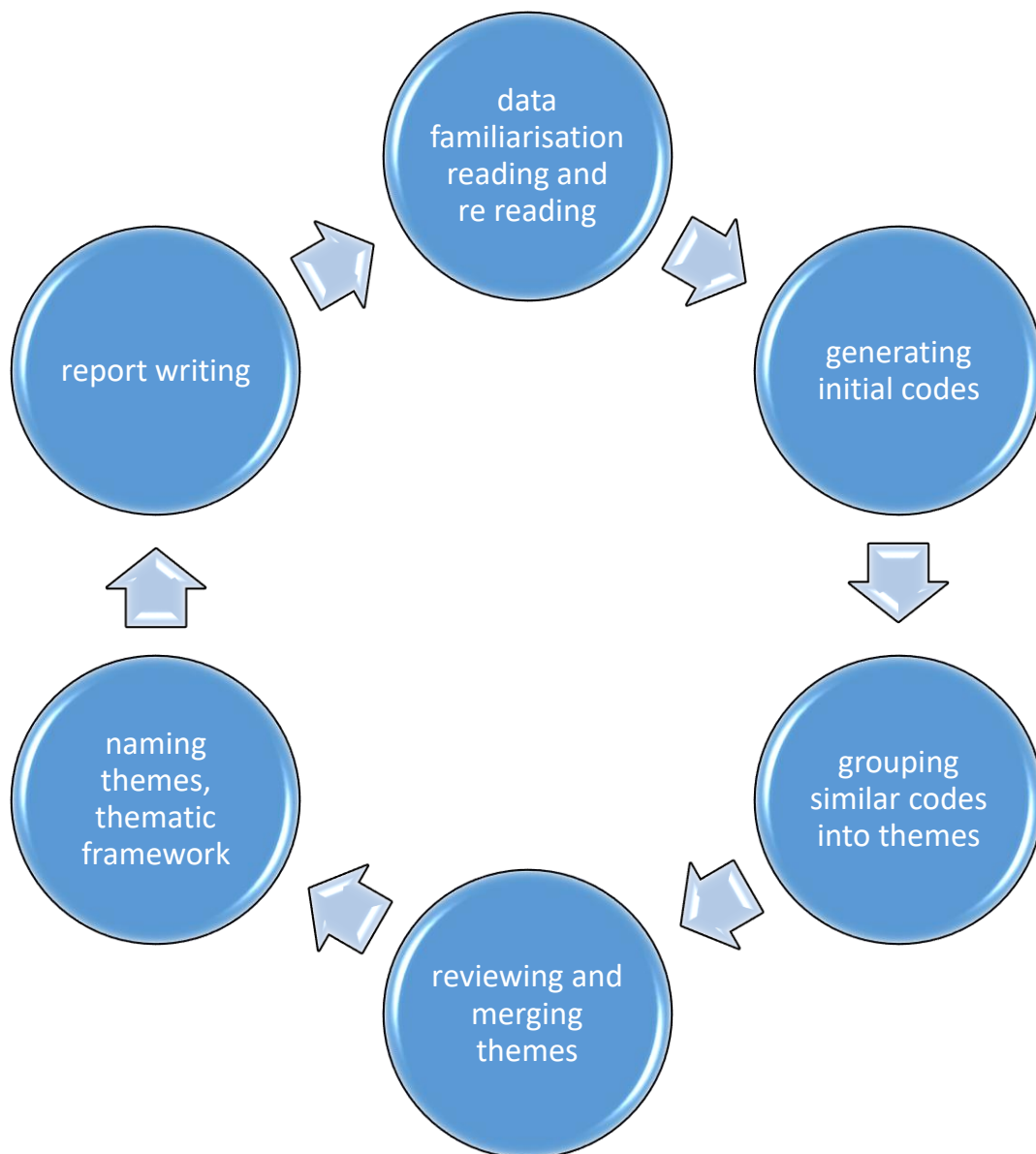


Figure 3: 6 -step thematic analysis (adapted from Clarke and Braun, 2013)

3.15 Ethical and cultural consideration

For the study to be conducted, Ethical clearance was sought from University of Zambia Biomedical Research Ethics Committee (UNZABREC) on 5th January, 2022, REF. NO. 2150-2021; and written permission was obtained from the National Health Research Authority at Ministry of Health headquarters on 28th January, 2022, REF. NO. NHRA 000020/28/01/2022. Written permission was also obtained from Lusaka District Medical Office and the study setting.

This study further followed and upheld the general Ethical principles that guide and underpin good research as follows;

1. Respect for Persons

This principle dictates that the researcher should work to protect research participants' autonomy while ensuring full disclosure of factors surrounding the study, including its potential benefits or harm (Alele, 2023, Barrow, 2022). To uphold the human dignity of the participants, the purpose of the study was explained, including its potential benefits and risks and they were invited to take part in the study. The risk that was explained was psychological trauma as they recounted their experiences with an antenatal HIV positive diagnosis. When they agreed to take part in the study, they were requested to sign a consent/assent form and they were told that their participation in the study was entirely voluntary and that they had the right to withdraw their participation anytime without having to give explanations. However, they were encouraged to continue with the study till the end and were informed that their participation was very important as it would bring out information that will be used to better the care of women diagnosed with HIV during pregnancy. There was no direct benefit for the participants, which might have coerced them to take part in the study. However, a snack was provided for each participant owing to the longer period that they stayed at the facility as they were being interviewed.

2. Beneficence

Beneficence is the fundamental premise underlying research which requires actions that promote the wellbeing and interests of others, or acting in such a way to benefit others while promoting their welfare and safety (Barrow, 2022). It includes participants' right to freedom from harm and discomfort, and participants' rights to protection from exploitation. The study weighed the prospective benefits and hazards that it would have on participants, and ensured

minimum risk of injury or discomforts to them by ensuring their wellbeing and comfort throughout the study. The potential benefits and risks of taking part in the study were explained in writing on the participants' information sheet. Participants were informed that there were no potential risks as no experiments were conducted on them. Their privacy was maintained by conducting the interviews in private rooms, whose doors were always closed. This was necessary, especially that HIV is a highly stigmatised condition.

The data is anonymous and there are no identification numbers to link the participants to it. This being a longitudinal panel study, participants' names and phone numbers were requested for, and with their permission, written on a separate diary, to facilitate easy follow-up, and ensuring that all the stages of data collection for each participant were done under their serial number. Confidentiality was maintained by restricting access to documents containing participants' information. The completed data collection tools were kept in a private, locked cabinet, and soft copies with participants' information were kept on password protected computers, with only the researcher having access to them, to protect participants' information. During stage 3 of the study, all tape-recorded interviews used reference numbers allocated to participants, and the verbatim transcription of the data were conducted in a private room to protect participants' anonymity and privacy.

3. Non-maleficence

This principle refers to actions that minimise or avoid harm to others (Barrow, 2022), and it is closely related to beneficence. In essence, every research has the potential to cost participants in various ways, even if it may just be their time, so research should be conducted only when it is necessary. This study was conducted because its benefits outweighed the risks, in that there was need to have country specific data on levels of stress that is experienced by women who are diagnosed with HIV during pregnancy, and classify their coping strategies, in order to improve their care. There was no physical, social or financial harm that was inflicted on participants throughout the study. Participants were interviewed during their clinic visits and they did not incur any extra costs to visit the Health facilities in order to be interviewed.

4. Justice

Justice pertains to the participants' right to fair and equitable treatment (Barrow, 2012). The appropriate sampling method was employed in selecting the study participants without prioritising or favouring any of them. Participants were treated fairly throughout the study and

their needs were prioritised over the aims of the research by ensuring their comfort. Participants who broke down during the interviews were given time to cry and recollect, without hurrying them to complete the interview. Counselling services were available for those who broke down during the interviews, though they all declined the services. Participants were also accorded their full HIV package, which includes; ART, counselling and scheduled reviews, and all the interviews were conducted at the end of each participant's clinic appointment. During stage 3 of the study, participants whose babies needed attention during the interview were given time to attend to their babies' needs and only continued with the interview once the babies were comfortable. Women who declined to take part in the study were not victimised in any way.

The next chapter presents the study findings.

CHAPTER FOUR: RESULTS

4.1 Introduction

In the previous chapter, the methodology that was used to conduct this study was discussed. This chapter presents the qualitative and quantitative results of the study. The quantitative results addressed objectives 1 and 2, thus; to measure the levels of stress, and to categorise the coping strategies used by women diagnosed HIV positive during pregnancy at selected Health facilities in Lusaka district. The qualitative results answered objectives 3 and 4 which were; to explore the experiences of women diagnosed HIV positive during pregnancy and to describe mother baby bonding in those women. The qualitative data explained the experiences of women diagnosed with HIV during pregnancy with regards stress, ART adherence, intimate partner violence and mother-baby bonding. The qualitative results further explained the resistance resources that women used to cope with an HIV positive diagnosis made during pregnancy. The Lazarus and Folkman stress and coping model (1984) explains that resistant resources are important to help people cope with a challenging situation.

4.2 Quantitative results

4.2.1 Demographic characteristics of the participants

Table 4 below presents a summary of the demographics of the study participants. A greater majority (102; 92.75 %) of the participants were aged between 18 and 35 years which is the safer child bearing years. The majority (86; 78.2%) were protestants, (23; 20.9%) were Catholics and only 1 participant was not religiously affiliated. Over half of the participants (63; 57.3 %) had acquired secondary level education, 19 (17.3%) had tertiary education, and one (0.9 %) participant had no formal education. With regards to residential area, more than half (57; 51.8%) of the study participants resided in medium density areas followed by 40 (36.4%) who resided in high density areas, and fewer (13; 11.8%) resided in low density areas, which is associated with affluence.

Only 10 (9.7%) participants were formally employed while a little less than half (43; 39.1%) were housewives. A number of the participants (23; 20.8%) were running their own businesses and 34 (30.9%) were doing other activities like selling in markets and working as housemaids to earn their living. Among the study participants, 10 (9.1%) had a monthly income above K3, 000.00 while over half (56; 50.8%) of them had a negligible monthly income, which may denote heavy dependency on their husbands for survival.

Regarding their marital status, over a third (78; 70.9%) of the participants were married, followed by (30; 27.3%) who were single. The rest were either divorced or widowed. On obstetrical characteristics, slightly less than a third (74; 67.3%) of the participants had between 1-4 children whereas less than half (32; 29.1%) were nullipara, and only (8; 7.3%) of them had 5 children or above. Among them, 70 (63.6%) were having their second to fourth pregnancies. With regards to where they sought health care, 55 (50%) of them attended antenatal care at Chilenje General Hospital, 40 (36.4%) went to George Clinic and the least number (15; 13.6%) went to Kanyama General Hospital (Table 4).

Table 4: Demographic characteristics of participants

Variable	Category	Frequency(n=110)	Percentage
Age	Below 18	0	0
	18-35	102	92.7
	36-49	8	7.3
	Above 49	0	0
Religious denomination	Roman Catholic	23	29.9
	Protestant	86	78.2
	Other	1	9
Level of education	no formal education	1	0.9
	primary	27	24.5
	secondary	63	57.3
	tertiary	19	17.3
Residential area	high density	40	36.4
	medium density	57	51.8
	low density	13	11.8
	village	0	0
Occupation	Housewife	43	39.1
	business woman	23	20.8
	formally employed	10	9.7
	other	34	30.9
Monthly income	below k1000.00	15	13.6
	k1000.00 to k3000.00	29	26.4
	above k3000.00	10	9.1
	negligible	56	50.8
Marital status	Single	30	27.3
	married	78	70.9
	widowed	1	0,9
	divorced	1	0,9
	other	0	0
Health facility	Chilenje	55	50
	George	40	36.4
	Kanyama	15	13.6
Obstetrical characteristics			
Parity	None	32	29.1
	1-4	74	67.3
	5 and above	4	3.6
Gravidity	1 st	32	29.1
	2 nd to 4 th	70	63.6
	5 th and above	8	7.3

4.2.2 Levels of stress at stages 1 to 3 of the study

The levels of stress were measured during all the stages of the study. Stage 1 of the study was done during the second antenatal visit, a month after the women were diagnosed HIV positive during their antenatal booking visit. Stage 2 of the study was conducted at 32-36 weeks gestation, which was mostly during the second trimester of their pregnancy, and measured the

stress levels that women were experiencing. Stage 3 of the study was conducted at 6 weeks post-delivery, measured the levels of stress and also collected qualitative data.

Frequencies were run to establish the stress levels at stages 1 to 3 of the study. The results showed that at stage 1 of the study, majority (63; 57.3%) of the participants had moderate levels of stress while (29; 26.4%) had high levels. The minority (18; 16.4%) had low stress levels. At stage 2 of the study, 20 participants were lost to follow-up. Of those who were interviewed, majority (59; 65.6 %) of them had moderate levels of stress and the participants with high stress levels dropped down to 13 (14.4%), while 18 (20%) had low stress levels. Among the 17 participants who were followed up at 6 weeks post-delivery (stage 3 of the study), one of them refrained from answering some of the research questions. Of the sixteen participant who answered all the questions, eight had low levels of stress, six had moderate, while the remaining two still had high levels of stress (Table 5).

Table 5: Levels of stress

Stress levels	Frequency	Percentage
Stage 1 (n=110)		
Low	18	16.4
Moderate	63	57.3
High	29	26.4
Total	110	100
Stage 2 (n=90)		
Low	18	20
Moderate	59	65.6
High	13	14.4
Total	90	100
Stage 3 (n=16)		
Low	8	50
Moderate	6	37.5
High	2	12.5
Total	16	100

4.2.3 Coping strategies utilised by the participants

The coping strategies that women used to cope with an HIV diagnosis were categorised during stages 2 and 3 of the study only. Stage 1 of the study did not categorise the coping strategies as this was the time that they were enrolled in the study and had only lived with the diagnosis for about 4 weeks. The Lazarus and Folkman stress and coping model that guided the study

explains that the coping effort only comes after primary and secondary appraisal of the stressor which cannot be achieved in a month

Descriptive statistics were conducted to categorise the coping strategies that women utilised at stages 2 and 3 of the study. The results revealed that at stage 2 of the study, majority (49; 44.5%) of the participants used problem focused (problem solving) coping strategy, and another 26 (23.6%) used problem solving (seeking social support) strategy of coping. The minority (14; 12.7%) used emotion focused coping strategy. At stage 3 of the study, the results revealed that by six weeks after delivery, 10 (62.5%) out of the 17 participants were using problem focused (problem solving) coping and the least number (2; 12.5%) were using emotion focused coping. Others (4; 25%) were using problem solving (seeking social support) coping (Table 6).

Table 6: Coping strategies utilized stage 2 and 3 of the study

Coping strategy	Frequency	Percentage
Stage 2 (n= 90)		
Problem focused (problem solving)	49	54.4
Problem focused (seeking social support)	26	28.9
Emotion focused	15	16.7
Total	90	100
Stage 3 (n=16)		
Problem focused (problem solving)	10	62.5
Problem focused (seeking social support)	4	25
Emotion focused	2	12.5
Total	16	100

A Wilcoxon matched pairs signed rank test was conducted to test the null hypothesis that the median differences between perceived stress scale at stage 1 and perceived stress scale at Stage 2 equals 0, at a significance level of .05. The results of that analysis indicated that there was a significant difference between perceived stress scale at stage 1 and perceived stress scale at Stage 2 ($z = -3.376$, $p < .05$). The results indicate that perceived stress reduced significantly at Stage 2 (Table 7).

Table 7: Cross tabulation between levels of stress at stage 1 and stage 2

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between Perceived stress scale (Stage1) and Perceived stress scale (Stage2) equals 0.	Related-Samples Wilcoxon Signed Rank Test	.001	Reject the null hypothesis.
Asymptotic significances are displayed. The significance level is .050.				

Related-Samples Wilcoxon Signed Rank Test Summary	
Total N	90
Test Statistic	714.500
Standard Error	177.560
Standardized Test Statistic	-3.376
Asymptotic Sig.(2-sided test)	.001

4.2.4 Relationship between coping strategy and levels of stress

A Kruskal-Wallis test was conducted to determine whether there is a relationship between the coping strategy used and the stress level. The results indicate significant difference at stage 2 of the study [$\chi^2(2) = 23.708, p = .001$]. We, therefore, reject the null hypothesis and conclude that the differences between the rank totals of 34.91 (A), 30.71 (B) and 46.43 (C) were significant, $H(2, n = 73) = 6.75, p = .034$ (Table 8).

Table 8: Relationship between coping strategy and stress levels

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
2	The distribution of Perceived stress scale (Stage2) is the same across categories of Coping strategy.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
Asymptotic significances are displayed. The significance level is .050.				

Independent-Samples Kruskal-Wallis Test Summary	
Total N	90
Test Statistic	2.895 ^{a,b}
Degree Of Freedom	2
Asymptotic Sig.(2-sided test)	.235
a. The test statistic is adjusted for ties.	
b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.	

Post hoc comparisons were conducted using Mann-Whitney Tests with a Bonferroni adjusted alpha level of .016 ($0.05 \div 3$). The difference between Problem Solving Group and Seeking Social Support Group was statistically significant ($z = -21.252$, $p = .002$); Problem Solving Group and Emotion Focused Group ($z = -33.327$, $p = .001$), but stress scale did not differ significantly between the Seeking Social Support Group and the Emotion Focused Group ($z = -12.076$, $p = .459$) (Table 9)

Table 9: Pairwise comparisons of coping strategy

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Problem focused (Problem Solving)-Problem focused (Seeking social support)	-21.252	6.322	-3.362	.001	.002
Problem focused (Problem Solving)-Emotion focused	-33.327	7.689	-4.335	.001	.001
Problem focused (Seeking social support)-Emotion focused	-12.076	8.448	-1.429	.153	.459
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.					
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

4.2.5 Relationship between levels of stress and demographic variables

Statistical tests were conducted to establish whether stress levels were dependent upon demographic factors like educational level, residential area, occupation and denomination. The results revealed that there was no significant difference between stress level and these demographic factors. However, there was a statistically significant association between health facility and levels of stress at Stage 1 (Table 10, Figure 4).

Table 10: Summary Kruskal Wallis Test Results on Demographic Variables

Demographic variable	Stage	Null Hypothesis	N	Test static	Df	Sig.
Level of education	1	The distribution of Perceived stress scale (Stage1) is the same across categories of Level of education.	110	2.020	2	.364
	2	The distribution of Perceived stress scale (Stage2) is the same across categories of Level of education.	89	.815		.665
Residential area	1	The distribution of Perceived stress scale (Stage2) is the same across categories of Residential area.	110	3.247	2	.197
	2	The distribution of Perceived stress scale (Stage2) is the same across categories of Residential area.	90	1.235	2	.539
Occupation	1	The distribution of Perceived stress scale (Stage1) is the same across categories of Occupation.	110	3.57	3	.354
	2	The distribution of Perceived stress scale (Stage2) is the same across categories of Occupation.	90	1.641	3	.650
Denomination	1	The distribution of Perceived stress scale (Stage1) is the same across categories of Denomination.	110	2.431	2	.297
	2	The distribution of Perceived stress scale (Stage2) is the same across categories of Denomination*.	90	2.494	2	.287
Health facility	1	The distribution of perceived stress scale (Stage 1) is the same across categories of Health facilities	110	6.558 ^a	2	.038
	2	The distribution of perceived stress scale (Stage 2) is the same across categories of Health facilities	90	3.206 ^{a,b}	2	.201

*A Mann-Whitney U Test was conducted at significance level of 0.05

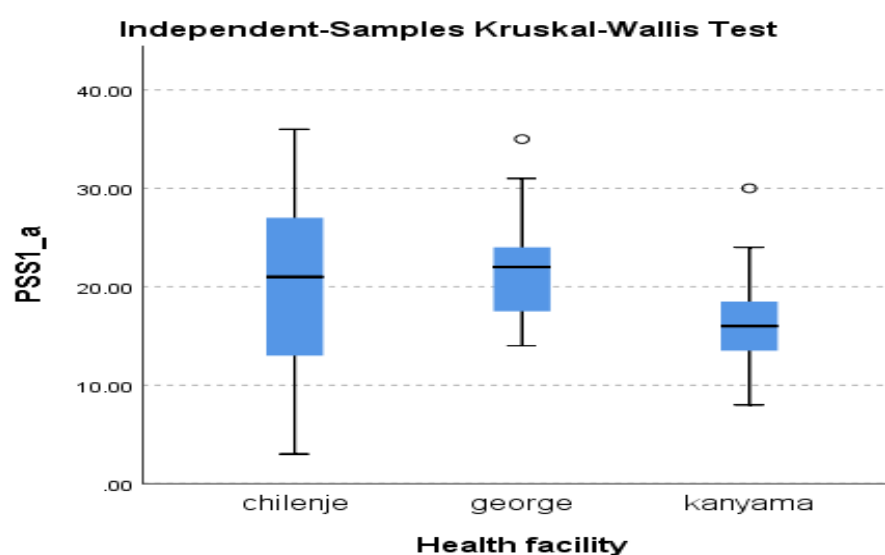


Figure 4: Independent samples Kruskal Wallis test

Table 11 and Figure 5 below show the Post hoc comparisons that were conducted using Mann-Whitney Tests with a Bonferroni adjusted alpha level of .016 ($0.05 \div 3$). The difference between Kanyama and George Group was statistically significant ($z = 24.638$, $p = .032$); but stress scales for Kanyama and Chilenje Health Facilities did not differ significantly ($z = 18.882$, $p = .125$), so did the stress scales for Chilenje and George Health Facilities ($z = -5.756$, $p = 1.000$).

Table 11: Pairwise comparisons of Health Facility

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Kanyama-Chilenje	18.882	9.274	2.036	.042	.125
Kanyama –George	24.638	2.556	2.556	.011	.032
Chilenje-George	-5.756	.870	-.870	.384	1.000
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.					
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

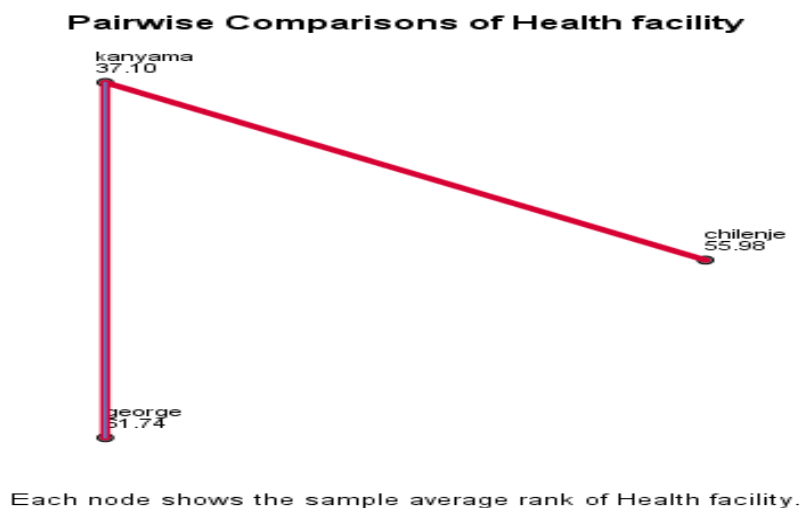


Figure 5: Pairwise comparisons of health facility

Mann Whitney U test between age group and stress levels

Mann Whitney U test was conducted to determine whether there was a difference between participants' age and levels of stress. Results of that analysis indicated that there was significant statistical association between the participants' age and levels of stress at both Stage 1 and 2 of the study ($U=627.000$, $p=.012$ at stage 1, and $U=498.500$, $p=.015$ at stage 2). The older women had higher levels of stress at both stages 1 and 2 of the study. (Table 12).

Table 12: Relationship between age and levels of stress

Demographic variable	Stage	Null hypothesis	N	Test statistic	Significance
Age of participants	1	The distribution of perceived stress scale (Stage 1) is the same across categories of Age of participants	110	2.526	.012
	2	The distribution of perceived stress scale (Stage 2) is the same across categories of Age of participants	90	2.424	.015

4.3 Qualitative results

Alphanumeric symbols were used to describe the study participants. The participant numbers which were assigned to them at enrolment into the study were maintained during the subsequent stages because panel studies were conducted on the same participants and this helped to measure the stress levels and also classify the coping strategies at different stages of

their lives. The abbreviation ‘P’, to stand for participant, was added before each participant’s serial number to identify them.

4.3.1 Demographic characteristics of the participants

The demographic characteristics for the participants for stage 3 of the study are found in Table 13 below. The majority (15: 88.2%) of these participants were in the age group of 18 to 35 years with most (14: 82.4%) of them attending Protestant churches. A number of them (11; 64.8%) had attained secondary education and 13:76.4% resided in medium density areas. Their occupation was varied, with 7 (41.2%) being businesswomen and these were followed by a tie of 4 (23.5%) who were housewives and doing other activities to earn a living respectively. Among these, 6 of them (35.3%) earned between K1000.00 and K3000.00 per month followed by 5 (29.5%) who had negligible monthly income. The majority (11:64.7%) of them were married and most (15:88.2%) of them were attending Chilenje hospital for their antenatal and postnatal services. Regarding their obstetrical characteristics, majority (14: 82.4%) had 1 to 4 children and 13 (76.5%) were having their 2nd to 4th pregnancies.

Table 13: Demographic characteristics of participants at stage 3

Variable	Category	Frequency(n=17)	Percentage
Age	18-35	15	88.2
	36-49	2	11.8
Religious denomination	Roman Catholic	2	11.7
	Protestant	14	82.4
	Other	1	5.9
Level of education	no formal education	0	0
	primary	3	17.6
	secondary	11	64.8
	tertiary	3	17.6
Residential area	high density	2	11.8
	medium density	13	76.4
	low density	2	11.8
	village	0	0
Occupation	Housewife	4	23.5
	business woman	7	41.2
	formally employed	2	11.8
	other	4	23.5
Monthly income	below k1000.00	3	17.6
	k1000.00 to k3000.00	6	35.3
	above k3000.00	3	17.6
	negligible	5	29.5
Marital status	Single	6	35.3
	Married	11	64.7
Health facility	Chilenje	15	88.2
	George	1	5.9
	Kanyama	1	5.9
Obstetrical characteristics			
Parity	None	3	17.6
	1-4	14	82.4
Gravidity	1 st	3	17.6
	2 nd to 4 th	13	76.5
	5 th and above	1	5.9

4.3.2 Stress levels for stage 3

Before the in-depth interviews began, participants' levels of stress were measured again, as presented in Table 14 below. Half (8:50%) of the participants had low levels of stress, probably because they had undergone their grieving process and had accepted their condition, with a determination to move on with their lives. However, 2 of them (12.5%) still had high stress levels which is detrimental to health, and may reflect utilisation of maladaptive coping strategies.

Table 14: Stress levels for participants at stage 3

Stage 3	Category	frequency (n=17)	percentage
levels of stress	Low	8	50
	Moderate	6	37.5
	High	2	12.5
Total		16	100

4.3.3 Coping strategies for stage 3

Table 15 below presents the coping strategies utilised by the participants at stage 3 of the study, and more than half (10:62.5%) of them were using problem focused (problem solving) coping strategy where they were actively seeking solutions to live with their HIV positive status. However, 2 (12.5%) of them were using emotion focused coping which is not helpful in dealing with stressful conditions.

Table 15: Coping strategies utilised at stage 3

Stage 3	Category	frequency (n=16)	percentage
coping strategy	Problem focused (problem solving)	10	62.5
	Problem focused (seeking social support)	4	25
	Emotion focused	2	12.5
Total		16	100

4.3.4 Experiences of women diagnosed HIV positive during pregnancy

After data analysis eight main themes emerged, with twenty five sub-themes and these are summarised in Table 16 below. The questions from which the themes emerged focused on their experiences with being diagnosed HIV positive during a routine antenatal care visit, disclosure of an HIV positive diagnosis, induced stress, ART adherence, coping and bonding with their new-born. Participants gave several responses to these questions, upon which the sub-themes emerged. The themes that emerged included; understanding of HIV, reactions to HIV diagnosis, stress of an HIV diagnosis, ART adherence, mother-baby interactions, making the HIV positive status known, staff behaviour, and adjusting to the reality of living with HIV.

Table 16: Thematic framework

	Main theme	Subtheme
1	Understanding of HIV	1.1. Disease that kills 1.2. Virus destroying immune system 1.3. Incurable disease 1.4. Sexually transmitted disease
2	Reactions to HIV diagnosis	2.1. Mixture of emotions 2.2. Aggression 2.3. Contemplating physical harm
3	Stress of HIV diagnosis	3.1. Pregnancy outcome 3.2. Living with HIV/Dilemmas with disclosure 3.3. Vertical transmission and breastfeeding 3.4. Baby's pain
4	Making the HIV positive status known	4.1. Intimate Partner Violence 4.2. Emotional reactions and stigmatisation 4.3. Disclosure worries and concerns
5	ART adherence	5.1. Facilitators to adherence 5.2. Hurdles to adherence
6	Mother-baby interaction	6.1. Mother-baby relationship 6.2. Feeding method 6.2 Hurdles to mother-baby bonding 6.3. Cause of baby's death
7	Staff behaviour	7.1. Interpersonal relationship 7.2. Medical terms and procedures
8	Adjusting to the reality of living with HIV	8.1. Coping with an HIV positive diagnosis 8.1.1 Psychological resilience 8.2. Difficulty coping

1. Theme 1: Understanding of HIV

The meaning of HIV to women is an important determinant of how they eventually cope with a diagnosis of HIV during pregnancy. A belief that HIV diagnosis causes adverse conditions, like ill health and death will cause more stress in the woman who is diagnosed positive during pregnancy. On the other hand, a belief that HIV is a disease that can be controlled may cause lower stress levels in the women. Women were asked what they understood HIV to be and some of them mentioned what HIV meant to them as follows;

1.1. A disease that kills

When asked what they understood HIV to be, some women described HIV as a disease that kills, and such a belief could lead to a woman experiencing more stress as they think of the prospect of dying. P 21 reiterated this by saying, "it is a disease that kills".

1.2. Virus destroying immune system

Other women had an understanding that HIV attacked the immune system, and therefore could adversely affect the general health of individuals if the immune system ended up failing. These women had the correct understanding because HIV is indeed a virus that destroys the immune system. P 81 described the virus as unseen in her following statement, “HIV is an unseen virus that destroys the immunity. *Nikadoyo nikalibbe kukaona ko. Siningakaone* (an unseen virus which I have never seen. I cannot see it)”. Women also understood the sequel of HIV if not well managed like P 49 who began by clearing her voice and repeated four times saying, “it is a virus that causes AIDS”. This could denote anxiety and stress. A few women had some misconceptions about the HIV, like P 5 who said, “It is a virus in the body. A virus that moves and destroys blood in the body. It drinks the blood, increases and destroys the blood”.

1.3. A sexually transmitted disease

Some participants understood that HIV is commonly sexually acquired when one had unprotected sexual intercourse with an infected person, and this is the truth about acquisition of HIV. However, none of the participants mentioned the other modes of acquiring the virus like vertical transmission to an unborn baby, which could lead to increased vertical transmission if mothers do not understand the risk of infecting their babies. Participants were also aware that HIV infected women could still live healthy lives if they followed medical advice. P 23 emphasised this by saying, “It’s an infection that comes through sexual intercourse. But people remain normal if taking advice from hospital”. This was resounded by another participant who was seemingly uncomfortable to mention sexual intercourse as stated below;

Mmmmm! It’s just a disease which we acquire, oooo how can I explain it, it’s just a disease which we acquire fromsomeone,,,,,someone, anyway (giggles). It’s not really difficult when you follow rules, you do everything they tell you, you won’t face challenges and you just need to accept... and move on (P 45).

1.4. An incurable disease

Most people know that HIV is an incurable disease which can only be controlled with daily medication. Some of the participants also believed that HIV is an incurable, though controllable condition. Such a belief can give hope to patients that they can still live normally if taking the

antiretroviral medications. P 7 summed this up by saying, “It is a normal disease that is not curable but it can be suppressed if you are taking medication”.

2. Theme 2: Reactions to HIV diagnosis

Receiving an HIV positive diagnosis brings about a number of reactions because of its lack of a cure. HIV has been affecting the human race for more than three decades, yet it is still a stigmatised condition. Therefore, women who were diagnosed HIV positive during pregnancy had emotional and physical reactions to the news. Participants were asked how they felt when they were informed of their HIV positive diagnosis.

Most of the participants reported undergoing a number of emotional reactions upon receiving their HIV positive diagnosis which included the following;

2.1 Mixture of emotions

Most of the participants explained that they experienced a mixture of emotions like shock, turmoil, anger and disappointment, with some of them simply refusing to believe that this could be true. Others described the pain they felt, and how they cried, with ensuing depression. Some of them found solace in prayer while others sought counselling in order to deal with their mixture of emotions, like P 13 who explained it this way;

I kept quiet, was in shock. I was disturbed but after I was counselled, I accepted the condition. It happens because sometimes as a wife, you can be faithful but your husband may be going out with others so just accept and pray (P 13).

Other women found it hard to accept the HIV positive diagnosis, and went to seek other opinions at the other health facilities. P 40 summed it up in the statement below;

I was disappointed. Could not believe it. I didn't even know how it came about. How, how? It was difficult for me to accept it. Somehow somehow, my feelings were telling me it's not true. I am yet to do some other tests. I will go to another facility to test to see if it is true. (P 40).

Failure to accept the diagnosis can lead to non-adherence to medication, or not taking the medication at all, which can lead to adverse health consequences for the mother and her baby.

Other participants described being devastated, and regretting the pregnancy, like P 104 who said, “I was devastated because I used to test and I was negative before this” and this was reiterated by P 17 who recalled the moment and said, while crying, “I felt very bad and felt like committing suicide. I regretted the pregnancy, because before this, I was just okay”. In these

instances, participants felt as if the pregnancy led to their testing HIV positive as they mentioned that they were HIV negative before the pregnancy. This could lead to more vertical transmission if indeed women got infected during their current pregnancies as HIV transmission is highest at seroconversion. It could also mean that women were not testing for HIV at frequent intervals and would not therefore know when they seroconverted, but just discover at routine antenatal screening. Inspire of counselling services being available at hand for participants, like P 17 who broke down, they declined to be counselled.

Participants also described feeling very bad about the diagnosis to the extent of failing to take the drugs and having insomnia, like P 81 who said, “*ninanvela kuyipa na cinkonko* (I felt bad and hurt), I was given treatment, and for 7 days, I was failing to swallow the drugs, I used to cry before taking the medicine. I would fail to sleep”. Other participants explained that the news was so disturbing, especially because they found out at routine antenatal care. One participant described receiving the diagnosis as a blow. This participant began by fearfully saying that she could not swallow anything during stage 1 of the study. On further probing, it turned out that the participant was so stressed, with no one to confide in that she was failing to eat. She explained her reaction to receiving the HIV positive diagnosis in the statement below;

I was devastated, depressed. I felt numb. My health had just been okay. I never thought I could have the virus. It was such a blow. I cried a lot. My morale went down. I could not eat. I could not sleep. I wish that this could be just a lie, that results were just a mistake (P 18).

Some of the participants reported being filled with fear at the prospect of dying, like P 21 who summed it as, “I felt and feared that I would die”. People fear to die if they understand the HIV to be a disease that kills. Participants also reported being disappointed with themselves like P 45 who was more on the defensive side and even said that she would hide her diagnosis in the following statement;

Eeeh, in this world we are living in, a lot of things happen. It's not just that because you are careless or what, you can get it in different ways, you know, so you just have to hide it. I wasn't really upset but I was disappointed (P 45).

2.2 Aggression

Participants also described some physical reactions at being diagnosed HIV positive. A few of the participants recounted their physical reactions like P 26 whose devastation made her

aggressive. She had this to say; “I was devastated. I went and broke everything breakable at my boyfriend’s place”. (P 26). This explains how heartbroken women are at being diagnosed with HIV and therefore, they can experience a lot of stress. P 26 explained that after some months, she resolved to forgive her boyfriend and that is when she began to cope with the stress.

2.3. Contemplating physical harm

Some participants contemplated physical harm to themselves and also to their unborn babies. This shows the strong reactions that women experience when they are informed that they are HIV positive during a routine antenatal care visit, and the high levels of stress which they experience. P 17 underwent a mixture of emotions, was devastated and had this to say, “I wanted to commit suicide. I wanted to abort the baby because it would still die anyway”. This was emphasised by P 49 who also had depression and foeticidal ideas and this was her description, “during the time when I experienced depression, I felt that maybe I needed to abort, until after counselling. I felt the need to abort many times”. Asked why she wanted to abort, she responded, “I thought my baby will blame me when he grows up” (P 49). This shows the stress that women undergo once given the HIV diagnosis. Apart from effects on themselves, they think of the effects on their child and constantly fear that they might infect the baby.

3. Theme 3: Stress of HIV diagnosis

An HIV positive diagnosis is usually stress-inducing because people know that it is an incurable condition which is only managed by daily dosing. When made during pregnancy, the diagnosis of HIV also instils fear in most women as they keep worrying about the outcome of their pregnancy and the health of their baby. Participants were asked if they got stressed by the HIV diagnosis and what stressed them most about it, and those who affirmed gave their reasons for perceiving the HIV positive diagnosis during pregnancy as stress-inducing as described in the sub-themes below.

3.1. Pregnancy outcome

Some of the participants reported being stressed due to uncertainty with the outcome of their pregnancy in light of their HIV positive status as explained by P 5 in the following statement, “I experience stress because I think about my pregnancy outcome and who would support me”. (P5). This shows that women diagnosed with HIV require support to cope emotionally and also physically with their condition.

3.2. Living with HIV and Dilemmas with disclosure

Most of the participants were stressed about living with the incurable virus while facing possible rejection and stigmatisation by their loved ones, which also caused dilemmas with disclosure of the diagnosis. Disclosure is necessary for the patients' social support, prevention of infection to the spouse in the event that he is HIV negative, and ART adherence. Patients and clients with HIV still suffer stigmatisation by society as HIV is a highly stigmatised condition which usually adds on to the suffering and stress that patients and clients undergo once they are diagnosed and disclose their status. When the participants were asked what stressed them most about being HIV positive, a number of them cited fear of stigmatisation as the most stressor. This was resounded by P 18 who said, "I have to take the drugs secretly and I also fear that people will stigmatise me once they know", and P 44 who said, "I feared further rejection from my husband". (P 44). Another participant re-emphasised stigmatisation in the following statement;

Its new, felt like things will.....you know people will talk about this, that, this happened and this happened. So I was worried, and scared, I didn't know what would be happening. People come in different shapes but I came to understand that it is the way you take care of yourself (P 45).

While others were stressed because of fear of stigmatisation by other people, some of the participants self-stigmatised, like P 5 who said, "When I aborted, I left my job because I was HIV positive" (P 5). Self-stigmatisation is not good because the patient gets stressed up thinking that people know about her condition and will talk about her when in fact, no one is even talking about her.

Other participants reported being uncertain about their future anymore, and this caused them stress. P 49 described her predicament as follows;

I have fears about leaving my child, 'coz' I want to see him grow up, I want to see him become something in future, get married, so that he achieves his goals, that's what I pray for (P 49)

P 28 put it clearer by saying; "I get stressed because I know that HIV kills". Participants also described the stress of their HIV diagnosis as emanating from the thought of daily dosing as explained by P40 who said

Yaah. Just the thought. When I think about it, haah. But sometimes I comfort myself to say, if so many people have lived with it I will also live...want to see my children grow.

Daily medication and thinking that my life will be shorter is also stressing. Sometimes you are tired and you can't take it anymore, but you keep on pushing.

Other participants had some misconceptions about HIV, like P 81 who began to use separate utensils from those of the other family members, thinking that she would infect them. She described the reason for her being stressed in the following statement;

It stresses me because I keep thinking that I will die before I have lived my full life, kaili (because) people used to say that if you have HIV you need to use your own eating utensils like plates, cups, so I used to wonder if I would have to be eating alone. I didn't want my first born to know what was happening. I haven't told him but I just ensure that I take care not to infect him (P 81).

The antiretroviral medication were also cited as a source of stress for some of the participants. Infection with the HIV leads to an incurable condition which can only be controlled by taking medicines daily in order to suppress the virus and reduce the chances of infecting others. For a pregnant woman, taking the medicine reduces the chances of vertical transmission of the virus. However, some participants were stressed by the daily medication and had this to say;

As pregnant women, we go through a lot of things. Being told that you have HIV just compounds them. Medicines are given 2 weekly and this is inconveniencing, it's depressing every time you go to get the drugs. Daily dosing is a constant reminder that you are HIV positive, a longer lasting injection would be better. Also taking drugs lifelong is stressing. Failure to disclose my status to my husband also stresses me. (P 18).

3.3. Vertical transmission and breastfeeding

Participants also reported being stressed about their HIV diagnosis due to being unsure of the health of their babies as they constantly feared that they might infect them. During counselling, the patients are usually informed about the benefits of taking the drugs and the reduced chances of vertical transmission. Women, however, still experienced mixed feelings about the efficacy of the ARVs in PMTCT. P 104 described being stressed about the health of her baby by saying, "it stresses me because it is a chronic and untreatable disease. I think a lot of thoughts about my baby. Will she grow up? I pray always that she will not be infected" (P 104). This was in spite of P 104 taking the ARVs. P 17 resounded the reasons for her being stressed about the

HIV diagnosis by saying, “in my thought of thoughts, I still fear that the baby will contract the virus. I wonder if she will be ok” (P 17).

In spite of being counselled about the relative safety of breastfeeding in an HIV positive status, some participants were not totally convinced about prevention of Mother-to-Child transmission of the virus. Some of the participants still got stressed because of fear of infecting the baby through breast milk, like P 23 who said, “But I fear to infect him through breast milk” (P 23) and this was emphasised by P 21 who said, “Even if the hospital told me that I could safely breastfeed if on ART, I feared constantly that I will infect the baby” (P 21). This calls for continued counselling to help reduce the stress levels experienced by the women as most mothers will always want the very best for their children. P 45 also expressed fear of infecting her baby and expressed her helplessness in preventing infection to her baby in the following statement;

I just don't want him to acquire this. I just have that ka (small) fear, may be through breastfeeding, I can infect him, though they say it's not...I just want my baby to be okay (P 45)

Some of the participants were stressed about breastfeeding concerns. Mothers obtain a lot of satisfaction from breastfeeding their new-borns as they see them grow in weight and height. Most mothers have been socialised to understand that breast milk is the best feed for a new-born infant, which is the truth. Breastfeeding further enhances the mother-baby bond as the mother and her baby interact during the feed, and helps babies to grow healthy. Inability to breastfeed leads to stress in both mothers and babies. Some mothers who were not able to breastfeed their babies owing to the HIV diagnosis admitted being stressed, like P 49 who said,

Like now, my baby cries a lot because he has colicky pain which he would not have if he was breastfeeding. When I am late to prepare his milk, he cries a lot and I feel bad. I wish I could breastfeed (P 49).

3.4.Baby's pain

The stress of an HIV diagnosis in other participants was to do with painful procedures, like drawing of blood for investigations from the baby. It is normally the desire of every mother that their babies are well all the time. When babies cry for any reason, a mother will normally rush to see why the baby is crying. When babies are sick, mothers also become sad with many wishing they could suffer in the stead of their babies. Babies born to mothers who are HIV positive have to undergo testing for HIV by pricking them to obtain blood samples. Some

participants whose babies underwent investigations experienced stress at seeing the suffering of their babies, like P 39 who said;

Sometimes he cries and then I feel bad that I am failing him.
Especially at discharge when they drew blood from him, he
was crying and I felt that I am the cause for his pain (P 39).

This shows anguish in a mother and she keeps on blaming herself for her baby's pain, reiterating the need for continued counselling.

4. Theme 4: Making the HIV positive status known

Informing significant others about one's HIV positive diagnosis is encouraged, mostly for social support, ART adherence, coping assistance, and to protect/ensure treatment of the sexual partner. Disclosure of HIV positive status leads to varied reactions among those to whom the client discloses. Sometimes, people who are diagnosed hesitate to inform others about their positive status for fear of the reactions of people that they confide in. In this study, some participants disclosed to their sexual partners, some to their mothers and others to their workmates.

Participants were asked about the reactions of significant others upon informing them of their HIV positive status. The study participants who informed their sexual partners about the HIV positive diagnosis reported various reactions from them as discussed below;

4.1.Intimate partner violence

Some participants reported emotional violence and stigmatisation by their partners, like P 21 who stated, "He told me not to tell anyone else. But I know that he already knew his status, that he is positive" (P 21). P 21 also reported being sad about not informing her relatives about her condition. Women also reported mental torture after informing their husbands about their HIV diagnosis, like P 23 who said, "he tortured me mentally, he was moody, but later stopped" (P 23), and P 5 who said,

When I tested positive, I was told to bring my husband and pretend as if I hadn't tested and we were tested together and both tested positive. He blamed me and accused me to have brought the disease. He began by refusing to take medicine but later started taking (P 5).

Participants like P 5 would be asked to bring their husbands along for the test before informing them of their diagnosis if they expressed fear and uncertainty about the reactions of their husbands once they disclosed.

Participants described more experiences and reactions with disclosure to their partners which was a mixture of blaming their spouses for having infected them, and also some lack of trust in their spouses, like P 13 who stays away from her husband and disclosed over the phone, and had this to say;

He said that he would also go for the test, kaili (because) he knew that he is the one who brought it since he has been going out with other women. But I don't know if he went because we stay apart. I haven't asked him because he can just tell me lies, unless I go to him. But now, I haven't gone because I fear for the health of my baby (P 13).

Other participants also described their experiences in the same vein like P 13, suspecting their partners to have already known their HIV status and taking medication secretly, causing emotional torture in their wives, like P 81 who described her disclosure and said, "He did not react in any way to the news, so I suspect that he is positive because of the way he didn't react when I told him that I was found positive" (P 81), and P 104 who said, "I took long to tell him, but when I did, he said nothing. But I knew that he had been taking the medicines secretly" (P 104)

4.2. Emotional reactions and stigmatisation

Other participants described emotional reactions which included turmoil and disbelief in their partners upon informing them of their positive status, like P 17 who said, "He appeared guilty. He encouraged me to take the medicines" (P 17). On the other hand, the husband to P 17 may have appeared guilty if he already knew his status and felt bad that he had infected his wife. P 18 reported emotional reactions from the spouse as explained below;

Initially, he was devastated, cried a lot, demanded to see the drugs, upon seeing them, cried more and asked why I was doing this to the baby by not informing him early. He then demanded to know if I was really told that I am positive. He asked me if that meant that he was also positive, and I told him that we can only know when he goes for the test. I asked him what he will do if he tested positive and he said, 'we will be taking the drugs together'. And if you are negative? He responded that he wouldn't divorce me for that because I am his wife (P 18).

Other spouses disbelieved and were shocked with the test results, like the husbands to P 40 and P 49 as stated by their wives, “he refused that it is not true and said that we needed to go together for the test” (P 40) and P 49 said, “he was in shock as well” (P 49). Participants also reported receiving a lot of support from their partners, like P 44 who said; “he took it lightly and encouraged me” (P 44).

Emotional reactions and stigmatisation were also reported from other relatives and friends to whom participants disclosed their status. Their significant others had varied reactions which included anger and disappointment, stigmatisation and disbelief. Below are some of the participants’ experiences;

Participant 5 disclosed to her boss and her mother and had this to say about how they reacted, “Mum was disappointed. Boss encouraged me that it happens” (P 5). It is good that women could disclose even to their supervisors at their work places as this would help in requesting for days off if the client was needed at the hospital. Another participant described her mother’s helplessness upon disclosing to her and said, “Mum felt bad, she was angry. *Banadandaula* (complained). But there was nothing she could do because I am married” (P 23). Others described harassment and stigmatisation by their loved ones, like P 54 who said, “My sisters laugh at me and say that I will soon die” (P54). Siblings usually stand together during difficult times so it was very unfortunate for P 54 to be harassed by her own sisters during her time of need. However, this may have occurred if the sisters had been advising her not to engage in unsafe sexual activities, and she probably did not comply, hence their unsupportive reactions when she informed them of her HIV positive status. Another participant has mixed feelings about the reactions of her family and had this to say;

Mum and my sisters encouraged me not knowing what they say about me in my absence, because sometimes people can say something when you are around and say bad things when you are not around (P 81).

4.3 Disclosure worries and concerns

Sometimes, patients who are diagnosed HIV positive fail to disclose to others for various reasons. Participants also expressed their discomfort/ hesitation in disclosing their diagnosis to other people and some reasons cited included uncertainty about ensuing marriage relationship, fear of the unknown, dilemmas about origin of the infection and inability to trust people. Participants explained their hesitation to disclose as stated below;

I failed to inform him early because I feared to destroy his happiness. I feared that he will feel betrayed. I am not sure how things will be between us after disclosure, will he still continue to have a close relationship with my mother? I fear that he might divorce me once I inform him, and people will be talking that I have been divorced again. P 18 also said this; “sister, I think he has been living with the virus. He withholds intimacy from me, I think he fears to infect me. But I am also a human being who has feelings”. I also fear that people will stigmatize me once they know. When P 18 finally disclosed, partner tested negative and she had this to say; “I wish death could come. Sister, will things be the same?” (P 18).

Another participant kept the positive status to herself for some time, and asked why she did not disclose early, had this to say, “I took long to inform my husband because I knew that I would still tell him someday” (P 104). But taking long to inform a sexual partner means that they could be infected in the process and adherence to medication may be compromised, which can lead to vertical transmission of the virus.

Another participant wanted to begin by clearing her dilemma about the origin of the infection. When asked if she had informed her sexual partner or other relatives, she explained that she needed to be sure where the infection came from before disclosing to anyone as stated below;

Aaaaactually, I’ m not married, I ‘m single, hhhhaaa not yet, to be honest, I haven’t informed him becaaaause aaa the time I was being informed, I don’t know why, I don’t know who, I don’t know where it came from, maybe...I just want to understand, I don’t know if its him, I don’t know if it’s me, I just want to be sure over that one (P 54).

Other participants could not bring themselves to trust people with their information, like P 13 who answered;

No, I have not informed my family because I know their thinking and behaviours, I can’t trust them with my information. I have 2 sisters and 3 brothers, am 3rd born. Our parents died (P 13).

It is an unfortunate situation when one cannot inform their own family about the issues that affect them, because normally the family members stick together and offer each other encouragement in times of need.

5. Theme 5: ART adherence

Adherence to antiretroviral medication is very important for viral suppression and better health outcomes. In a pregnant woman who is diagnosed with HIV during the pregnancy, adherence to medication is crucial to prevent vertical transmission of the virus to the unborn baby, and after delivery, to the breastfeeding baby where appropriate. The World Health Organization recommends consistent daily dosing with antiretroviral medication for optimum viral load suppression. People living with HIV who achieve an undetectable level of virus by consistent use of antiretroviral therapy are less likely to transmit HIV to their sexual partner(s) and are at low risk of HIV vertical transmission to their children (WHO, 2023)

5.1. Facilitators to adherence

Participants were asked questions about their ART and their experiences with ART adherence. Participants who adhered to their medication explained what facilitated their ability to adhere, which included setting reminders for themselves, and also wanting to prevent transmission of the virus to their babies.

Participant 13 managed to adhere by setting an alarm for herself, as she explained, “I set an alarm for myself to help me remember to take the medicine” (P 13, P 39). Others, like P 23 probably developed a psychological connection to taking the medicine as she had this to say,

If I haven’t taken 20 minutes after I am supposed to take the medicine, I would feel itchy and start scratching. After I take, then the itching would stop about 45 minutes later (P 23).

Other participants adhered to the ART purely for the sake of their babies. Reasons given included prevention of transmitting the virus to the baby, and also prolonging their lives in order to see their children grow. Participants also described their ART adherence, like P 18 who said, “After I was given the medicines, I failed to take them for a week. Now I take daily for the sake of my baby though I sometimes skip for a day or so” (P 18), and P 39 who described her adherence for the baby’s sake and said, “But I love my baby, actually, I will say that he is my comfort and the reason for my adherence to medication” (P 39).

5.2 Hurdles to adherence

However, some participants had difficulties with adherence and described their challenges which included physical problems. Clients are informed to return to the hospital whenever and if ever they experience side effects to the drugs that they are given. Sometimes, clients may not

return, or if they return, they may be told to keep taking the drugs and keep observing for reactions as long as the side effects experienced are not life-threatening.

Participant 9 experienced some side effects and explained, “I have problems. They give me gasses, headache and I used to vomit after taking the drugs in the month that I started” (P 9), and P 21 who said, “I experience dizziness and the bed would feel like it is going round and round. I feel dizzy so do not take the medicines sometimes” (P 21). Participants who reported problems with adherence due to experiencing side effects were referred for further attention to the In-charge.

Other participants, like P 18 had different hurdles with adherence and she had this to say;

Failure to disclose the disease to my husband makes me not to adhere, I have to take the drugs secretly, and if he is with me, I skip the doses. Also, the daily dosing is a constant reminder that I am HIV positive, continued P 18.

Participants also described the stress of living with the virus as the reason for poor adherence. Some participants, like P 40 had this to say; “Sometimes when you are stressed up with things you forget to take. Just the thought of taking the medicines is defeating too, but I take daily. I swallow with water. I finished septrin” (P 40)

Forgetfulness was also cited as a reason for poor adherence where the participant simply forgets whether they have taken the dose for the day or not as explained by one of the participants below;

If alarm is off, I forget to take and think that I have taken already. So I also count the pills to remind myself, but sometimes I forget. Even when I remember that maybe I haven’t taken, I will not take because I am not sure (P 44).

Participant 81 described her actions after forgetting to take the ARVs by saying, “sometimes I forget to take when I have so much work to do, and then if I remember that I haven’t taken, I will take when I go to bed in the night” (P 81). This shows that the dosing may not be consistent and can put the client at risk of inadequate viral suppression with its consequences and treatment failure.

Other participants would skip doses due to fear of stigmatisation. P 5 lived with her mother and other relatives, and did not have a room of her own. She had this to say concerning adhering to ART;

I used to vomit when I just started taking the medicine and I felt queer. I lost weight. I am surprised that I am not gaining weight. I sometimes skip the doses if there are visitors around because I feel ashamed and I fear that they will talk about me and say that I am taking the medicine for AIDS (P 5).

6. Theme 6: Mother-baby interaction

Mother-baby interaction is important for the psychological and physical health of both the mother and her infant and babies who have not bonded with their mothers usually show signs of distress. Mothers who have bonded with their babies are able to carry out caring functions on their babies, feel fulfilled and this leaves babies happy and fulfilled too. Mother-baby bonding can be determined by how the mother handles and takes care of her baby, and how the baby responds to that care. Breastfeeding is one of the activities that enhance bonding and improve the wellbeing of both mother and baby.

6.1 Mother-baby relationship

The relationship between the mother and her baby is important for bonding of the mother-baby pair. The mother baby relationship can be enhanced or disturbed by the events that happen during pregnancy, labour and delivery, and even during the postnatal period. Participants were asked questions on how they cared for their babies and the bonding behaviours that were displayed like talking to the baby while attending to its needs, and the baby acknowledging the caring behaviour by smiling or being calm. Some participants described the effects of an HIV diagnosis on their ability to bond with their babies, which was generally positive.

Positive bonding behaviours were described by most of the participants who said, “As I attend to my baby’s needs, I talk to him and sing for him and he responds by looking at me and smiling” (P 7, P 13).

Other participants described the activities that they carry out on their babies, and the strong bond of love that exists between them. P 17 had this to say; “I usually sing for her and she listens attentively. I love her very much” (P 17). Apparently, P 17 had contemplated abortion after receiving the HIV positive diagnosis.

More beautiful bonding behaviours were described by other participants, like P 39 who said, “We talk. We have a conversation mostly. We listen to music, I put for him and also sing to him. He responds by moving, listening and being calm”. (P 39). In addition, P 44 said, “I stretch her, talk, and sing to her and she looks happy and looks like she understands. Our friendship is growing. Though I wanted to abort her, I feel connected to her from quickening,

and it is heart-warming for me” (P 44). Participant 45 also recounted, “I talk to him. I remember when I had my first baby, my mother would say, ‘talk to him’ while you are caring for him, so I talk to him and he responds by being active. I love him, it’s a joy to have him” (P 45). This shows that the art of mothering often occurs through apprenticeship, where women learn how to bond with their babies from their own mothers.

Other participants, though outwardly bonding with their babies, constantly feared for the baby, like P 81 who confessed; “I stretch him and play with him and he seems happy and smiles. I keep fearing, though, that I may infect him” (P 81).

However, some participants expressed inadequate bonding with their infants, like P 104, who said; “I don’t do anything else to her as I am attending to her needs. After I bath her, she just sleeps”. (P 104).

6.2 Feeding method

Breastfeeding enhances mother-baby bonding as it naturally causes the mother to be close to her baby during the feed. Babies too look straight into their mothers’ faces as they breastfeed, enhancing the bond. Most mothers breastfeed their babies because breast milk is the recommended feed for human infants. Mothers who have tested HIV positive during pregnancy, or those who have a positive status prior to pregnancy may opt not to breastfeed to increase the chances of having an HIV negative child. When asked how they were feeding their babies and how long they take to feed the baby at each feed, participants made various descriptions. They were asked how long they took to feed the baby to determine if they were bonding adequately with their infants, as a mother who is not bonding will not spend a lot of time with their babies, and tend to hurry the feeds.

Participant 7 expressed her desire to have breastfed, but ended up bottle feeding due to some challenges and she had this to say;

I formula feed him because it is more convenient for me and I didn’t have milk. I tried to breastfeed but nothing was coming out. But I wanted to breastfeed him, I tried for 2 days. So I feed him 2 to 3 hourly and continue until he is full (P 7).

Other participants breastfed with the understanding that breast milk is the best feed for a baby as expressed by P 9, “I breastfeed him because it is cheap and it is the best. I breast feed him several times in a day and let him breastfeed until he is full” (P 9). Other participants breastfed

upon encouragement from other people, as stated by one of them, “I breastfeed her because people encouraged me to breastfeed. I feed her several times in day until she is full” (P 17).

For mothers who have undergone a Caesarean delivery, midwives may breach the feeding plan which the mother established during pregnancy as the mother may be asleep due to anaesthetic effects. P 13 had this to say;

I breastfed initially but produced no milk, then I started bottle feeding. During pregnancy, I told the Health care workers that I would just bottle feed to reduce the risk of transmitting the virus. But after my Caesarean Section, they had put the baby to the breast while I was still sleeping, but milk didn't come out so I resorted to formula feeding. I feed him several times in a day until he is full (P13).

More responses were given by participants concerning their feeding methods as follows;

I use artificial milk and bottle-feed him. I think it is better so that I don't infect him with the virus. I feed him 6 to 7 times in a day until he is full (P 14)

Other participants breastfed for fear of stigmatisation and had this to say;

I breastfeed him because I feared people-family and neighbours, that if they see me not breastfeed, they will know that I am positive and stigmatise me. I feed him 3 times in a day until he is full (P 21).

This shows an inadequate bonding behaviour where the participant restricts breastfeeding to only 3 times a day, and it just satisfies the mother's ego.

Some of the participants had some good reasons for breastfeeding, though still fearing to infect the baby, and explained their feeding choice as follows;

I breastfeed him because if not breastfed, bana bankala nachikonko ngati sibanyonka nakudwaladwala (they feel hurt if they don't breastfeed and they become sickly). I was also told that there is no risk if I am on ARVs. I breastfeed several times in a day till he is full....But I fear to infect him through breast milk (P 23).

Other participants breastfed because they were informed to do so at the hospital, and one of them had this to say,

I breastfeed because I was informed to breastfeed at the hospital. I breastfeed him 3 times per day because I go to sell goods at the market. But I breastfeed him as long as he wants at each feed (P 28)

Some of the participants breastfed, but had put measures in place, which were driven by fear of infecting the baby. P 39 had this explained her situation as follows;

I exclusively breastfeed him, eeeeh, I thought it was the best for him, for now I can breastfeed up to 6 months then I will stop breastfeeding completely if his next test will be HIV negative. I breastfeed him 4 times. He sleeps for 2 hours and whenever he wakes up, he breastfeed for about 15 to 20 minutes and then he sleeps again (P 39).

Sometimes, Health care workers may not adequately explain the feeding choices to the mothers as depicted in the following conversation with P 45;

I breastfeed my baby. Asked why she chose this method of feeding, she was surprised and said, “I thought that is the only way??? Or is there any other option? Coz I was thinking that maybe after 4 months I stop breastfeeding and introduce the bottle when my maternity leave ends. I breastfeed most of the time, like more than 10 times in a day, and sometimes I feed until the milk finishes in one breast. But sometimes on changing breasts, then he stops sucking (P 45).

Participants also expressed disappointment in the Health care system with regards late receipt of their Viral Load results which affected their feeding decisions. When asked how she fed her baby, P 49 said, “I formula feed him using the bottle, because the time I gave birth, it was in December, so I didn’t know my latest Viral Load (VL). I was due for the VL the next visit”.

P 49 further expressed anguish at not being able to breastfeed as follows;

But after the results, it was now too late to breastfeed, though I had really wanted to breastfeed because breast milk is the best. Like now, my baby cries a lot because he has colicky pain which he would not have if he was breastfeeding. When I am late to prepare his milk, he cries a lot and I feel bad. I wish I could breastfeed, but I didn’t know my Viral Load. I feed him several times in a day until he is full (P 49).

Others explained their feeding methods, combining it with the reason for adhering, though still fearing to infect the baby as stated by P 81 in the following statement;

I breastfeed him because I was told that it is okay to breastfeed since both the baby and myself are on ARVs. I took the drugs so that he is born well, but I feel bad, that I may infect him (P 81).

Further, the reason for wanting to stop breastfeeding early was given by P 81, which still indicated the women’s mixed feelings about prevention of Mother-to-Child transmission of

HIV while taking ARVs. P 81 planned to wean the baby off the breast early and said, “so I want to stop breastfeeding when his teeth erupt *kaili apa* (because now) I know that I am positive, and I may infect him if he bites the breast while breastfeeding” (P 81).

6.3 Hurdles to adequate mother-baby bonding

Mother baby bonding was not without challenges among participants. Mothers expressed the fears that they had with getting too close to their babies which included fear of infecting the babies and also fear that the baby will die.

Participants explained their haunting fear of the potential to infect their babies, as one of them said, “In my thought of thoughts, I still fear that the baby will contract the virus” (P 17), and this was resounded by another participant who stated, “I think a lot of thoughts about my baby. Will she grow up? I pray always that she will not be infected” (P 104). Participant 21 also expressed her fears as she explained, “I feed the baby less often because I fear constantly that I will infect him. Even if the hospital told me that I could safely breastfeed if on ART, I fear constantly” (P 21). More mixed feelings were expressed by the participants as stated in the following statement by one of them;

I just don't want him to acquire this. I just have that ka (small) fear, may be through breastfeeding, I can infect him, though they say it's not...I just want my baby to be okay (P 45).

Other participants could not bond adequately because they feared that their babies would die as some of them said, “I think that my baby will not live and it affects my relationship with him” (P 104). Others feared for their own lives as stated by some of them,

I have fears about leaving my child, 'coz' I want to see him grow up, I want to see him become something in future, get married, so that he achieves his goals, that's what I pray for (P 49).

6.4 Cause of baby's death

Some mothers had no chance to bond with their infants because the babies died. Of the participants who were interviewed at stage 3 of the study, two of the women lost their babies and they had this to say;

I aborted at 7 months while I was on duty, the baby never cried at birth. I suffered from high blood pressure because I was thinking too much about pregnancy outcome when I was

told that I was HIV positive to the extent that I developed high BP. I lost my appetite and never felt hungry (P 5).

Another participant who lost her baby expressed her sorrow and said;

I was admitted at 6 months for pre-eclampsia. I developed high blood pressure during pregnancy, I think the news of HIV contributed to the high blood pressure. The baby died in the 'stomach' with inducing medicine, he weighed 750g. I felt overloaded, I had too much medication and it was too much for me. Death of baby affect me, I was induced and experienced a lot of pain (P 40).

7 Theme 7: Staff behaviour

Health care workers play a very important role in the lives of their clients, who usually pay a lot of attention to the advice that they are given at the facility. Their attitude and practice plays a vital role on how clients generally behave towards Health care. Midwives and other Health care providers play an important role in the care of perinatal women and their support to women diagnosed HIV positive during pregnancy would go a long way to help them cope positively. Women were asked to describe the health care that they received during pregnancy, labour and delivery, and also postpartum, with probes on why they described the care the way they did.

7.1 Supportive staff

Women described the staff behaviour during their course of care from antenatal, intranatal and postnatal periods as generally supportive, as stated by some of them who said, "they encouraged me by their advice" (P 5) and "the care was good. They would call me. The counsellor escorted me to level 1 for operation" (P 81). Other participants commended the privacy that was given to them, as one of them explained;

Care was good. I was given privacy if we were talking about my status. The care during labour and delivery was good. I was being encouraged and I was given medicine and also encouraged to breastfeed. The post natal care was good too (P 23).

The supportive care of staff was further described as follows;

I was given the best care, despite the pain. I was encouraged to eat during labour. After delivery, they helped me to clean up, they brought the baby to me, joked around and made me happy and laugh (P 44).

Others expressed confidence in the ability of Health care workers to take good care of them as stated by some of them, represented by P 45 who said;

Hmmmm. They just treated me like everyone else, they taught us, kaili (because) when you give them the card, they know what to do, they can't do something wrong, so I didn't fear anything. Care was good, treated like everyone else. They are nice people (P 45).

7.2 Medical terms and procedures

Staff behaviour was also described under medical terms and procedures by participants. Medical terms are usually used to describe conditions and procedures in medicine. And sometimes, Health care workers may get carried away and use the medical terms when attending to clients. Participants had this to say about the medical terms and procedures;

Their care was good. But health workers should take time to explain what is expected of you. They should take time to explain the disease and the terms to patients. When they said my viral load was high, and they talked about copies, I didn't know what they were saying (P 9).

Other participants expressed disappointment at what they termed as lack of care from the providers, like P 21 who said;

Hah! Here, here, they don't care for us-during pregnancy, I was just shoved around. No explanations of anything were given. No explanations on how to take the medicine and how to take care of myself. During labour, they took good care of me, but after delivery, my baby was given drugs which were not explained to me (P 21).

Additionally, some of the participants explained how they felt inadequately cared for by Health care professionals as expressed in the following sentiments; “though impolite, they treated me well. Sometimes, Health care workers are impolite and talk roughly to us. They offer no encouragement, no explanation about the disease or how to take care of the baby” (P 14). The inadequate care and inadequate explanations was further described by other participants who said;

Care was good. Just at discharge, I was given antibiotics while on the ward but at discharge nothing was said until I asked. And then I was told to use the old prescription that I was given. So I had to go back. Even the blood levels were not checked. When I went for postnatal that is when I was told that I had low blood and I was also pale (P 39).

Participants also complained of inadequate support from the staff as pointed out by some of them in the following statement;

Health care providers are not there when the clients need them. They do not provide information which the patients need. I was given a ‘mother’-I don’t know if she is a counsellor. I needed to go to Pharmacy but I didn’t know the place. I tried to call the counsellor but she never picked (P 40).

Participants also complained about not receiving their laboratory results on time, which affected some decisions that they had to make as stated below;

Eeeh! My results were not given to me early enough, took 3 months. I didn’t know my viral load as I went into labour. At least during the 9th month viral load should be checked and results given so that women deliver with a free mind (P 39).

Staff also need to give support and adequate instructions to their clients, but this was not the case as stated by some of them in the following;

I did not receive any encouragement from Health care workers. They did not inform me of how I should take care of myself, the foods that I needed to be eating. They should keep confidentiality and go to the families to teach the family on how to care for the women who have HIV (P 18).

The Health care system always has trainees to sustain the health care professions, and these trainees have to attend to clients during their training periods. However, the presence of trainees may cause fear in the clients as they are aware that the trainees may not have acquired the required competences as yet. Some participants had this to say; “during labour, I was afraid and I was just praying that they won’t make any mistake – there were a lot of students there which made me restless” (P 45).

7.3 Rude staff

Others viewed staff to be rude and less caring, though at times, they reported chancing staff who were good, as expressed by some participants;

They just need to mind how they talk to people. At times they are rude but at times you can find somebody good. But they just need to work on that because sometimes, you even feel stigma from the way they talk. They should also take time to explain to us about our condition even when we have not asked (P 49).

8 Theme 8: Adjusting to the reality of living with HIV

A diagnosis of HIV brings about changes in an individual's life as they adjust to living with the virus. The mechanisms that are used by individuals to cope with a challenging or stressful situation are very important and can either help to reduce the stress, or may make it worse.

8.1. Coping strategies

When asked questions on how they managed to cope with the challenging diagnosis of HIV during pregnancy, participants described how they managed to adjust their lives to living with HIV as follows;

8.1.1. Coping support

Participants mostly reported having good health except for common and minor illnesses like common cold. They also reported having received support to cope from Health care workers, family and friend as expressed by some of them. P 5 said,

I managed to cope because I listened to medical advice. My husband encouraged me sometimes but I left him 2 weeks after I was diagnosed. My mother helped me cope by encouraging me to eat (P 5).

Others acknowledged the support of husbands too, while suspecting them of having infected them as some said, "My family supports me, including my husband. I think my husband is the one who brought the disease" (P 104).

Some participants explained that online resources helped them to cope, and coupled with the encouragement from Health care providers on the need to be more prayerful, they managed to cope with the stress, like P 13 who explained;

I was counselled and I quickly accepted the situation. I pray a lot because the staff advised me to be praying. I search for information on how I should live with myself and with others on Google (P 13).

Other participants described the role of their families and facility staff in helping them cope and said, "My family, church and health workers encourage me to be strong and forge ahead" (P 17), and this was resounded by P 21 who said, "I chat away with family. Health care workers encourage me to continue taking the drugs" (P 21). This support from the facility staff and family was further elaborated by some of the participants who said;

I have managed to cope with the help of family, friends and health workers. Health workers encourage me to adhere and

live positively. Family encourages me to eat healthy and not to harm myself physically or mentally (P 44).

Some of the participants obtained coping support from internet where other people who are living with HIV share their coping experiences. P 39 explained her coping by saying;

Eeeh! I cope by reading articles, and on internet, get comfort from people that share their experiences. There is also a doctor that I can share with if I have a challenge. I v met another doctor too whom I can talk to. My sister also encourages me by giving me hope (P 39).

Apart from coping by support from internet and other people, participants also described coping by joining social media groups, denoting the need for Health providers to develop mechanisms to ensure that correct information is shared on these groups. One of the participants explained her coping mechanism in the statement below;

I am in a group which I joined on social media. We do encourage each other. A counsellor also encourages me that I am not the only one with the condition and inform me that I can live long (P 49).

Even informal groups where women meet and just talk randomly without even knowing if someone has the condition that they are discussing was cited as coping support by the participants, like P 45 who had this to say;

Health workers encouraged me to forge ahead too. I also got encouragement from an informal group at a funeral gathering where women were just talking about the importance of taking ARVs. My friend encouraged me a lot and told me not to worry (P 45).

Other participants described coping by themselves and when asked how they managed, some of them said, “by involving myself in social activities, making myself busy, prayer, and self-encouragement” (P 14), and some were coping by avoiding to think about the problem as follows; “I read articles on HIV. I also just avoid thinking about it” (P 18).

8.1.2 Psychological resilience and moving on

Being resilient is important in helping people to forge ahead and try to live normally despite adverse circumstances. Participants became resilient and determined to live their lives on after being diagnosed with HIV.

P 7 described how she managed to cope and said; “I have been living normally and have gone on with my life. My family and a friend encourage me by making me happy and laugh” (P 7).

This was somehow similar to what P 40 said who stated; “I am trying by all means to live a normal life and take the medicine. I have told myself that I will take the medicine and live on my life in this world” (P 40).

Other participants described their coping by accepting the fact that they had seroconverted to being HIV positive and told themselves that crying would not help. Some encouraged themselves to accept their new condition, knowing that the infection is acquired in many ways and they may not be the ones to blame for acquiring it. Some participants’ responses are represented in the following statement;

Sooo, the other thing is aaaaaa, the other thing is aaa you know, if we know how we have moved in life, we just have to accept, yaaa., I just accepted everything, like yaaa, it’s just part of my life, it has come, it’s not something I can deny or I can move away from it, it’s here, so I just need to accept and...move on. How many times are you going to cry, how many times are you going to be sad? I just brushed everything over and start living a new life, yaaa. I always pray. He says, ‘give me your burdens’, so you just give Him. What I cannot handle, I give to God, only He can handle it (P 45).

8.2 Difficulty coping

Sometimes, coping with a challenging situation is difficult for various reasons. Some of the participants had difficulties coping with the HIV diagnosis during pregnancy for reasons which included depression and loss of the baby.

Participants who encountered difficulties with coping shared their experiences and one of them had this to say; “the death of my baby has affected me, I think a lot. I feel overloaded. I had too much medication. Labour was induced and was very painful” (P 40). Another participant who lost her pregnancy stated, “I was very disturbed, I was thinking too much to the extent that I had high Blood pressure. I lost appetite and never felt hungry. I decided to stop working after abortion” (P 5). Some participants developed depression and failed to cope due to nondisclosure of the HIV diagnosis to their spouse. P 18 said, “It was very difficult for me before I disclosed to my husband. I was depressed and failed to eat. I could not sleep well. The idea that I was hiding something from him haunted me” (P 18).

4.4 Summary

The findings of the study have revealed that most of the participants were in the safe childbearing age of 18 to 35 years, with most of them having 1 to 4 children. The quantitative

results showed that most of the participants had moderate stress levels at both stage 1 and 2 of the study, which was followed by those with high stress levels at stage 1. The coping strategies utilised by participants were mostly problem focused (problem solving) at both stage 2 and 3 of the study. When individuals use the problem focused coping, they tend to have less stress levels as they try to find solutions to the challenging situation. However, some participants utilised the emotion focused coping throughout the study period, which is a maladaptive type of coping, necessitating coping assistance to the affected individuals. The study further revealed that there was a statistically significant association between coping strategies and levels of stress at stage 2 of the study. Post hoc comparisons found significant differences between the Problem Solving group and the Seeking Social support group, and also between the Problem Solving group and the Emotion focused group. Thematic analysis of the qualitative results brought out 8 main themes which included what participants understood HIV to be, their reactions to the HIV positive diagnosis, which were emotional and physical reactions; the reasons for the stress caused by their HIV diagnosis, which included fear of infecting their baby and fear of rejection and stigmatisation by other people; and how they cope with an HIV positive diagnosis. Participants reported their coping support which included psychological resilience and seeking social support, avoidance, and they also explained their difficulties in coping with an HIV positive diagnosis. Participants talked about their bond with their babies and mentioned some difficulties that they encountered in having optimum bonding which included constant fear of infecting the baby and fear of death. The study further brought out the staff behaviour as described by the participants which included being supportive to their clients and sometimes, being rude.

The subsequent chapter will discuss the findings of the study.

CHAPTER FIVE: DISCUSSION OF RESULTS

5.1 Introduction

In the previous chapter, the qualitative and quantitative study findings were analysed and presented. This chapter discusses the results of the mixed methods study which was conducted in 3 stages to ascertain the stress levels, classify the coping strategies and explore the experiences of women who were diagnosed HIV positive at selected Health facilities in Lusaka District. The quantitative findings showed a relationship between the levels of stress and the coping strategy utilised by the women, and a difference between stress levels at stage 1 and those at stage 2 of the study. The qualitative findings revealed eight themes, among them, the stress of an HIV diagnosis and the coping support that women used to cope with that stress.

Integration of quantitative and qualitative data revealed convergence and complementary insights between the findings. The qualitative results agreed with, and elaborated the quantitative results. Measuring the stress levels revealed that women experienced moderate to high levels of stress during stage 1 of the study, and moderate levels of stress still topped the list at stage 2 of the study (Table 5). Upon classifying the coping strategies, it was found that women mostly used the problem focused (problem solving) strategy, which was followed by those who used the problem focused (seeking social support) (Table 6). Both the qualitative and quantitative data sets revealed that women who were diagnosed HIV positive during their pregnancy experienced stress. The quantitative results provided the stress levels, while the qualitative results reported that women were stressed, and further elaborated their reasons for experiencing stress after receiving their HIV positive diagnosis. The coping strategies were also classified quantitatively, and the qualitative interviews provided data on how the women were coping with the stress, in which they reported having social, spiritual and medical support to cope, and this explained how those who utilised the problem focused (seeking social support) managed to cope. Participants also reported coping by themselves, where they became resilient and actively sought solutions to deal with the stress of an HIV diagnosis. This validated the quantitative finding of coping by using the problem focused (problem solving) strategy. Overall, the qualitative results provided complimentary insights and elaborated the quantitative results.

The results have been discussed under each objective and in light of the existing body of knowledge.

5.2 Demographic characteristics

The findings show that the majority of women who were enrolled in the study while seeking antenatal care services, representing 92.75%, were aged between 18 and 35 years. This is the safest childbearing age in obstetrics, when women are neither too young, with reproductive organs still developing, nor too old, when degenerative processes as a result of aging have begun in the body of a woman, which may lead to complications and adverse pregnancy outcomes. Having more women in this age group helped to have women whose stress was unlikely to have been caused by other obstetrical complications which were age-related. This finding is supported by Zhang et al, 2018 who concluded that maternal age has an impact on the maternal health status and pregnancy outcomes with an increase in the risks of various types of pregnancy complications and adverse pregnancy outcomes as maternal age advances. Unfortunately, women in this age group also have the highest HIV positivity and infection rate because they are in their reproductive age and the most sexually active (Kebede et al 2022, Trindade, 2021, Woldesenbet, 2021, Nakazwe et al, in 2019). Similar to the current study, Kebede et al 2022 also found a higher seroprevalence (4.4%) among urban residents in Ethiopia, with significant associations between seropositivity and residence among others. In the current study, all the participants resided in Lusaka district, which is an urban area, indicating a probable higher risk of HIV infections among urban residents due to their diverse sociocultural demographic characteristics unlike in the rural areas. This therefore calls for continued sensitisation on HIV prevention to young people, and indeed scaling up prevention of vertical transmission of HIV programs.

This study also found a statistically significant association between age and levels of stress at both stage 1 and 2 of the study ($p=.012$ and $p=.015$) respectively and the women aged 36 to 49 years were found to be experiencing higher levels of stress compared to the younger women aged 18 to 35 years (Table 12). This may be because older women have more grave responsibilities than the younger women and therefore worry about a lot of other consequences of being diagnosed with HIV during pregnancy, like leaving behind a number of children if they died. Older women may also have been neglected by the Health care providers who might have taken it for granted that they already knew how to manage themselves since they are older and supposedly wiser, and may not have counselled them adequately. This therefore calls for equal treatment of both older and younger clients with regards to counselling and supporting them to cope with an antenatal HIV positive diagnosis.

With regards to religious affiliation, majority of the participants were Protestants with a minority who were not religiously affiliated. Zambia was declared a Christian nation and so it is not uncommon to find a lot of people in Zambia being religiously affiliated to Christianity. The study results have revealed that majority of the participants were indeed Christian (Phiri, 2003). Religiosity has been found to be helpful in managing stressful situations as the affected learn to trust God for sustenance, and tend to cope better with adverse situations (Ironson, Krener and Lucette, 2016).

The level of education plays an important role in women's utilisation of Health care services. More than half of the participants had attained secondary education representing 57.3%. It has been known that individuals with higher educational attainment tend to understand and utilise health education messages more effectively than those with lower educational levels, hence, they would heed HIV prevention messages (Miller et al, 2017; Raghupathi and Ragupathi, 2020; Tran, Pham, and Nguyen, 2021). A study was conducted by Worku et al (2022) in Ethiopia to determine the proportion of HIV among pregnant women in Amhara Regional state and found that completing secondary education and graduated from college were among the protective factors associated with maternal HIV. David et al (2020) equally explored the association between HIV risk and educational attainment for women attending antenatal clinics and found that the HIV risk was lower among postgraduate women than the illiterate ones. One would therefore expect to find more HIV positive women in the lower educational level groups of women. However, the current study participants were all HIV positive, with most of them having attained secondary education. The findings of the current study may suggest that women with higher educational attainment may be the ones who utilise antenatal care services more, hence their higher number among the participants, or that educational level has no effect on HIV risk among Zambian women. In addition, women with a higher educational level who are married may adhere to the HIV prevention messages, but their sexual partners may not, which can still put them at risk of contracting the virus in spite of having a higher level of education, and almost $\frac{3}{4}$ of the study participants were married. Furthermore, this study was conducted on pregnant women who did not know their HIV positive status prior to their antenatal booking, but accepted to be tested for HIV, agreeing with the results for Muyunda et al (2018) that educational attainment strongly predicts HIV testing among women of the childbearing age. Therefore, it is important for governments to strive to provide education opportunities for all citizens, and this has been heralded by the current Zambian government which has introduced

free education for all its citizens to raise their educational level. Accepting to test for HIV during pregnancy plays a vital role in preventing vertical transmission of HIV.

In the current study, 70.9% of the women were married, followed by 27.3% who were single, designating a higher infection rate among the married women. Coupled with other demographic characteristics, like level of education, married couples face a substantial risk of contracting HIV from their partners, probably, through premarital and extramarital sexual behaviour, age difference between partners, and number of previous marriages (Nabukenya, Nambuusi and Matovu, 2020). In a marriage relationship, couples normally have sexual relations without using protection because it is deemed as the natural way to procreate in most societies. Furthermore, couples are usually expected to be faithful to one another and not have extra marital relationships. However, sometimes, couples may have extra marital affairs, and polygamous unions, which put them at risk of acquiring sexually transmitted infections, including HIV. Sometimes, it is one of the couple who engages in unsafe sexual relations outside marriage and put the spouse at risk of acquiring the HIV. In this study, women suspected their husbands of having brought the disease into the home, like P 104 who said that she suspected that the husband brought the infection because of the way that he supported her after disclosing her HIV positive status, and P 21 who reported that the husband implored her not to tell anyone else about the HIV diagnosis because he supposedly had prior knowledge about his own HIV positive status. Women are particularly vulnerable to HIV infection because of their anatomic make-up, and when contracted during pregnancy, are at more risk of transmitting the virus to their unborn babies. In as much as married women are more at risk of acquiring the virus, single women are equally at risk as discovered by Tlou (2019) and Wand et al (2019, indicating that single women may still be involved in sexual relations which put them at risk of acquiring the virus, and widows may have a higher HIV positive rate as they may have been infected already by the time their husbands died, or could indeed be engaging in risky sexual practices after the death of their husband. Other single women may have been born HIV positive and opt to stay single and not have a pregnancy due to their positive status (Salters et al, 2017, Carlsson Lalloo et al, 2016). Therefore, HIV prevention messages should continue to be given to all, regardless of their marital status. There were, however no statistically significant associations between marital status and the levels of stress,

Almost half of the participants resided in medium density areas (51.8%) and less than half of them were housewives (39.1%) with about half (50.8%) of them having negligible monthly income from small scale businesses like selling vegetables in the markets. Only 9.7% were

formally employed with 9.1% having a monthly income of above k3, 000.00 per month (Table 4). These findings denote a predominantly low socio-economic status among the participants and mirrors the low educational level among women who mostly (57.3%) attained secondary education, which makes it more difficult for one to find a place in the job market as they had no professional training. Most well-paying jobs require some tertiary education where someone acquires more knowledge in a field by training, and these are the ones who would be employed in various industries and organisations. A low socioeconomic status among women denotes financial dependence of women on their husbands which could affect their ability to negotiate safer sex, thereby putting them at risk of acquiring HIV. Similar studies reported that HIV was more common among housewives and women who receive low salaries (Trindade et al, 2021) and this was resounded by the American Psychological Association which stated that lack of socioeconomic resources is linked to riskier health behaviours which can lead to the contraction of HIV (APA, 2023).

However, this study has revealed that there is probably no segregation in HIV testing across clients' economic status at the selected health facilities where the study was conducted as all women were tested for HIV regardless of their socioeconomic status. This is contrary to the results of a study conducted by Sharma in India who found significant inequalities in testing between the richer and poorer quintiles of women (Sharmar & Vishwakarma, 2022). There was, however, no effect of the economic status on the level of stress as there were no statistically significant associations observed. In another study, financial insecurity emerged as the central theme impacting the mental health of perinatal women living with HIV across time (Tuthill et al, 2021). Sometimes, the economic status of women can affect their antenatal care utilisation, where women with a low socioeconomic status fail to access care due to financial challenges, and would therefore not be tested for HIV. In the current study, women still managed to attend antenatal care where they were diagnosed HIV positive, despite their socioeconomic status. Women who utilise antenatal care services can be tested for HIV which is encouraged during pregnancy, and if diagnosed early enough and given treatment, the chances of vertical transmission of the virus to the unborn baby are minimised. Further, participants were able to continue returning for antenatal and postnatal care services, evidenced by some of them being interviewed at stage 3 of the study. However, some of the women who reported adverse pregnancy outcomes during stage 3 of the study had a low socioeconomic status, as well as those who reported IPV after disclosing their HIV positive diagnosis, like P 5 who was a shop attendant, but later on resigned. Her stress levels remained high up to the 6th week post-

delivery interview. Governments should therefore keep striving to find ways of raising the socioeconomic status of women to help them not become heavily dependent on their husbands for financial support, which can put them at risk of IPV and resultant continued high stress levels after being diagnosed with HIV during pregnancy.

With regards their obstetrical characteristics, majority (63.6%) of the women were having their second to fourth pregnancy and 67.3% had one to four children. Only 7.3% had five children and above. However, gravidity and parity were not significantly associated with levels of stress, therefore, when planning support measures for women diagnosed HIV positive during pregnancy, equal attention should be paid to both prim gravid/parae, multigravid/parae and grande-multigravid/parae women.

Half (50%) of the study participants attended Chilenje hospital for their antenatal care. There was a statistically significant association between stress levels and Health facility at stage 1 of the study. Post-hoc comparisons using Mann-Whitney tests with Bonferroni adjusted alpha level (Figure 5) found a statistically significant difference in stress levels between Kanyama and George group. This could be attributed to more supportive staff to women when they are newly diagnosed with HIV, which helped them to begin to cope with being HIV positive at George clinic. The Lazarus and Folkman model states that if people use positive coping strategies, which may be assisted by the resistant resources to cope with a challenging situation, the stress levels begin to dissipate. The field notes that were taken during data collection revealed that most of the study participants were booking for antenatal care from the 8th to the 14th week of pregnancy, and this is when they received their HIV positive test results, as testing for HIV is done during the booking visit. The first trimester is the period for organogenesis of the fertilised ovum. If women are not supported to cope when they are just diagnosed HIV positive during the first trimester, which coincides with organogenesis, the stress in the mother could even result in malformation of some of the organs in the embryo and lead to congenital abnormalities (Glover, 2011, Hobil, 2005). It is important that women are supported at diagnosis, to assist them to cope and hence reduce the stress levels. However, the current study did not follow up the babies for a longer period beyond six weeks of age, therefore, another longitudinal study should be conducted to follow up babies of mothers who are diagnosed with HIV during pregnancy to ascertain their growth and development patterns and also rule out other congenital malformations which may not have manifested by the sixth week of age. At stage 3 of the study, participants reported that their babies were normal, with only one of them having a baby who had congenital heart disease. However, this participant declined the

qualitative interview and no further details were obtained from her. In addition, the differences in stress levels were only found at stage 1 of the study and not at stage 2, which still leaves questions as to why there was a difference at stage 1, when this was a longitudinal panel study. Therefore comparative studies between the support strategies of staff to women who are diagnosed with HIV should also be conducted to further evaluate the differences in the support given to women at selected Health facilities within Lusaka district in order to address the differences and assist women to cope.

5.3 Stress in women diagnosed with HIV during pregnancy

More than half (57.3%) of the participants had moderate levels of stress and this was followed by 26.4% of those who had high levels of stress at stage 1 of the study (Table 5). This finding is higher than the stress levels that were found by Engidaw et al (2019) who found a perceived stress level of 11.6 % among Ethiopian pregnant women. This variation could be because the study was conducted on pregnant women whereas the current study was conducted on pregnant women who had been diagnosed with HIV during their pregnancy, raising the stress levels. The study by Engidaw, however, reveals that pregnant women experience stress due to the pregnancy, and hence, a diagnosis of HIV adds on to this stress. This was reiterated by Participant 18 who said that as pregnant women, they experienced a lot of stress related to the pregnancy, and being diagnosed with HIV just compounds it.

The stress of pregnancy increases when the woman experiences other stressful events, like testing positive for HIV during antenatal care (Tibebu et al, 2023, Rochat et al, 2018). This can further be compounded by non disclosure of the HIV positive diagnosis, especially to the spouse, as a result of the secrecy involved with taking medication. Some participants, like P 18 affirmed this during the qualitative interviews when she said that failure to disclose the diagnosis to her husband really stressed her. At stages 2 and 3 of the current study, the high levels of stress dropped to 14.4% and 12.5% respectively, while moderate levels of stress remained highest at 65.6 % and 37.5% respectively (Table 5). There could have been a drop in the high stress levels because by stage 2 of the study, participants had gone over the shock of being diagnosed with HIV and had begun to cope positively. However, some of the participants remained with high stress levels up to six weeks postdelivery which was detrimental to their health, and to that of their babies. The persistent high stress levels might have resulted from inadequate support to cope and hence the need to ensure individualised care for women diagnosed with HIV in order to offer them appropriate support to help them cope. The findings

on the stress levels, and the way they progressed helped to understand how the women experienced the stress of an HIV positive diagnosis over time, and the need for continued support as some of them were still experiencing high stress levels.

Both high and moderate levels of stress during pregnancy can adversely affect the pregnant woman and can lead to adverse pregnancy outcomes. The high and moderate stress levels had various effects on the participants as explained during stage 3 of the study which included development of hypertensive disorders in pregnancy, suicidal and foeticidal ideas, inconsistent ART adherence and inadequate bonding with their new-borns (P5, P 17, P 18, P 49, P 104). The findings are similar to Moseholm et al's (2022) whose study found that pregnant and non pregnant women living with HIV had a higher burden of adverse psychosocial outcomes compared to the HIV negative women. These effects are all detrimental to the health of the mother and her baby, as was explained by some of the participants who had pregnancy and foetal loss. According to the Lazarus and Folkman model 1984, stress developed in the study participants when they evaluated the HIV diagnosis to be threatening, but with secondary appraisal that the effects of the disease could be controlled, women's stress levels dissipated in the subsequent stages of the study in a number of them. The American Psychological Association, reported that maternal stress can have a negative impact on foetal and ongoing childhood development, and also impede mother-baby bonding in weeks and months post-delivery (APA, 2023). The current study collected data only up to six weeks post delivery, leaving a gap in knowledge on the effects of stress on ongoing development of the child. There is need to conduct another longitudinal study to assess the effects of maternal stress in women diagnosed with HIV during pregnancy on the development of the child into adolescence.

During stage 3 of the study which was conducted at 6 weeks post-delivery, participants reported fair bonding behaviours with their babies, and mostly had good pregnancy outcomes. Some participants, however had adverse pregnancy outcomes which included abortion, still birth and operative delivery. Participants attributed the adverse pregnancy outcomes to the stress of being diagnosed HIV positive during their pregnancy. The HIV pandemic has affected human populations for over three decades but its adverse effects on the mental health status of individuals has not changed much. Stress can eventually transition into depression which can lead to poor quality of life among pregnant women with HIV, similar to findings by Nyamukoho et al in 2019.

During the qualitative interviews in this study, women who reported experiencing a lot of stress also reported IPV, like P 5 who reported that her husband continuously blamed and accused her of having infected him. These qualitative findings were complementary to the quantitative findings which found high and moderate levels of stress among the study participants. Women would benefit from supportive husbands as they experience the stress of an HIV positive diagnosis during pregnancy, but when they are faced with intimate partner violence, the stress levels remain high which can lead to adverse pregnancy outcomes and poor quality of life for the woman. Ogueji, (2021) also explored the experiences and predictors of psychological distress among pregnant women living with HIV and found that women experienced psychological distress and these experiences were determined by women's sociocultural contexts. The study emphasised the importance of psychosocial care for HIV positive pregnant women. On the contrary, the quantitative part of the current study did not find any statistically significant associations between stress and participants' sociocultural contexts.

In the current study, participants described their reasons for being stressed by an HIV positive diagnosis. When women were asked what they understood HIV to be, some described it as a disease that kills, a normal disease which can be controlled, or a disease that destroys the immune system. How participants understood HIV affected their reactions when they were diagnosed positive, with those who understood HIV to be a killer disease reporting being so stressed. Participants described a mixture of reactions which included emotional reactions like anger, depression and fear, and also physical reactions like aggression, foeticidal and suicidal thoughts. They further explained what stressed them most about the HIV diagnosis which included fear of adverse pregnancy outcomes, dilemmas in disclosure, fear of infecting the baby and inability to breastfeed. These findings complemented the quantitative findings which revealed moderate and high levels of stress among women who were diagnosed with HIV during pregnancy. The findings are similar to those of a study that was conducted by Worku et al in Ethiopia in 2023 to explore the lived experiences of pregnancy and postpartum among women living with HIV where 6 major themes emerged, among them; fear and distress related to maternal and child health, HIV status self-disclosure dilemma, and coping mechanisms. Fear and concern over their own health and that of their baby grips women when they are diagnosed with HIV during pregnancy and adds to the stress of pregnancy which they might already be experiencing. In the current study, some women mentioned fear of death as something that really stressed them upon being diagnosed with HIV, like P 104 who reported that she feared that her baby would die, and P 81 who kept fearing that she would die before living her full

life, this in spite of sensitisation about HIV and advances in its management. These findings are similar to findings by other researchers (Ashaba et al, 2017, Lingen-Stallard et al, 2016), and show the reality of the stress that pregnant women undergo once they receive an HIV positive diagnosis. However, these findings and the fears that women faced indicate that women do not really understand the acquisition of HIV and the new approaches in managing it, where ART is given, with the aim of reducing the viral load, enabling individuals to live normal lives and preventing vertical transmission of the virus to the baby. More sensitisation is therefore required to equip communities with knowledge on HIV and its management. The role of the antiretroviral drugs in prolonging life should continue to be explained to the masses. This can help to ease the fears that the affected individuals face upon being diagnosed with HIV.

Putsoane and Madiba (2021) equally found intense reactions to an HIV diagnosis during pregnancy which included fear of vertical transmission, sadness, shock and confusion among others as participants were unprepared for the HIV positive diagnosis at routine antenatal care. This study, similar to the current study, also found hesitancy to commence ART at the immediate post testing period. This happens when women are still experiencing high levels of stress as they are internalising and adjusting themselves to an HIV positive status. In this study, during the qualitative interviews at stage 3, women reported keeping the ARVs for some time before beginning to take them, like P 81 who said that she waited for a week before commencing the drugs because she could not just bring herself to swallowing them. These results reveal the emotional distress and psychological stress which women diagnosed with HIV undergo, and herald the need for deliberate identification of their problems, and supporting them individually according to their needs. The problem that occurs when women take long to commence ART is the danger of vertical transmission of the virus, as the viral load remains high without ART, especially if the woman acquired the virus during her pregnancy.

Even talking about their feeding method brought out evidence of women undergoing stress as some talked of weaning the baby off the breast at certain ages due to various fears (P 45, P 39). Women should therefore be given enough information about infant feeding in HIV positive mothers, and this counselling should be repeated at each antenatal visit so that by the time that the woman is delivering, she has made an informed choice about feeding her baby. Others, like P 7 could not lactate and so just opted to formula feeding. Sometimes, lactation fails when a mother is stressed (Fernandez-Tunas et al, 2023). More support should therefore be given to women, especially in the early weeks and months following their diagnosis, to reduce their

levels of stress and help them to cope. Stress levels should be measured from the time the woman is diagnosed HIV positive until they stabilise, and this should include measuring stress during the postnatal period. In this way, those women who need further assistance to cope will be assisted in order to support the establishment and maintenance of lactation in women who opt to breastfeed.

Midwives attend to women during routine antenatal care and can easily identify women with high levels of stress by checking their stress levels using validated instruments at each visit. Midwives should therefore make deliberate plans to measure the stress levels in women diagnosed with HIV during pregnancy in order to identify those with high stress levels. Once identified, individualised plans of care for each woman should be made to help them cope. The nursing process echoes the need for individualised care of all clients, and midwives should adhere to this for women diagnosed with HIV during pregnancy.

5.4 Coping strategies used by women diagnosed HIV positive during pregnancy

Participants used two coping strategies to deal with the stress of an HIV diagnosis, that is; problem focused and emotion focused (Table 6). Most of the participants at George Health facility were found to be using more of the problem focused (seeking social support) coping strategy. This may be because the Health professionals, including Counsellors offer more support to the women, or that participants found it easier to share with their social networks and obtained the support to cope. However, Kanyama is also a high density area, just like George where participants could easily find social networks to help them cope, so the issue of support by Health workers could be more applicable. A follow up study should be conducted to determine the support strategies to women who are diagnosed with HIV during pregnancy at selected Health facilities in Lusaka district. This will help identify support or lack of support to the women and provide recommendations on coping support to them. There was a statistically significant association between the perceived stress and the coping strategy at stage 2 of the study ($p=0.001$). Table 8 shows the post-hoc comparisons which found a statistically significant difference between the problem solving group and the seeking social support group ($z=-21.252$, $p=0.002$), and also between the problem solving group and the emotion focused group ($z=-33.327$, $p=0.001$). These findings explain the superiority of the problem focused (problem solving) strategy in dealing with stress. In this strategy, women use their internal resources to find solutions to the threatening situation of being diagnosed HIV positive and strive to put in place measures to meet the challenge. This is in contrast to the problem focused

(seeking social support) strategy where participants were depending on support from other people to cope with the stress. In as much as utilising social support to cope is good, it might not be as helpful as relying on oneself as it is impossible to always be with people. There are times when the pregnant woman who was diagnosed with HIV may be alone, and if she relies so much on seeking social support to cope, she will have problems.

The women who used emotion focused coping mostly reported avoiding to think about the HIV positive status, but then that does not sort out the problem. P 18 reported just avoiding to think that she was HIV positive, and apparently, this participant experienced high stress levels throughout the study period. While using Emotion focused coping may help for some time, the problem remains and raises the stress levels from time to time. McGarrity et al (2019) found that avoidant coping, together with depressive symptoms predicted more disordered eating in patients who were being prepared for bariatric surgery. This study, though not conducted on pregnant women diagnosed with HIV, shows that avoidant coping does not effectively reduce anxiety and depressive symptoms. In addition, a ten year model by Holahan et al in 2005 which prospectively examined the role of avoidance coping in prospectively generating both chronic and acute life stressors, and the stress-generating role of avoidance coping as a prospective link to future depressive symptoms found that avoidance coping was linked to depressive symptoms. Even though this study was conducted on middle aged men and women, the findings show a similarity to the findings of the current study in that the participants who utilised emotion focused coping remained with high stress levels through to their 6th week postnatal visit. These findings demonstrate that avoidant or emotion focused coping may not be the best in dealing with stress. However, on the contrary, Hofmann and Hay (2018) described the role of avoidant coping in managing stress and concluded that avoidance behaviors can be a valuable therapeutic element, depending on the function of these behaviors. In the current study however, women who used emotion focused coping, which is equivalent to avoidant coping remained with high levels of stress, which is not favourable during pregnancy, as stress can adversely affect the developing foetus. These results therefore identify the need to encourage women diagnosed with HIV in pregnancy to use the problem focused (problem solving) strategy by supporting them with resources to cope, like providing them with factual information about HIV and its management. In order to encourage use of the problem focused (problem solving) strategy to deal with stress, this study recommends another study to identify factors associated with use of the problem focused (problem solving) strategy, whose results will be used to recommend the use of this strategy by women diagnosed with HIV

during pregnancy. Other studies also found different ways in which women attempted to cope with the stress brought about by an HIV positive diagnosis. Jolle et al (2022) explored HIV related stigma experiences and coping strategies among pregnant women in rural northern Uganda and found that social rejection and public ridicule were identified as HIV related stigma experiences while ignoring, social support and prayers were identified as HIV coping strategies among participants. This study also reported ignoring as one of the coping strategies that were used, but as identified from the current study, this strategy is not very helpful in dealing with the stress. Similarly, Meza-Rodrigues (2023) found that pregnant women with HIV in Mexico mostly used emotion focused coping. Another study reported that women who were diagnosed with HIV during pregnancy used problem focused coping and recommended incorporation of psychosocial care to address psychosocial challenges in the HIV care package to optimise the wellbeing of affected women (Ashaba et al, 2017). The current study has identified a need to support women so that they utilise the problem focused (problem solving) approach by providing them with factual information on HIV and its management.

Problem focused coping is helpful in dealing with the stress of an HIV positive diagnosis as described by other studies. Faria et al (2019) in Brazil investigated the influence of coping strategies on quality of life of mothers living with HIV over a 24 month period postpartum. Women answered the questionnaires at the 3rd, 12th and 24th month postpartum and found that problem focused coping was associated with all positive changes in quality of life, while emotionally focused strategies showed inverse associations with physical and environmental quality of life. The recommendation was that health care should help women to actively cope with HIV to help their vulnerability. The current study similarly found that most of the women used the problem focused (problem solving) strategy and their levels of stress dissipated as seen in Tables 5 and 6 above. Kotze et al (2014) described active and avoidant coping which can be equated to problem focused and emotion focused coping in the current study. In Kotze's results, women who utilised avoidant coping, just like women who used emotion focused coping in the current study mostly experienced high stress levels. However, Madiba (2021) explored the experiences of women who were diagnosed HIV positive when pregnant and assessed their emotional recovery beyond diagnosis. The findings were that women were overwhelmed with transitioning from the HIV negative to a positive status, but with time, they were able to transition to feelings of acceptance. However, the transitioning was slow, with some women experiencing non-acceptance for extended periods. The study recommended continuous HIV counselling and provision of culturally appropriate care to foster acceptance

for HIV positive women. The current study, also followed up the participants from their antenatal period through to their 6th week postnatal visit, and still found some women with persistent utilisation of emotion focused coping, even postdelivery, and those women still experienced high stress levels (Table 5 and 6). Indeed, the current study agrees with Madiba on the need to provide continuous monitoring and HIV counselling for extended periods of time to help women to cope. However, the current study focused on the women who were diagnosed with HIV and did not interview staff who could have provided information on the counselling that is done to the women.

The Lazarus and Folkman (1984) model of stress and coping explains the role of resistant resources, like psychosocial and spiritual help in assisting individuals to cope with stressful situations. People who experience various kinds of problems may decide to seek refuge in God and hence find themselves affiliated to a religious group where they can get encouragement and strength. Apart from affiliating to religious groups, individuals can also become more prayerful to obtain spiritual strength to cope. A longitudinal study was conducted to determine whether the use of spirituality/religiousness to cope with HIV predicts survival over 17 years and found that overall, positive spiritual coping significantly predicted greater survival over 17 years (Ironson, Krener and Lucette, 2016). Most of the current study participants were Christians (Table 4), but interestingly, during stage 3 of the study, just very few of them reported seeking spiritual support to cope, though some affirmed finding strength to cope by spiritual encouragement and prayer. The participants who reported being prayerful in order to cope with the stressful situation of being diagnosed with HIV during pregnancy generally reported less stress at stage 3 of the study. They expressed reliance on God and committing their lives into His able hands, which is a good practice that can help to relieve stress. Indeed, some of the participants were encouraged by their Health care providers to cope by praying, like P 13 who reported praying a lot because the staff advised her to pray. Apparently, this participant consistently remained with low levels of stress through all the 3 stages of the study.

5.5 Experiences of women diagnosed HIV positive during pregnancy

Participants were asked about their experiences with being diagnosed HIV positive during a routine antenatal care visit, and they described their experiences, with most of them reporting moderate to high levels of stress. A few of them reported low stress levels, mostly because they appraised the HIV as a virus that can be controlled to enable them lead a normal life. Those who reported being stressed were asked what it was that stressed them about being diagnosed HIV positive, and they reported their reasons which included lack of cure of HIV, uncertainty

about their pregnancy outcome, intimate partner violence, fear of infecting their babies, inability to breastfeed and fear of death. This is similar to other studies which found stress and psychological challenges in perinatal women with HIV (Waldron et al, 2022, Ashaba et al, 2017). Some participants, like P 17, P 104 and P 18 reported their shock at being diagnosed HIV positive, as they had been negative before pregnancy, similar to findings by Lingen-Stallard et al (2016). This may mean that women were not testing regularly and did not notice when they seroconverted, but if they were truly infected during the pregnancy, the consequences could be increased risk of vertical transmission as transmission is highest in newly infected patients, calling for continued counselling on adherence to ART. Some women who reported shock about the HIV positive diagnosis blamed the pregnancy for their HIV positive status, and some even had foeticidal and suicidal ideas. This is not good as it can negatively affect mother baby bonding which begins during pregnancy (Çınar et al, 2022, Rossen et al, 2017). This study followed up the participants from pregnancy to six weeks post delivery. It will be good to conduct a longitudinal observational study which should follow up women who are diagnosed with HIV during pregnancy to observe the bonding behaviours of the mother-baby pair up to 5 years postdelivery, when the child completes their underfive clinics.

Other participants reported feeling stigmatised by their loved ones when they informed them of their diagnosis or indeed self-stigmatised, like P 45 who said that she was definite that people would talk about her HIV positive status. Similarly, Jolle et al found that social rejection and public ridicule were identified as HIV related stigma experiences (Jolle et al, 2022). The fear of HIV related stigma is real among the affected, and sometimes even affects ART adherence as reported by the study participants, like P 5, and hence Ministries of Health should come up with strategies to help demystify HIV (Kalichman et al 2020, Pantelic et al, 2019, Knettel et al, 2018, Monteiro et al, 2018). Another study could be conducted to ascertain the perceptions of HIV positive patients on the care package that they receive. This can help bring out information on whether patients appreciate having a designated place where they are attended to, like the ART clinics, or they would rather mix with all other clients suffering from other conditions in the general Outpatient departments when they attend their reviews. Some participants in the current study, like P 45 reported that when other people saw them go to the ART clinic, they would stigmatise them, and participants equally expressed surprise to find certain people that they knew at the ART clinic and concluded that those people were also HIV positive. Though finding people that they knew collecting drugs comforted the participants,

knowing that they are not the only ones suffering from HIV, there is still need to conduct a study to explore their perceptions about their care.

Some of the participants never accepted that they were HIV positive, like P 40 who reported that her feelings were telling her that the diagnosis is not true, and that she would still go to another Health facility to test, similar to study findings by Walsh et al (2012). During the study period, some women took long to come back for their next visits, or were lost to follow-up as they were still going to other centres to book again for antenatal care and retest for HIV due to denial of the positive results which they received. One such client kept going round the Health facilities after being diagnosed with HIV, hoping to get different results, and only reappeared at Chilenje with an inevitable abortion which became complete when she just arrived. Additionally, 20 women were lost to follow up at stage 2 of the study, and upon calling them by phone, some would never pick up their calls, or would respond that they had relocated to go and deliver from another town. Similarly, Madiba found non-acceptance for extended periods among South African pregnant women diagnosed HIV positive during pregnancy (Madiba, 2021). Failure to accept the diagnosis can also lead to non-adherence to medication, or not taking the medication at all, which can have adverse health consequences for the mother and her baby. There is need for the Ministry of Health to digitalise clients' records onto a national system which can allow detection/tracking of participants once they book for antenatal care, to save them the stress of booking at so many Health facilities in the hope of getting a negative test result. Counselling to HIV patients should also be ongoing by measuring the stress levels at every clinic visit to identify those with moderate to high levels in order to assist them cope positively. This will help clients to accept the condition and adhere to ART in order to increase the chances of having an HIV negative baby. Additionally, a follow up study can also be conducted on Health care worker's experiences with providing care to women diagnosed with HIV during their pregnancy, which can reveal the care patterns provided to the women.

Most of the participants reported disclosing their HIV status to their spouse and significant others, and described their experiences with disclosure, with most of them being given the support that they needed. Similarly, Mwamba et al found that 93% of HIV positive pregnant women were willing to disclose to at least one person (Mwamba et al, 2021). Disclosure usually helps clients to cope with the stress because they will have nothing to hide, and may receive the support to cope in living with the condition. On the contrary, Zotova et al found that, disclosure was higher among participants diagnosed prior to their current pregnancy relative to those diagnosed during current pregnancy, and higher depressive symptoms were found among

women diagnosed during their current pregnancy who disclosed to their partners (Zotova et al, 2022). The discrepancy in these results could be methodological in which the study by Zotova used a cross sectional design and women may not have disclosed their status by the time that the study was conducted, but might have disclosed later on. The current study found that women who might not have disclosed following their diagnosis did so later on, citing reasons of uncertainty in marriage relationship after disclosure, or simply pushing the disclosure to a later date for no apparent reason. Participant 104 mentioned that she did not disclose the diagnosis quickly to her spouse because she knew that she would still inform him at a later date anyway. These results are supported by the grief model by Kubler-Ross (1969) where newly diagnosed women could have been in the early stages of the grief over loss of their old self and failed to immediately disclose the diagnosis. However, non disclosure leads to stress due to the secrecy involved with taking the drugs, and can even result in non adherence.

Participants also explained how disclosure to their sexual partners affected them in various ways. Some participants reported IPV from their intimate partners once they disclosed their diagnosis, which was mostly emotional violence and this led to a lot of problems and maladaptive coping among them. P 5 reported being constantly accused of having infected the husband with HIV and this contributed to her developing hypertension, leaving her marriage, and eventually, having a miscarriage. P 23 reported being tortured mentally by her husband, and P 21 was instructed by the husband not to inform anyone else about the HIV positive diagnosis. She longed to inform her parents and siblings in order to receive moral support from them, but she had to obey her husband and kept it to herself, causing her to experience more stress. Equally, Groves et al, conducted a study in 2017, in which they hypothesised that an antenatal diagnosis of HIV would exacerbate postpartum IPV in women who had a history of IPV. The findings were in the opposite direction, but HIV positive women without a history of IPV faced more than two times the risk of incident postpartum IPV than HIV negative women. The study concluded that there was need to put in place measures to reduce incident and ongoing IPV during the perinatal period. In the current study, participants reported that IPV made their stress to worsen. These findings call for Midwives to come up with more strategies of involving the men in antenatal care. If the couple came together for antenatal HIV testing, and are informed of their results together, they can both receive professional counselling and the incidence of IPV could be reduced. However, Hampanda (2020) explored women's relative power and perceptions of male partner involvement through interviews with postpartum women in Zambia. The findings showed that there were far-reaching gender power imbalances

which included low participation in house-hold decision making, oppressive gendered sexual norms and economic reliance on husbands which hindered women's autonomy and prevented optimum mental and physical health during pregnancy and postpartum. If the husband was HIV negative, these problems were exacerbated. The study found that male involvement was both helpful and hurtful and recommended that future programmes on male involvement need to consider the benefits and risks of involving the men within specific relationships and according to women's needs rather than advocating for universal male involvement. The current study agrees with this recommendation to ensure that male involvement would not end up disadvantaging the women and causing more stress in them. On the contrary, one study found that disclosure to their partners eased the stress from women (Madiba and Putsoane, 2020). The difference in the results could be in the study populations that differed between the studies. Madiba and Putsoane conducted their study on adolescents and young women whose spouses could also be younger in age, and may not have really understood the gravity of the situation, while the current study was conducted on women of child bearing age. The current study results also revealed a significant association between the age of the participants and the stress levels at both stage 1 and 2 of the study, where older women experienced higher stress levels compared to the younger women (Table 12). Older couples, unlike younger couples who might still be in the honeymoon bliss of their marriage, may no longer care so much about each other, even in the face of an adverse situation like a diagnosis of HIV during pregnancy, and this can lead to high levels of stress.

Participants also disclosed to their other relatives and family members, with most of them receiving support to cope. Participants described the reactions of their significant others which included anger and disappointment. These results show that the entire family may get affected by an antenatal HIV diagnosis in various ways. Tension could arise in the family in cases where the relatives begin to blame one of the couple for having infected their relative, and could lead to misunderstandings in the extended family. These findings call for supportive measures to be put in place for the women who test HIV positive during pregnancy, together with their families. Participant 18, requested that Health care providers should support the affected woman together with her family, by providing them with factual information about HIV and also giving them guidance on how to care for the affected woman. The Ministry of Health could explore policies on family centered care in managing HIV. However, some participants reported lack of support from their family, like P 54 who reported harassment from her sisters once she disclosed to them and she reported that they would laugh at her and inform her that

she would soon die. This was an unfortunate situation because sisters normally encourage one another, especially in difficult circumstances. Even though P 54 explained that she did not know why the sisters laughed at her, this might have resulted from a possible promiscuity in which her sisters would have counselled her against it but she did not listen. However, whatever the case, families should support pregnant women who are diagnosed with HIV to help them cope with the stress and prevent the negative consequences of high stress levels during pregnancy and postpartum. Health care providers should therefore continue encouraging the disclosure of an HIV positive diagnosis and also support by the significant others for the affected to help them cope with the stress that comes with an HIV positive diagnosis during pregnancy. Mass campaigns on the need of the families to support women who have been diagnosed with HIV should be scaled up, to assist in reducing the stress that these women experience, as stress can lead to pregnancy complications.

The current study also found that men, too, underwent several reactions once their wives informed them of their HIV positive diagnosis. Participants described the reactions of their sexual partners upon disclosing the HIV positive diagnosis, which included, among others, turmoil, and disbelief (Table 16). Some of the men tested negative while others did not take the test due to various fears as described by their wives. These results bring out the fact that men are also vulnerable in the face of an antenatal HIV positive diagnosis, and are liable to experiencing emotional reactions when they are informed about the diagnosis by their wives. Rather than blaming them, men should also be fully involved in the program and assessed so that they can also be given the supportive care as appropriate. Currently, most HIV testing facilities encourage male involvement in antenatal care, which makes it easy for the couple to be tested together and it is usually easy to communicate the results if both of them are positive. Male involvement is a commendable practice which should be continued. However, sometimes, males may not accompany their sexual partners to the antenatal clinic, and in such cases, if the woman tests positive, they are told to bring their sexual partner to the Health facility, without disclosing the diagnosis to them. Once at the Health facility, they are both tested and informed of their results. This was explained by some of the participants who were advised to do so, and this happens in instances where the woman is afraid to disclose to her husband, so they do it with the help of Health care workers. In discordant couples, women feared for what would follow, like P 18 who wondered if her relationship with her husband would remain the same under the circumstances, adding some more stress to her.

The stress of an HIV diagnosis during pregnancy affected their adherence to the ART in some women. Most participants reported adhering to their ARVs and the reasons for adherence included doing so for the sake of the baby, like P 39 who reported that she loved her baby very much and he was the only reason that she was taking the ART. Other participants reported failing to take the medication because it constantly reminded them of their HIV positive status, like P 18 who also reported some adherence only for the sake of her baby. Abebe et al (2022) sought to determine the prevalence of depression and its association with ART adherence among HIV positive pregnant women attending antenatal care and found that 47.6% of the respondents had depression and there was a statistically significant association between depression and non-adherence to ART. The study recommended screening for depression during routine antenatal care to enhance ART adherence. The current study also recommends assessing women for stress after they receive an HIV positive diagnosis during pregnancy, as stress usually precedes depression. Once stress is identified, individualised plans of care for each woman should be made to help them cope. This can thereby help them in medication adherence, which helps in reducing the risk for vertical transmission of the virus. Midwives can also encourage women to adhere to the ARVs for the sake of their own health, so that they improve their own quality of life.

The World Health Organization (WHO, 2023) recommends consistent daily dosing with antiretroviral medication for optimum viral load suppression. People living with HIV who achieve an undetectable level of virus by consistent use of antiretroviral therapy are less likely to transmit HIV to their sexual partner(s) and are at low risk of HIV vertical transmission to their children (Madiba and Putsoane, 2020). However, participants also reported some problems that they had with adherence which included daily dosing, experiencing side effects, forgetting to take the drugs and fear of stigmatisation. This is similar to what Knettel et al found that stigmatisation negatively affected retention in HIV care (Knettel et al, 2018). Participants recommended long lasting injectable ARVs to reduce on daily dosing and forgetting to take the medication. On the contrary, Mukosha et al, 2020 found that adherence to ART was a challenge among women at Chilenje level 1 hospital in Zambia. Chilenje level 1 hospital was one of the study settings for the current study. This discrepancy in findings could be attributed to the methodology that was used, where Mukosha et al enrolled women who were on PMTCT for six months or more and quantitatively measured ART adherence in a cross-sectional study. The current study was a longitudinal mixed methods which did not measure the ART adherence but depended on the reports given by the participants on their adherence to ART from the

time that they were diagnosed during pregnancy up to six weeks postpartum. Okawa et al (2016) equally found declining levels of adherence in a prospective study which examined ART adherence in pregnant and postpartum women in Zambia. This study, just like the current study examined the self reports by women and the difference in the findings could be that Okawa followed up the women up to 24 months postpartum whereas the current study followed them up to just six weeks postpartum. Therefore, the women in the current study might also default in future, especially after weaning their children as most of them reported adhering for the sake of not infecting their babies. However, other participants reported adhering for better health so that they could see their children grow, and these may continue adhering to medication to achieve their goal.

The experiences with staff were described, with participants reporting both support and inadequate support from staff (Table 16). In his study, Nyarko (2019) found that women had insufficient knowledge on importance of exclusive breastfeeding, when HIV transmission occurs and the merits of Caesarean section in PMTCT. These findings, though obtained from pregnant women who might have been HIV negative reveal the inadequate explanations that are given to clients by the Health care workers. In the current study, women reported lacking knowledge on the medical terms and procedures because they were not explained to them by the Health workers. Participant 14 said that Health care workers should take time to explain the disease to the women, and teach them how to take care of their babies. This was resounded by P 9 who reported that Health professionals should take time to explain what is expected of the patients and also explain the medical terms to clients to make them understand. These findings are similar to other study findings where women reported negative experiences with Health care (Asadi et al, 2018, Ndou et al, 2016, Nyamathi et al, 2009). These findings indicate the need for Health care providers to give women information at their level of understanding so that they know whatever is being done on them. Just like the study by Subramaniyan et al in 2013, and Nyamathi et al, in 2009 found stigmatising attitudes by staff towards HIV positive women, staff were also reported to be rude by some participants like P 49 who reported that when staff were rude towards them, women even felt stigmatised. When women feel stigmatised by Health care providers, or when they receive disrespectful and humiliating care, they can end up not returning to the Health facility. This can result in tension between Health care providers and clients and lead to other consequences like loss to follow up and home births that can be detrimental to the health of the mother and her baby as they will not receive the HIV care package as appropriate, similar to other study findings (Lusambili et al, 2020, Zitha

and Mokgatle, 2020). Other studies also found negative attitudes of Health care practitioners towards pregnant women with HIV (Alexis and Hope, 2018, Aleebrahim et al, 2020). Overall, participants reported to have received good care from the providers in the current study, however, there is need for Health care providers to maintain a professional and empathetic attitude towards their clients and ensure that they provide respectful maternity care to all clients at all times. Health care providers should explain the management of HIV to women, especially that HIV is chronic and incurable. It is cardinal that women understand how they should care for themselves.

Some participants reported coping positively with the stress of an HIV diagnosis that was made during pregnancy, and described their coping support which included good physiological health, support from family, health care workers, online resources and even informal and social media groups, similar to findings by Ashaba et al who found that women coped through support from partners, family and friends, and also by being self-reliant (Ashaba et al, 2017). Similarly, a study by Tong et al, though conducted on HIV positive Health Workers to explore their coping strategies found that they coped, among others, by seeking social support and applying problem-solving strategies (Tong et al, 2022). The Lazarus and Folkman stress and coping model (1984) states the importance of resistance resources, like psychosocial and spiritual help in assisting individuals to cope with stressful situations. The quantitative results of the current study have also demonstrated that stress levels declined at subsequent stages of the study because the women were able to utilise positive coping strategies to deal with the stress that resulted from an HIV positive diagnosis during pregnancy (Table 5 and 6). With advances in technology, and many women having access to internet and social media platforms, individuals get a lot of information from these avenues. Some participants, like P 13 and P 18 reported obtaining support to cope from internet and social media platforms. It is incumbent upon Medical practitioners to ensure that correct and up -to -date information is availed on these platforms to ensure correct information to clients at all times. Support from Health care workers is valued and would benefit the clients because it is professional and gives factual information on how clients should care for themselves. This is in line with Akinsolu et al's recommendation to incorporate mental Health care in routine maternal health care for women living with HIV (Akinsolu et al, 2023). Other participants reported coping by themselves where they told themselves that they would adhere to the medication regimen and live their lives on, like P 40. This was evident from the quantitative results which showed that most women were using the problem focused (problem solving) coping strategy to deal with the stress, in which they

actively sought solutions to deal with the problem of HIV (Table 6). The qualitative interviews also revealed that most women who reported positive coping are those who understood HIV to be a controllable disease. Therefore, Health care providers should continue giving updated information about HIV and its management so that the masses can understand that the diagnosis of HIV infection is not a death sentence.

However, there are other participants who reported inability to cope with the stress, with resultant adverse conditions and pregnancy outcomes (P 5, P 18). These participants utilised emotion focused coping or avoiding to think about their HIV positive status but this did not help as they remained with high levels of stress (Table 5 and 6). These findings were similar to findings by Kotze et al, 2014, but were contrary to the findings by Ashaba, 2017 who found coping among postpartum women living with HIV. This difference in results can be explained by the differences in methodology and study populations in these studies. The study by Ashaba conducted semi-structured interviews and used content analysis on postpartum women living with HIV, while the current study used mixed methods on women who were diagnosed with HIV during their current pregnancy. Participants in Ashaba et al study had been living with the condition by the time they were recruited in the study, and could have undergone their grieving process, reaching the stage of acceptance (Kubler Ross, 1969), whereas participants in the current study had been diagnosed recently and were still undergoing the grieving process in its early stages before they were able to accept that they had seroconverted. It is therefore important that recently diagnosed women receive more emotional support to help them cope with the stress of an HIV positive diagnosis, as waiting for the grieving process to be complete could lead to high stress levels which can negatively affect the woman and mother baby bonding.

5.6 Experiences with mother baby bonding

Mother baby bonding is critical in the normal growth and development of a child, and bonding begins during pregnancy, way before a baby is born (Çınar et al, 2022, Rossen et al, 2017). Participants described their experiences with bonding with their babies at stage 3 of the study, with most of them describing positive bonding behaviours. They reported engaging with their babies as they cared for them, which made the babies respond positively too. Participants wished the very best for their babies and wanted them to be HIV negative and grow up to become responsible members of society. They became particularly encouraged with an HIV negative test result on their baby, and were optimistic that their babies could grow as HIV

negative persons. However, participants also reported inadequate bonding which resulted from the stress of an HIV diagnosis and mostly fear of infecting the baby, or fear that the baby would die. Willcocks et al explored the impact of being diagnosed with HIV during pregnancy on mother-infant bonding using Grounded theory. The study findings highlighted the challenges with bonding which emerged during the early stages of diagnosis and postpartum but mothers became resilient and positive as infant testing progressed. The study called for timely information regarding vertical transmission and more support to women diagnosed positive during pregnancy (Willcocks et al, 2016). The current study similarly found problems with bonding especially during pregnancy by some of the participants. Other participants had fears to bond adequately with their babies, like P 104 who feared that her baby would die any time and this affected her relationship with him. Participant 17 had problems bonding with her unborn baby as she felt that the pregnancy was the cause for her HIV positive status, as, according to her, before this she was just okay. She reported wanting to abort the baby, and more so because she believed that the baby, being HIV positive too, would die anyway. A number of the other participants described unhappy feelings towards the pregnancy as it was seen as the cause of the diagnosis. This is not a healthy bonding behaviour as bonding begins during pregnancy (Çınar et al, 2022, Rossen et al, 2017). These findings are similar to the findings by Daglar and Nur (2018) who found that maternal depression during pregnancy or after delivery negatively affected the development of the mother baby bond, in a cross sectional study. However, the current study was longitudinal, and by six weeks postdelivery when women were interviewed about mother baby bonding, they had accepted their condition and focused on having an HIV negative baby, and this enhanced the mother baby bond. The current study findings are important as they reveal that as the levels of stress in the mother decreases over time (Table 5), mother baby bonding can actually be enhanced. It is therefore critical to recognise confusion and stress in women diagnosed with HIV to reduce their stress and help them bond adequately with their babies. The confusing thoughts and stress are real in the women diagnosed HIV positive during a stressful state. However, somewhat contrary results were found by Moniri et al (2023) who assessed the relationship between pregnancy and birth experiences with maternal fetal attachment and mother child bonding. This study found no statistically significant associations between pregnancy hassles and maternal foetal attachment or mother-child bonding ($p > 0.05$), though the study concluded that pregnancy uplifts have a positive role in improving maternal foetal attachment. The study recommended that interventions should be planned to make pregnancy period a pleasant experience for mothers, so in a way, this study recognises the importance of reducing stress levels in order to enhance

mother baby bonding. Equally, the current study recognises the importance of reducing the stress levels to enhance mother baby bonding.

Breastfeeding usually enhances bonding due to the close contact between mother and baby during a feed (Gibbs et al, 2018; Penacoba and Catala, 2019). This study found that most of the women breastfed their babies and had the rewarding maternal feeling of caring for their babies and watching them grow daily. However, similar to a study conducted by Umeobieri et al. (2018) some of them, like P21 breastfed for wrong reasons, like fear of stigmatisation if they were not seen breastfeeding as people would conclude that they were HIV positive (Umeobieri et al. 2018). This is not helpful for both mother and baby as breastfeeding should be honest and enjoyable. Participants recommended that community members should be encouraged to mind their own business as opposed to always checking on what their neighbours were doing. Indeed, sometimes the pressure to conform to what society terms as normal can overwhelm the women diagnosed with HIV during pregnancy, however, they should be encouraged to adopt behaviours that can better their health and also prevent vertical transmission of the virus to their baby.

The breastfeeding experience also brought out some facts regarding staff where some participants lacked knowledge on the feeding options for HIV positive women. Some participants expressed surprise to hear that there were other feeding options for an HIV positive mother apart from breastfeeding. As much as breastfeeding is the best method and enhances the bond between the mother and her baby, it is important that mothers are given the feeding options during antenatal care so that they make an informed choice, which should be written down to ensure that it is followed. This finding was similar to findings by Adeniyi et al, 2019 who found coercion and Health workers' recommendation to be the underlying cause for HIV positive women wanting to breastfeed. The Ministry of Health could also include infant feeding counselling during antenatal care, which is only mentioned in the postnatal care package (MoH, 2020). Beginning the counselling on feeding options antenatally could help the women to understand so that by the time they deliver, they have settled on a feeding method which they can afford, but also reduce chances of vertical transmission of the virus. Another participant expressed displeasure at the midwives who put her baby to the breast in her post Caesarean section drowsiness, when she had informed the Health care workers that she would not breastfeed. The mix-up could have occurred if the participant had informed any other Health care worker apart from Midwives who usually attend to women's labour and delivery, or simply because her feeding choice was not documented on her antenatal record. It is important

that the feeding method which a mother settles for, is documented to avoid mistakes. Counsellors could also communicate discussions which border on procedures that may be conducted on clients in their absence, to the midwives so that even if they are absent, whatever was agreed upon between the Counsellor and the woman is implemented.

Women also complained about late Viral Load results that would not be available as they delivered. According to the participants, knowing their viral load could have helped them assess their own suitability to breastfeed without the fear of infecting their babies during breastfeeding. The Zambia consolidated guidelines on management of HIV guides that viral load should be checked every 3 months for HIV positive pregnant and breastfeeding women (MoH, 2020). Unfortunately, the 3 monthly viral load checking may not be on schedule as the woman delivers, depending on which gestation period the viral load checking began. Therefore, Health care workers should individualise the Viral Load testing for each woman to help them make informed feeding choices. Woldesenbet et al (2021) also found that initiating ART during pregnancy was associated with lower likelihood of receiving a viral load test and results during pregnancy and recommended that viral load testing could be improved especially among women initiating ART during pregnancy. This is very important in monitoring the health of women and also allowing them to make informed choices about breastfeeding. These results are contrary to the results of a study conducted by Musahnu et al (2020) in Zimbabwe who found a median time interval for the return of viral load results from the date of sample collection to be 14 days. It is good that mothers receive their results to assist them in deciding the infant feeding option. Most mothers are aware that breast milk is the best feed for their baby regardless of their HIV status, and that breastfeeding enhances bonding with their babies (P 9, P 23, P 49). It is important that staff support mothers to bond with their babies to ensure their healthy growth and emotional stability by giving them correct information and helping them to establish and maintain lactation.

5.7 Strengths of the study

- 5.7.1 The study used validated tools and brought out the levels of stress and the coping strategies that women utilise after receiving an HIV positive diagnosis at selected Health facilities in Lusaka district.
- 5.7.2 The qualitative findings revealed the experiences of women after receiving an HIV positive diagnosis, and also explained the reasons for their being stressed once

diagnosed. The qualitative results further helped to understand how women coped with an HIV positive diagnosis.

5.7.3 This longitudinal study provided information on the levels of stress and coping strategies at different stages of the participants' lives, thus from their second antenatal visit through to six weeks post delivery, and thus gave a clearer picture of what women go through after being diagnosed with HIV during pregnancy.

5.7.4 The study has provided information on the effects of an HIV positive diagnosis on mother-baby bonding

5.8 Limitations of the study

5.8.1 Inadequate literature with regards HIV diagnosis during pregnancy, which affected the literature review and the discussion of findings in light of existing literature. However, to mitigate this, related literature, and sometimes, old literature which had not been updated were used.

5.8.2 The study was conducted in Lusaka district which is urban, so generalisation of the study findings to rural areas should be done with caution. However, thick descriptions were used to minimise this limitation.

5.8.3 Loss to follow up of participants at stage 2 and 3 of the study. However, this was minimised by the sampling method that was used.

The next chapter will conclude, outline the implications and make recommendations based on the study findings.

CHAPTER SIX: IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

The previous chapter discussed the findings of the study while triangulating the quantitative and qualitative data. This chapter discusses the implications and recommendations, and also concludes the study on the effects of, and coping strategies of women who were diagnosed with HIV during pregnancy at selected Health facilities in Lusaka district of Zambia. The chapter also discusses the study limitations and recommendations for future research.

6.1 Contributions of the current study

This study has contributed to the body of knowledge on the effects of an HIV diagnosis during pregnancy and the coping strategies that women use at selected Health facilities of Lusaka district. Apart from ascertaining the levels of stress that women undergo, and categorising the coping strategies that they use, this study further explored the effects of an HIV diagnosis on mother baby bonding, and found that most of the women were able to adequately bond with their babies in the six weeks following delivery.

6.2 Implications of the study

The results of the study indicate that pregnant women who are diagnosed with HIV during pregnancy undergo a lot of stress, but most of them use problem focused (problem solving) coping strategy which helps them to actively seek solutions and therefore manage to cope with an HIV diagnosis that is made during pregnancy.

1. Implications to nursing and midwifery practice

Some participants expressed relief to find someone to talk to, to the extent of wanting to reward the investigator for the interview in appreciation for talking to them. Stage 1 of the study involved enrolment into the study and answering questions on the Perceived Stress Scale, without qualitative interviews. But some participants began to explain their experiences already and ventilate, being grateful that they could talk to someone. Nurses and midwives are usually viewed by clients and patients as people that they can talk to and confide in. These results imply that there is need for the nursing and midwifery profession to live up to the roles of their profession which include, among others, advocacy, compassionate caregiving, teaching, communicating and managing the care of clients and patients diagnosed with HIV during pregnancy. They should also engage the multidisciplinary team to manage women with high stress levels.

2. Implications to nursing and midwifery education

The study findings revealed inadequate information and higher numbers of HIV infection among younger women. The HIV has been affecting human populations for over three decades now, and so it is easy for nurses and midwives to take it for granted that everyone has adequate information on HIV. However, this study revealed inadequate information about the disease. Nurses and Midwives should ensure continuous dissemination of HIV information and facts to the masses to enlighten them on HIV and its management. Nursing and midwifery training institutions should also continue teaching students about HIV so that they have adequate information to teach clients as they graduate.

3. Implications to nursing and midwifery management

The study revealed that participants were stressed. Nursing and midwifery managers should ensure that women diagnosed with HIV during pregnancy are monitored for stress during antenatal and postnatal visits in order to help them cope. Adequate staffing should be ensured to enable nurses and midwives offer comprehensive care to the women. When students are allocated to clinical areas, managers should ensure that there are enough qualified staff, in appropriate uniform which distinguishes them from students, to supervise students in order to build confidence in the clients.

4. Implications to nursing and midwifery research

Fewer studies were available on HIV diagnosis during pregnancy and also effects on mother-baby bonding. More research should be conducted in these areas to enable evidence based practice for women diagnosed with HIV during pregnancy.

6.3 Conclusions

Receiving an HIV positive diagnosis is a reality that leads to adjustments in a person's life. When made during pregnancy, it adds to the stress of pregnancy which the woman is already experiencing, and women have to make adjustments in their lives. The study findings have provided evidence of the stress that women go through once they receive an HIV positive diagnosis during pregnancy. There was a statistically significant association between stress levels and the coping strategy that women utilised. The coping strategies that women employ to deal with the stress are important and can either help reduce, or worsen the stress levels. The findings revealed that most women utilised the problem focused (problem solving) strategy which made them resilient and move on. However, some women utilised problem focused

(seeking social support) or emotion focused coping and continued to have high levels of stress. There is therefore need to use validated stress measuring tools to identify women who are stressed in order to help them cope with the condition.

Women also shared their experiences with being diagnosed HIV positive during a routine antenatal care visit. Thematic analysis revealed that some women had wrong information about HIV, its acquisition and management. Participants reported being stressed about the HIV diagnosis, largely because they feared that they would infect their babies, or that they would die. Some feared to disclose their diagnosis as they feared being rejected by their loved ones, and a number of them suspected their husbands for having infected them. Participants reported adhering to the ART regimen, mostly for the sake of their babies, but some had challenges with adherence due to, among others, fear of stigmatisation and drug side effects. Most mothers reported positive bonding behaviours with their babies, but some of them reported pregnancy loss due to hypertensive disorders which they attributed to the stress of an HIV positive diagnosis. Participants reported receiving support to cope from health care workers, family and friends. However, some reported receiving inadequate care from Health professionals, and receiving their Viral Load results very late, which affected the feeding choices of their babies. There is need to give women all the necessary information about the condition, and empathetic support, to help them understand and cooperate with the lifestyle changes that they have to make after being diagnosed HIV positive during pregnancy.

6.4 Recommendations

The results brought out a number of issues regarding HIV diagnosis during pregnancy; the levels of stress that women experience, how they cope with this stressful situation, and their experiences after being diagnosed with HIV during pregnancy, which included among others inadequate information about HIV and the reactions of community members to people who are diagnosed with the virus.

1. Recommendations to Ministry of health

1.1 Participants reported that the community members still stigmatise people diagnosed with HIV. Some participants could not adhere to ART due to fear of stigmatisation. Others breastfed for fear of being suspected to be HIV positive if they did not. Therefore the Ministry of Health should continue to vigorously sensitise the community on the need to support people living with HIV to make their burden lighter. The Ministry of Health should also consider putting it as policy for every Health facility to assess

women's stress levels when they have been diagnosed HIV positive at each clinic visit until they stabilise.

- 1.2 The Ministry of Health should lobby for employment of more midwives to ensure adequate staffing in the Maternal and Child Health departments. These midwives should measure the levels of stress in women diagnosed with HIV during pregnancy at each antenatal and postnatal visit until the stress levels stabilise. Coping strategies should also be categorised at each visit in order to offer coping support to women who will be found to be using emotion focused coping.
- 1.3 The Ministry of Health should continue training and updating the knowledge of the Community Based Volunteers to enable them provide factual information to, and support women who are diagnosed with HIV during pregnancy.
- 1.4 The managers at the study sites should ensure the correct attitude of staff towards women diagnosed with HIV, which should be empathetic, at all times.
- 1.5 The managers at the study sites should make deliberate efforts to support the significant others of women diagnosed HIV positive during pregnancy, as they also undergo several reactions at disclosure of the HIV diagnosis by the pregnant women. The women should be encouraged to bring their significant others for counselling as necessary, and once brought, should be given an undivided audience by the Health care team.
- 1.6 The Nursing and Midwifery Council of Zambia should work closely with training institutions to ensure that graduates are trained in conducting research so that they develop an inquiring mind and are able to conduct research in their work institutions to enhance evidence based practice. The use of validated tools to measure stress and classify coping strategies among antenatal women diagnosed with HIV could be included in the midwifery curriculum so that student midwives get acquainted to using them at all times.

6.4.1 Recommendations for future research

1. Another longitudinal comparative study should be conducted to ascertain mother-baby bonding from birth up to 60 months postpartum in women who are diagnosed with HIV during pregnancy and HIV negative women.
2. A follow up longitudinal comparative study should be conducted to ascertain the growth and development patterns of children aged 0 to 18 years born from mothers who are diagnosed HIV positive during pregnancy and those from HIV negative mothers.

3. A quantitative study should be conducted to compare the characteristics of women diagnosed with HIV during pregnancy who use problem focused, with those who use emotion focused coping.

6.5 Dissemination and utilisation of the study findings

The research report will be bound and 3 copies will be deposited at the School of Nursing Sciences and Medical library to be added to the repository.

Executive summaries will be written and shared with the Ministry of Health Headquarters, the District Medical Office, and the study settings in order to share the research findings.

The Perceived Stress Scale and Coping Strategy Indicator that were adapted for this study will be shared with the study sites so that they can be measuring the stress levels and classifying the coping strategies utilised by women who will be diagnosed with HIV during pregnancy. This will help them to identify those with high levels of stress in order to assist them to cope.

The research findings will be published in peer reviewed journals and during local, regional and international conferences.

6.6 Reflection on my Doctoral journey

Teaching at a Higher Institution of learning requires that one undertakes life-long learning. Apart from that it has always been my passion to contribute to the nursing and midwifery profession, among others, by generation of knowledge. Further, my mother always encouraged me to be courageous, work hard and maintain Excellency in whatever I do. With this motivation, I embarked on my Doctoral journey. Unfortunately, I registered for the program a few months after my dear mother died, and I hadn't realised that I was still battling with grief for the loss of my mother. After just beginning to write the concept of my thesis, I was overwhelmed with grief and stopped writing for a long period of time. After sometime, I found solace in God and continued to write. The journey has not been easy. Indeed I was constantly reminded of what one senior Lecturer told me when I informed her that I was pursuing my Doctoral Degree during one of the workshops. She responded and said, "Hmm! I wish you the best. The PhD journey is a lonely one". True to her word, I experienced loneliness sometimes, where I may not have been sure of what to do. I am thankful to my supervisors and fellow Lecturers who took the time to guide me. Another fellow PhD candidate abroad encouraged the group of us during a conference and said, "You need to write, because if you do not write,

your paper will remain waiting for you, untouched”. That ignited me to persevere in writing, amid work deadlines.

However, my PhD journey has not only been stressful, but it was also rewarding. During my studies, I have met and learnt a lot from other scholars, both in Zambia and abroad. I have also learnt resilience, focus and endurance, which have added value to my life as a person and as a professional. Interacting with my study participants helped me to understand the realities of the stresses that patients may be going through, sometimes, with no one noticing, and has made me an even more empathetic person. I look forward to continuing contributing to the profession by conducting more studies and adding to the body of nursing and midwifery knowledge.

Table 17: Gantt chart

TASK	Responsible person	Jan to Jun 2020	September, 2020	March 2021	June 2021	June 2022	July to Dec 2022	Jan to Jun 2023	Jul to Dec 2023
Research proposal development	Researcher and supervisors								
Literature review									
Permission to conduct study	Researcher								
Ethical clearance	Researcher								
Data collection	Researcher								
Data analysis and presentation of preliminary findings	Researcher and supervisors								
Manuscript writing	Researcher and supervisors								
Report writing and submission of manuscripts to Midwifery journal	Researcher and supervisors								
Finalising and binding research report	Researcher and supervisors								
Monitoring and exaluation	Researcher								

Appendix 1: Research Budget

No.	Budget Category	Quantity	Unit Cost (ZMW)	Total (ZMW)
A.	Stationery			
1.	Bond paper	15Reams	70.00	1 050.00
2.	Pens	20	2.00	40.00
3.	Pencils	10	2.00	10.00
4.	Rubber	5	5.00	25.00
5.	Notebooks	3	10.00	30.00
6.	Flash Diskettes	2	100.00	200.00
7.	Correction Fluid	3	20.00	60.00
8.	Scientific calculator	1	150.00	150.00
9.	Bags	1	500.00	500.00
10.	Stapler	1	25.00	25.00
11.	Staples	2 packets	20.00	40.00
12.	Tonner	3	1500.00	4 500.00
13.	Markers	5	10.00	50.00
14.	Box files	4	50.00	200.00
15	Tape recorders	2		
16	Tapes	6		
	Subtotal			11 265.00
B	Other Services			
1.	Ethics Committee	1	1,500	1,500.00
2.	Photocopying Research	70 Pages X 2	0.30	420.00
3.	proposal	3 pages x 60	0.30	54.00
4.	Photocopying interview	3 pages x 40	0.30	36.00
5.	schedule	3 copies	20.00	60.00
6.		4 Copies	250	1,000.00
	Binding Research proposal			
	Binding Research report			
	Subtotal			3,070.00
C.	Personnel Allowances			
1.	Lunch :- Researcher	1 x 90 days	250.00	22 500.00
2.	Transport:-Researcher	30l/wk. x 12 wks.=360 l petrol	17 000	6 120.00
3	Research assistant allowances	K20.00/respondent	K20.00/respondent x 84 x2 phases	3 360
	Subtotal			31 980.00
D	Participants' snacks			
1	Eetsummore biscuits	1x 261participants-all stages	30.00	7 830.00
2	Soft drinks	1x261 participants-all stages	10.00	2 610
	Subtotal			10 440.00
	Total			42, 955.00
	Contingency	10%		4, 296.00
	Grand Total			61, 051.00

Budget Justification

1. Stationery

Stationary is required to type the research proposal, the questionnaires, the research report and for printing the documents. Staples and staplers are required for holding the paper work together. Pens and pencils are needed for taking notes throughout the research project. A researcher's bag is needed for carrying interview schedules and other items like note books and tape recorders to and from the study sites. The flash disk is needed to keep soft copies of the research proposal and report. The scientific calculator is needed for making calculations so that accurate data is presented. Tape recorders and tapes will be used for taping the interviews during data collection

2. Personnel Emoluments

Funds will be needed for buying food during lunch hour when collecting data for the researcher.

3. Services

Services will be needed to format and bind the research proposal. The research ethics handling fee is a requirement of the research ethics committee which approves the study.

4. Transport

Fuel will be needed for researcher to reach all the data collection sites.

5. Contingency fee

This is 10% of the total budget to cater for unforeseen expenses during the study.

6. Participants' snacks

Participants will be given a biscuit and a drink to refresh them as they will spend more time at the health facilities while waiting to be interviewed.

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Appendix 3: Participant Information Sheet



THE UNIVERSITY OF ZAMBIA

SCHOOL OF NURSING SCIENCES

DEPARTMENT OF MIDWIFERY, WOMEN'S AND CHILD HEALTH

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Email: dean-nursingscience@unza.zm Lusaka, Zambia

School of Nursing Sciences Building

University Teaching Hospitals

P.O Box 50110

INFORMED CONSENT TEMPLATE FOR INTENDING RESEARCHERS

Title of the proposed study: HIV diagnosis during pregnancy: Effects and Coping Strategies used by women at selected Health facilities in Lusaka District, Zambia

Investigators:

Brenda Nambala Sianchapa, the University of Zambia, Cell phone number 0979 187399;

Dr. Patricia Katowa-Mukwato, the University of Zambia, Cell phone number 0977564486,

Dr. Catherine M. Ngoma, the University of Zambia, Cell phone number 0966652879

Background and rationale for the study:

The Human Immune deficiency virus is a blood borne virus that seeks and destroys an individuals' immune system. The virus can be spread to the unborn baby from an infected mother, hence pregnant women undergo testing for HIV during pregnancy in order to prevent mother-to-child transmission of the virus. Receiving an HIV positive diagnosis during pregnancy may lead to a number of effects on the affected woman, and the coping mechanism that she will use will have an impact on how she copes with the diagnosis. This study therefore seeks to determine the effects of an HIV positive diagnosis that is made during pregnancy and the coping mechanisms that women use at selected Health facilities in Lusaka District in order to develop guidelines for caring for the women and their families.

Purpose:

The purpose of this study is to determine the effects of an HIV positive diagnosis that s made during pregnancy, and how affected women cope. You are being asked to participate in the study so that you inform us on how an HIV positive diagnosis that was made during your current pregnancy has affected you, and how you are managing to cope with the diagnosis. The study will not involve any experiments but you will only be requested to answer some questions

.Procedures:

This study will be conducted in three (3) stages. Stage 1 will involve asking you some questions which will measure your stress levels as a result of being diagnosed with HIV during pregnancy at your second antenatal visit. Stage 2 will involve asking you questions which will measure your stress levels similar to stage 1, but in addition, will ask you questions on the mechanisms that you have been using to cope with the diagnosis at your 6th antenatal visit (at 8 months of your pregnancy). Stage 3 will be done when you have delivered and have come to the clinic for your 6 weeks postnatal visit. During this stage, you will be asked questions which will measure your stress levels, classify your coping strategies just like what would be asked during stages 1 and 2 of the study. In addition, during stage 3 of the study, you will also be asked questions on how your relationship with your new born baby may have been affected by the HIV positive diagnosis which you received during pregnancy

Who will participate in the study?

The study participants will be all women seeking antenatal and postnatal care services at the study setting who will have tested HIV positive for the first time during the current pregnancy. All the women will be requiredd to participate in Stages 1 and 2 of the study. The sessions for Stage 1 will last 20-30 minues, and 30-40 minutes for Stage 2. Stage 3 will only involve 20 women out of the 124 and the inteviews will last 50-60 minutes.

Risks/Discomforts:

By taking part in the study, you will be asked some questions where you will need to narrate your experiences of having an HIV diagnosis made during pregnancy. There are no potential risks involved. However, narrating your story may bring back fresh memories of the time you were diagnosed, which may cause you some stress.

Benefits:

By taking part in this study you will contribute to the existing knowledge on effects of an HIV diagnosis made during pregnancy and the coping strategies that women use. This may help stakeholders to identify areas that need to be addressed in the care that is given to women who are diagnosed HIV positive during pregnancy, and put measures to help them cope with the diagnosis. There are, however, no financial or direct benefits for you personally at present.

Alternatives:

Your participation in this study is entirely voluntary. You can choose if you want to take part in the study. You can also, during the interview, withdraw your participation if you wish to do so, without any consequences. You can even tell me that I cannot use the information that you have revealed to me during the interview, and I will honour your decision.

Cost:

There are no direct costs for you to participate in the study. However, you will spend a little longer time at the health facility as you wait to be interviewed. At the end of the interview, you will be given a snack to refresh yourself.

Compensation for participation in the study:

Your participation in this study has no major risks; therefore there is no planned compensation. However, if you break down during the interviews, counselling services by trained counsellors will be on hand to offer counselling to you.

Reimbursement:

There will be no reimbursement of your transport money as you will be interviewed during your routine antenatal or postnatal visits. You will only be given a snack at the end of the interview for your refreshment after spending more time at the hospital as you wait to take part in the study. However, in special circumstances, if you have to travel solely to take part in the study, your transport money to and from the Health facility will be refunded.

Questions:

Should you have any study related questions, you can ask the investigators on the following numbers; Brenda Nambala Sianchapa-0979 187 399, Dr. Catherine M. Ngoma on 0966 652 879, and Dr. Patricia Katowa-Mukwato on 0977 564 486,

Questions about participants rights:

Should you have questions about your rights as a research participant, you can forward your queries to;

The Dean, University of Zambia, School of Nursing Sciences, P.O. Box 50110, Lusaka

Telephone 211252453

The Chairperson, Biomedical Research Ethics Committee, School of Medicine, P.O.BOX 50110, Lusaka. Telephone No: 211256067

Statement of voluntariness:

Your participation in this study is voluntary and you may participate in the study on your own free will. You can also withdraw from the study at any time without any penalty. However, you are encouraged to take part in the study so that the effects and coping strategies used to cope with a diagnosis of HIV made during pregnancy can be ascertained. This will help in developing guidelines to care for women who are diagnosed HIV positive during pregnancy.

Confidentiality:

The results of this study will be kept strictly confidential, and used only for research purposes. My identity will be concealed in as far as the law allows. My name will not appear anywhere on the coded forms with the information. Paper and computer records will be kept under lock and key and with password protection respectively.

The interviewer has discussed this information with me and offered to answer my questions. For any further questions, I may contact the Chairperson, UNZABREC on the following details;

The Chairperson

Biomedical Research Ethics Committee

School of Medicine

P.O.BOX 50110,

Lusaka.

Telephone No: 211256067

Appendix 4: Statement of Consent/Assent

..... has described to me what is going to be done, the risks, the benefits involved and my rights regarding this study. I understand that my decision to participate in this study will not alter my usual medical care. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name: Signature of participant/thumbprintAge.....

Date (DD/MM/YY).....

Name of Witness..... Signature of Witness.....

Date (DD/MM/YY).....

Name..... Signature/thumbprint of parent or guardian for minors

Date (DD/MM/YY).....

Name.....Signature of Interviewer

Date (DD/MM/YY).....

If you have any further questions please contact the University of Zambia Biomedical Research Ethics Committee

Telephone: +260977925304

Ridgeway Campus

Telegrams: UNZA, LUSAKA

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Lusaka, Zambia

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Assurance No. FWA00000338IRB00001131 of IOR G0000774

Appendix 5: Data Collection Instruments

The University of Zambia

School of Nursing Sciences

Department of Midwifery, Women's and Child Health

Perceived Stress Scale

Questionnaire No. -----

Date:

Place:

Instructions to respondents

The perceived stress scale is a stress assessing instrument and will help to understand how the diagnosis of HIV infection in pregnancy has affected your feelings and your perceived stress. 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. Although some of the questions are similar, there are differences between them and you should treat each one of them as a separate question. Indicate your response on the space provided on the left hand side of the questionnaire

Answer the questions fairly quickly without trying to count up the number of times you felt a particular way, but just indicate the alternative that seems like a reasonable estimate.

Please do not write your name on this questionnaire

Section A: Demographic Information

1. What was your age at your last birthday?
 - a. Below 18 years
 - b. 18 to 35 years
 - c. 36 to 49 years
 - d. Above 49 years
 2. What is your religious denomination?.....
 3. What is your level of education?
 - a. None
 - b. Primary
 - c. Secondary
 - d. Tertiary
 4. What type of residential area do you live in?
 - a. High density
 - b. Medium density
 - c. Low density
 - d. Village
 5. What is your occupation?
 - a. Housewife
 - b. Business woman
 - c. Formal employment
 - d. Other (specify).....
 6. What is your monthly income?
 - a. Below K1000
 - b. K1000 to k3000
 - c. Above k3000
 7. What is your marital status?
 - a. Married
 - b. Single
 - c. Widowed
 - d. Divorced
 8. How many children do you have?
-

- a. 0
 - b. 1 to 4
 - c. 5 and above
9. How many pregnancies have you had?.....

Section B: Perceived Stress Scale

For each question, choose from the following alternatives:
--

0-never 1- almost never 2- sometimes 3-fairly often 4-very often
--

..... 1. In the last month, how often have you been upset because of being diagnosed HIV positive during pregnancy?

..... 2. In the last month, how often have you felt that you were unable to control the important things in your life as a result of the diagnosis of HIV?

..... 3. In the last month, how often have you felt nervous and stressed due to the HIV positive diagnosis?

..... 4. In the last month, how often have you felt confident about your ability to handle your personal problems in light of the diagnosis of HIV?

..... 5. In the last month, how often have you felt that things were going your way in light of the diagnosis of HIV during pregnancy?

..... 6. In the last month, how often have you found that you could not cope with all the things that you had to do because of the diagnosis of HIV?

..... 7. In the last month, how often have you been able to control other irritations in your life?

..... 8. In the last month, how often have you felt that you were on top of things?

..... 9. In the last month, how often have you been angered because of things that happened that were out of your control?

..... 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them as a result of the diagnosis of HIV?

You may stop here. Thank you for your participation

THE UNIVERSITY OF ZAMBIA
SCHOOL OF NURSING SCIENCES
DEPARTMENT OF MIDWIFERY, WOMEN AND CHILD HEALTH

Coping Strategy Indicator

Questionnaire number: Date:

Place:

Instructions to respondent

We are interested in how people cope with problems and troubles in their lives. Below are several ways of coping. We would like you to indicate to what extent you used each of the coping methods to cope with the HIV positive diagnosis which you received during pregnancy.

Indicate how you coped by ticking the appropriate box for each coping behaviour listed below. Answer all the questions even if some may sound similar.

Please do not write your name on this questionnaire

For each question, choose from the following alternatives;

1- a lot 2-a little 3-not at all

Keeping the diagnosis of HIV infection during pregnancy in mind, indicate to what extent you

-
- 1. Let your feelings out to a friend?
 - 2. Rearranged things around you so that your problems had the best chance of being resolved?
 - 3. Brainstormed all possible solutions before deciding what to do?
 - 4. Tried to distract yourself from the problem?
 - 5. Accepted sympathy and understanding from someone?
 - 6. Did all you could to keep others from seeing how bad things really were?
 - 7. Talked to people about the situation because talking about it helped you feel better
 - 8. Set some goals for yourself to deal with the situation?
 - 9. Weighed your options very carefully?
 -10. Daydreamed about better times?
 -11. Tried different ways to solve the problem until you found one that worked?
 - 12. Confided your fears and worries to a friend or relative?
 - 13. Spent more time than usual alone?
 - 14. Told people about the HIV diagnosis because just talking about it helped you come up with solutions?
 - 15. Thought about what needed to be done to straighten things out?
 - 16. Turned your full attention to solving the problems that came due to the diagnosis?
 - 17. Formulated a plan of action in your mind?
 - 18. Watched television or did other recreational activities more than usual?
 - 19. Went to someone (friend or professional) in order to help you feel better?
 - 20. Stood firm and fought for what you wanted in the situation?
 - 21. Avoided being with people in general?
 - 22. Buried yourself in a hobby or sports activity to avoid the effects of an HIV diagnosis?
-

- 23. Went to a friend to help you feel better about the HIV diagnosis
- 24. Went to a friend to advise you on how to live with the effects of the HIV diagnosis?
- 25. Accepted sympathy and understanding from friends who are living with HIV?
- 26. Slept more than usual?
- 27. Fantasized about how things could have been different?
- 28. Identified with characters in novels, movies or radio?
- 29. Tried to find solutions to the HIV diagnosis
- 30. Wished that people would just leave you alone/
- 31. Accepted help from a friend or relative?
- 32. Sought reassurance from those who know you best?
- 33. Tried to carefully plan a course of action rather than acting on impulse, on how to live with the HIV virus?

You may stop here. Thank you for your cooperation

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF NURSING SCIENCES
DEPARTMENT OF MIDWIFERY, WOMEN AND CHILD HEALTH**

Interview Schedule

SERIAL NUMBER:..... DATE:

PLACE:

INSTRUCTIONS TO INTERVIEWER

1. Greet the respondent and introduce self and purpose of interview
 2. Assure respondent of confidentiality and maintain it
 3. Request respondent for written consent before beginning the interview
 4. Do not write respondent's name on the interview schedule
 5. Circle the most appropriate answer or write the responses on the spaces provided
 6. Provide time for respondent to ask questions at the end of the interview
 7. Thank the respondent at the end of the interview
-

SECTION A: EXPERIENCES OF WOMEN DIAGNOSED HIV POSITIVE DURING PREGNANCY

I: STRESS

-
1. What do you understand by HIV?

.....

.....

-
2. Please tell me how you felt when you were told that you have the HIV

.....

.....

-
3. Has the way you felt about the HIV positive diagnosis changed overtime?

- a. Yes
- b. No (skip to question 5)

4. Please explain the changes in the way you feel about HIV diagnosis overtime

.....

.....

.....

5. How many meals have you been eating per day since the time that you were diagnosed with HIV

.....

.....

.....

.....

6. Please share with me the general composition of your diet

.....

.....

.....
.....
7. How would you describe your sleep from the time that you were diagnosed with HIV?.....
.....
.....
.....

8. Do you experience stress because of the HIV positive diagnosis?

- a. Yes
- b. No (skip to question 10)

9. What do you think stresses you about the HIV positive diagnosis?

II. Intimate Partner Violence

10. Have you informed your sexual partner about your HIV positive diagnosis?

- a. Yes
- b. No (skip to question 12)

11. Please tell me about your experiences after informing your sexual partner about your HIV positive diagnosis

.....
.....
.....
12. Why have you not informed your sexual partner about the diagnosis?

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

13. Do you ever intend to inform your sexual partner about your HIV positive diagnosis?.....

14. Have you experienced any form of violence from your sexual partner from the time that you informed him of the HIV positive diagnosis?

a. Yes

b. No (skip to question 16)

15. If you have experienced violence, what is it that your partner does to you which you deem as violence against you?

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

16. Has your partner tested for HIV?

a. Yes

b. No (skip to question 18)

c. Other (specify)

.....
.....

17. If yes, what is his status?

a. Negative

b. positive

18. Apart from your sexual partner, have you informed your significant others about your HIV positive diagnosis?

- a. Yes
- b. No (skip to question 20)

19. What are your experiences after informing your significant others about your HIV positive

diagnosis.....
.....
.....
.....
.....

III. ART adherence

20. Have you heard of antiretroviral treatment?

- a. Yes
- b. No

21. Have you been commenced on antiretroviral therapy?

- a. Yes
- b. No (skip to question 29)

22. When were you commenced on antiretroviral medication?

- a. At diagnosis
- b. During pregnancy
- c. During labour
- d. After delivery

23. Please explain how you have been taking your medication

.....
.....

24. Have you continued taking your medications up to now?

- a. Yes (skip to question 26)
- b. No

25. Why have you stopped taking your antiretroviral medication?

- a. I experienced these side effects

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

- b. The risk to transmit the virus to my baby is over

- c. Other reasons (specify)

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

26. Please tell me your experiences with antiretroviral treatment?

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

27. Do you encounter any problems adhering to the ART medications?

- a. Yes
- b. No (skip to question 30)

28. What are the problems that you encounter?

.....
.....

29. Please explain why you were not commenced on antiretroviral treatment
.....
.....

IV. Mother baby bonding

30. How old was your pregnancy when you gave birth to your baby?
- a. Full term
 - b. Preterm (specify the weeks)
 - c. Post term (specify the weeks)

31. What was the birth weight of your baby?.....

32. Is your baby alive?

- a. Yes
- b. No (skip to question 44)

33. Did your baby receive ARVs after birth?

- a. Yes
- b. No

34. What is the health of your baby?

- a. Good
- b. Poor

35. How are you feeding your baby?

- a. Breastfeeding
- b. Bottle feeding
- c. Other (specify)

36. Why have you chosen this method of feeding for your baby?

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

37. How many times do you feed your baby per day?

.....
38. How long do you feed your baby per feed?

39. How do you attend to the hygiene needs of your baby?.....
.....
.....

40. Please share with me some of the things that you do to/with your baby as you are attending to his needs.....
.....
.....

41. How do you feel when you are attending to your baby's needs?
.....
.....
.....

42. How does your baby respond to your care?
.....
.....
.....
.....

43. Please tell me your experiences on your relationship with your baby having carried and delivered him with an HIV positive diagnosis which was made during your pregnancy

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

44. What was the cause of death of your baby?

.....

SECTION B: COPING STRATEGIES

45. Please tell me how you have been coping with an HIV positive diagnosis from the time that you were diagnosed

.....

.....

.....

.....

SECTION B: RESISTANCE RESOURCES

I: Support

46. Who offers support to you which helps you cope with the diagnosis of HIV? **Circle all that apply**

- a. Family
- b. Friend
- c. Church
- d. Health care workers
- e. Other (specify)

47. How do the person/people mentioned above help you cope with the HIV positive diagnosis?

.....

.....

.....

48. To what extent is this support available to you?

- a. As much as I need it (a lot)
- b. Quite a lot (sometimes)

c. Only a little

49. With an antenatal HIV positive diagnosis how would you describe the care that you were given by health care workers during pregnancy, labour and delivery, and after birth?

.....

.....

.....

II. Physiological health

50. How often have you felt unwell from the time that you were diagnosed with HIV?

.....

.....

51. What are the health problems that you have encountered?

.....

.....

.....

.....

SECTION C: EXPERIENCES

52. Having received an HIV positive diagnosis during pregnancy, please explain your experiences during pregnancy, labour and delivery , and the postnatal period

.....

.....

.....

.....

Recommendations

53. What are your recommendations to health professionals working with mothers who are diagnosed with HIV infection during pregnancy?

.....

.....

.....

We have come to the end of the interview. Thank you for your participation

.....

Appendix 6: Translated Tools

15.2. ZOWONJEZERA 2: ZINTHU ZOCHOKERA/KUVOMEREZA

..... wandifotokozera zomwe zichitike, kuopsa kwake, ubwino wokhudzidwa ndi ufulu wanga pa kafukufukuyu. Ndikumvetsa kuti chisankho changa chotenga nawo mbali mu kafukufukuyu sichingasithe chisamaliro changa chamankhwala. Pogwiritsira ntchito chidziwitsochi, chidziwitso changa chidzabisika. Ndikudziwa kuti ndikhoza kusiya nthawi iliyonse. Ndikumvetsa kuti posaina fomuyi, sindikunyalanyaza ufulu wanga uliwonse koma ndimangosonyeza kuti ndadziwitsidwa za kafukufukuyu amene ndikuvomera modzifunira kutenga nawo mbali. Tsambali liperekedwa kwa ine.

Dzina :..... Siginecha ya wophunzira/chala chachikulu.....
Age.....
Tsiku (DD/MM/YY).....

Dzina la Mboni..... Siginecha ya Mboni.....
Tsiku (DD/MM/YY).....

Dzina..... Siginecha /chidindo cha kholo kapena wolera ana
Tsiku (DD/MM/YY).....

Dzina.....Signature of Interviewer
Tsiku (DD/MM/YY).....

Ngati muli ndi mafunso ena chonde lembalani a University of Zambia Biomedical Research Ethics Committee

Foni: +260977925304

Kampasi ya Ridgeway

Telegrams: UNZA, LUSAKA

PO Box 50110

Telex: UNZALU ZA 44370

Lusaka, Zambia

Fax: + 260-1-250753

Imelo: unazarec@unza.zm

Chitsimikizo No. FWA00000338IRB00001131 ya IOR G0000774

15.3. ZOWONJEZERA 3: ZINTHU ZOSONKHANITSA MA DATA

UNIVESITE WA ZAMBIA

SUKULU YA SAYANSI YA UNAMWI

DIPAMALI YA MAYAMIKI, UMOYO WA AMAYI NDI ANA

ZINTHU ZINTHU AMAZINDIKIRA

Mafunso No. ----- - Tsiku:

Malo:

.....
...

Malangizo kwa oyankha

Chiyerekezo cha kupsyinjika ndi chida chowunika kupsinjika ndipo chithandizira kumvetsetsa momwe matenda a kachilombo ka HIV ali ndi pakati adakhudzira malingaliro anu komanso kupsinjika komwe mukuganizira. Mafunso omwe ali mu sikelo iyi amafunsa za momwe mumamvera komanso malingaliro anu mwezi watha.

Pachochitika chilichonse mudzafunsidwa kuti mufotokoze kangati mwamva kapena kuganiza mwanjira inayake. Ngakhale mafunso ena ali ofanana, pali kusiyana pakati pawo ndipo muyenera kulitenga lililonse ngati funso lapadera. Onetsani yankho lanu pa malo omwe ali kudzanja lamanzere la mafunso

Yankhani mafunso mwachangu osayesa kuwerengera nthawi zomwe mudamva mwanjira inayake, koma ingowonetsani njira ina yomwe ikuwoneka ngati kuyerekezera koyenera.

Chonde musalembe dzina lanu pafunsoli

GAWO A: ZAMBIRI ZA DEMOGRAPHIC

10. Kodi munali ndi zaka zingati patsiku lanu lobadwa?

a.Pansi pa zaka 18

b.Zaka 18 mpaka 35

c.Zaka 36 mpaka 49

d.Oposa zaka 49

11. Kodi chipembedzo chanu ndi chiyani ?.....

12. Kodi maphunziro anu ndi otani?

a.Palibe

b.Pulayimale

c.Sekondale

d.Apamwamba

13. Kodi mumakhala kumalo otani?

a.Kuchulukana kwakukulu

b.Kuchulukana kwapakati

c.Ochepa kachulukidwe

d.Mudzi

14. Kodi ntchito yanu ndi yotani?

a.Mkazi wapakhomo

b.Bizinesi mkazi

c.Ntchito yolembedwa

d.Zina (tchulani).....

15. Kodi mumapeza bwanji pamwezi?

a.Pansi pa K1000

b.K1000 mpaka k3000

c.Pamwamba pa k3000

16. Kodi banja lanu ndi lotani?

a.Wokwatiwa

b.Wokwatiwa

c.Wamasiye

d.Osudzulidwa

17. Kodi muli ndi ana angati?

a.0

b.1 ku 4

c.5 ndi pamwamba

18. Kodi mwatenga mimba zingati ?.....

GAWO B: ZOMWE ZINTHU ZINTHU AMAZINDIKWIRA

Pa funso lililonse, sankhani zina mwa zotsatirazi:

0-osati 1- pafupifupi konse 2- nthawi zina 3-mwachilungamo nthawi zambiri 4-nthawi zambiri

.....1. M'mwezi watha, ndi kangati komwe mudakhumudwa chifukwa chopezeka ndi kachilombo ka HIV panthawi yomwe muli ndi pakati?

.....2. M'mwezi watha, ndi kangati mudamvapo kuti simunathe kuwongolera zinthu zofunika pamoyo wanu chifukwa chopezeka ndi kachilombo ka HIV?

..... 3. M'mwezi watha, ndi kangati komwe mudachita mantha ndi nkawa chifukwa chopezeka ndi HIV?

.....4. M'mwezi watha, ndi kangati mudadzidalira kuti mutha kuthana ndi mavuto anu potengera kuti muli ndi kachilombo ka HIV?

..... 5. M'mwezi watha, ndi kangati komwe mudamvapo kuti zinthu zikukuyenderani bwino potengera kuti muli ndi kachilombo ka HIV pa nthawi yapakati?

..... 6. M'mwezi watha, ndi kangati komwe mwapeza kuti simunathe kupirira zonse zomwe mumayenera kuchita chifukwa chopezeka ndi kachilombo ka HIV?

..... 7. M'mwezi watha, kodi ndi kangati komwe munatha kuletsa zokhumudwitsa zina m'moyo wanu?

..... 8. M'mwezi watha, ndi kangati mudamvapo kuti muli pamwamba pa zinthu?

..... 9. M'mwezi watha, kodi munakwiya kangati chifukwa cha zinthu zomwe zidachitika zomwe simungathe kuzilamulira?

..... 10. M'mwezi watha, ndi kangati pamene mukumva kuti zovuta zikuchulukirachulukira kotero kuti simunathe kuzigonjetsa chifukwa chopezeka ndi kachilombo ka HIV?

Mutha kuyima apa. Zikomo chifukwa chotenga nawo mbali

SUKULU YA SAYANSI YA UNAMWI
DIPAMALI YA MAYAMIKI, AMAYI NDI UMOYO WA ANA
CHIZINDIKIRO CHA NJIRA YOPHUNZITSIRA

Nambala ya mafunso: Tsiku:

Malo:

.....

Malangizo kwa oyankha

Timachita chidwi ndi mmene anthu amachitira ndi mavuto ndi mavuto m'miyoyo yawo. M'munsimu muli njira zingapo zothetsera vutoli. Tikufuna kuti mufotokoze momwe munagwiritsira ntchito njira iliyonse yothandizira kuthana ndi matenda omwe munalandira pa nthawi yapakati.

Onetsani m'mene munapiririra pochonga bokosi loyenera pazochitika zilizonse zomwe zalembedwa pansipa. Yankhani mafunso onse ngakhale ena angamveke ofanana.

Chonde musalembe dzina lanu pafunsoli

Pa funso lirilonse, sankhani kuchokera m'njira zotsatirazi;

2- zambiri 2- pang'ono 3- ayi

Kusunga matenda a HIV pa nthawi ya mimba m'maganizo, onetsani kuti mumatani

- 1. Muuze mnzanu zakukhosi kwanu?
 - 2. Kukonzanso zinthu zomwe zikukuzungulirani kuti mavuto anu akhale ndi mwayi wabwino wothetseratu?
 - 3. Ganizirani njira zonse zothetsera mavuto musanasankhe zochita?
 - 4. Munayesa kudzipatula ku vutolo?
 - 5. Munalandira chifundo ndi kumvetsetsa kuchokera kwa wina?
 - 6. Kodi zonse zomwe mungathe kuti muteteze ena kuti asaone momwe zinthu zilili zoipa?
 - 7. Kulankhula ndi anthu za vutolo chifukwa kuyankhula za nkhanayi kukuthandizani kuti mukhale bwino
 - 8. Khalani ndi zolinga zokuthandizani kuthana ndi vutolo?
 - 9. Munayesa zosankha zanu mosamala kwambiri?
 - 10. Mukulota za nthawi zabwinoko?
 - 11. Kodi mwayesa njira zosiyanasiyana zothetsera vutolo mpaka mutapeza yothandiza?
 - 12. Munauza mnzanu kapena wachibale nkhowa zanu?
 - 13. Ndinathera nthawi yochuluka kuposa nthawi zonse ndili ndekha?
 - 14. Munauza anthu za matenda a kachirobho ka HIV chifukwa kungoyankhula chabe kwakuthandizani kupeza mayankho?
 - 15. Munaganiza zotani kuti tiwongole zinthu?
 - 17. Munapanga dongosolo loti muchitepo kanthu m'maganizo mwanu?
 - 18. Kuonera TV kapena zosangalatsa zina kuposa masiku onse?
 - 19. Munapita kwa wina (mnzanu kapena katswiri) kuti akuthandizeni kukhala bwino?
 - 20. Munaima nji ndikumenyera zomwe munkafuna pa nthawiyo?
 - 21. Kupewa kukhala ndi anthu wamba?
 - 22. Munakwiridwa muzokonda kapena masewera kuti mupewe zotsatira zopezeka ndi kachilombo ka HIV?
 - 23. Pitani kwa bwenzi lanu kuti akuthandizeni kumva bwino za kachirobho ka HIV.
-

- 24. Munapita kwa bwenzi lanu kuti akulangizeni za momwe mungakhalire
ndi zotsatira za kuyezetsa magari?
- 25. Kodi munalandira chifundo ndi kumvetsetsa kuchokera kwa abwenzi
omwe ali ndi kachilombo ka HIV?
- 26. Munagona kwambiri kuposa masiku onse?
- 27. Mukungoganizira za momwe zinthu zikanasinthira?
- 28. Kuzindikiridwa ndi anthu omwe ali m'mabuku, makanema kapena
waillesi?
- 29. Ndinayesera kupeza njira zothanirana ndi kachirombo ka HIV
- 30. Ndikukhumba anthu akanangokusiyani nokha/
- 31. Kulandila thandizo kuchokera kwa bwenzi kapena wachibale?
- 32. Mukufuna chilimbikitso kwa amene amakudziwani bwino?

Mutha kuyima apa. Zikomo chifukwa cha mgwirizano wanu

**UNIVESITE WA ZAMBIA
SUKULU YA SAYANSI YA UNAMWI
DIPAMALI YA MAYAMIKI, AMAYI NDI UMOYO WA ANA**

NKHANI YAKUCHEZA

SERIAL NUMBER:..... TSIKU:.....

MALO:

MALANGIZO KWA ONSE

1. Moni kwa woyankhayo ndikudziwonetsani inu nokha ndi cholinga chofunsa mafunso
 2. Tsimikizirani woyankha zachinsinsi ndikusunga
 3. Funsani woyankhayo chilolezo cholembedwa musanayambe kuyankhulana
 4. Osalemba dzina la woyankha pa nthawi yofunsa mafunso
 5. Lembani mzere wozungulira yankho loyenera kwambiri kapena lembani mayankhowo pamipata yomwe yaperekedwa
 6. Perekani nthawi yoti woyankha afunse mafunso kumapeto kwa kuyankhulana
 7. Thokozani woyankhayo kumapeto kwa zokambirana
-

GAWO B: ZOCHITIKA ZOPHUNZITSA NTCHITO YOPHUNZITSIRA HIV

INE: STRESS

1. Mumamva chiyani pa nkhani ya HIV?
2. Chonde ndiuzeni momwe munamvera mutauzidwa kuti muli ndi kachilombo ka HIV
3. Kodi m'mene munamvera pa nkhani yopezeka ndi HIV yasintha nthawi yayitali?
 - c. Inde
 - d. Ayi (dumphani ku funso 5)
4. Chonde fotokozani kusintha kwa momwe mumamvera pakuzindikira kachilombo ka HIV nthawi yayitali
5. Ndi zakudya zingati zomwe mwakhala mukudya patsiku kuyambira pomwe munapezeka ndi kachilombo ka HIV
6. Kodi mungafotokoze bwanji kugona kwanu kuyambira pomwe munapezeka ndi kachilombo ka HIV?
7. Kodi mumakhala ndi nkawa chifukwa chopezeka ndi HIV?
 - a.Inde
 - b..Yayi (dumphani ku funso 10)
8. Kodi mukuganiza kuti chimakugogomezzerani chiyani pa nkhani yopezeka ndi HIV?

II. Chiwawa cha Mnzanu Wapamtima

9. Kodi mwamudziwitsa okondedwa wanu za momwe muliri ndi HIV?
 - a.Inde
 - b.Ayi (dumphani ku funso 12)
-

10, Chonde ndiuzeni zomwe munakumana nazo mutadziwitsa okondedwa wanu za matenda anu a HIV

11. Chifukwa chiyani simunamudziwitse wokondedwa wanu za matendawa?

12. Kodi mumafuna kumudziwitsa wokondedwa wanu za matenda anu ?.....

13. Kodi munakumanapo ndi nkhanza zamtundu uliwonse kuchokera kwa wokondedwa?.....

a.Inde

b.Ayi (dumphani ku funso 16)

14. Ngati munakumanapo ndi nkhanza, ndi chiyani chomwe wokondedwa wanu amakuchitirani chomwe mukuwona ngati nkhanza kwa inu?

15. Kodi wokondedwa wanu adayezetsa HIV?

a.Inde

b.Ayi (dumphani ku funso 18)

c.Zina (tchulani)

16. Ngati inde, ali ndi udindo wotani?

-
- a. Zoipa
 - b. zabwino
-

17. Kupatula bwenzi lanu logonana nalo, mwadziwitsako anthu ena ofunikira kuti muli ndi kachilombo ka HIV?

a.Inde

b.Ayi (dumphani ku funso 20)

18. Kodi mumakumana ndi zotani mutadziwitsa anthu ena ofunikira kuti muli ndi kachilombo ka HIV?

III. kutsatira ART

19. Kodi mudamvapo za mankhwala ochepetsa mphamvu ya kachilombo ka HIV?

a.Inde

b.Ayi

20. Kodi mwayamba kumwa mankhwala ochepetsa mphamvu ya kachilombo ka HIV?

a.Inde

b.Ayi (dumphani ku funso 29)

21. Munayamba liti kumwa ma ARV?

a.Pa matenda

b.Pa nthawi ya mimba

c.Pa nthawi ya ntchito

d.Pambuyo pobereka

22. Chonde fotokozani momwe mwakhala mukumwa mankhwala anu

23. Kodi mwapitiriza kumwa mankhwala mpaka pano?

a.Inde (dumphani ku funso 26)

b.Yayi

24. Chifukwa chiyani mwasiya kumwa ma ARV?

25. Zifukwa zina (tchulani) Chonde ndiuzeni zomwe munakumana nazo ndi mankhwala ochepetsa mphamvu ya kachilombo ka HIV?

26. Kodi mumakumana ndi zovuta zilizonse potsatira mankhwala a ART?

a. Inde

b. Ayi (dumphani ku funso 30)

27. Ndi mavuto ati omwe mumakumana nawo?

28. Chonde fotokozani chifukwa chomwe simunayambe kumwa ma ARV

IV. Kugwirizana kwa amayi

29. Kodi mimba yanu inali yazaka zingati pamene munabala mwana wanu?

a. Nthawi yonse

b. Preterm (tchulani masabata)

c. Postterm (tchulani masabata)

30. Kodi kulemera kwa mwana wanu kubadwa kunali kotani?
?.....

31. Kodi mwana wanu ali moyo?

a. Inde

b. Ayi (dumphani ku funso 44)

32. Kodi mwana wanu adalandira ma ARV atabadwa?

a. Inde

b. Ayi

33. Kodi thanzi la mwana wanu ndi lotani?

a.Zabwino

b.Osauka

34. Kodi mukumudyetsa bwanji mwana wanu?

a.Kuyamwitsa

b.Kudyetsa botolo

c.Zina (tchulani)

.....

35. N'chifukwa chiyani mwasankha njira imeneyi yodyetsa mwana wanu? Kodi mumadyetsa kangati patsiku?

36. Kodi mumadyetsa mwana wanu nthawi yayitali bwanji pa chakudya chilichonse?

37. Kodi mumasamalira bwanji zosowa zaukhondo za mwana wanu?

38. Chonde ndiuzeni zina mwazinthu zomwe mumachita kwa/ndi mwana wanu pamene mukusamalira zosowa zake

39. Kodi mumamva bwanji mukamasamalira zosowa za mwana wanu?

40. Kodi mwana wanu amayankha bwanji pa chisamaliro chanu?

41. Chonde ndiuzeni zomwe munakumana nazo pa ubale wanu ndi mwana wanu mutamunyamula ndikum'bereka ali ndi kachilombo ka HIV komwe munapanga mukakhala ndi pakati.

42. Kodi imfa ya mwana wanu inali chiyani?

GAWO C: NTCHITO ZOCHITIKA

43. Chonde ndiuzeni momwe mwakhala mukulimbana ndi matenda opezeka ndi kachilombo ka HIV kuyambira pomwe munapezeka

C. 1. ZONSE ZONSE

Ine: Thandizani

44. Ndani amakupatsani chithandizo chomwe chimakuthandizani kuthana ndi matenda a HIV? **Lembani mozungulira zonse zomwe zikugwirizana**

a.Banja

b.Bwenzi

c.Mpingo

d.Ogwira ntchito zachipatala

e.Zina (tchulani)

45. Kodi munthu/anthu omwe tawatchulawa akuthandizani bwanji kuti mukhale ndi kachilombo ka HIV?

46. Kodi chithandizochi chilipo mpaka pati?

a.Momwe ndimafunikira (zambiri)

b.Zambiri (nthawi zina)

47. Podziwa kuti muli ndi kachilombo ka HIV oyembekezera mungafotokoze bwanji chisamaliro chomwe munapatsidwa ndi ogwira ntchito yazaumoyo pa nthawi yapakati, panthawi yobereka, pobereka komanso mutabereka?

II. Physiological thanzi

48. Ndi kangati komwe mwakhala mukudzimva kuti mulibe bwino kuyambira pomwe munapezeka ndi kachilombo ka HIV?

49. Ndi matenda ati omwe mwakumana nawo?

GAWO D: ZOCHITIKA

50. Popeza mwalandira kuti muli ndi kachilombo ka HIV pa nthawi yoyembekezera, chonde fotokozani zomwe munakumana nazo pa nthawi yoyembekezera, yobereka komanso yobereka, **komanso**

51. Kodi mungakonde bwanji kwa azaumoyo omwe amagwira ntchito limodzi ndi amayi omwe apezeka ndi kachilombo ka HIV panthawi yoyembekezera?

Tafika kumapeto kwa zokambirana. Zikomo chifukwa chotenga nawo mbali

Appendix 7: Permission Letters

Request to Conduct Study

The University of Zambia,
School of Nursing Sciences,
P.O. Box 50110,
LUSAKA.

28th July, 2017

The District Medical Officer,
Lusaka District,
LUSAKA,

Dear Sir/Madam,

RE: REQUEST TO CONDUCT A STUDY TITLED, ‘EFFECTS OF HIV INDUCED STRESS IN WOMEN DIAGNOSED DURING PREGNANCY IN LUSAKA AND KAFUE DISTRICTS OF ZAMBIA.’

The above subject refers.

I am a student at the University of Zambia, pursuing a PhD in Midwifery. My study title is, ‘effects of HIV induced stress in women diagnosed during pregnancy in Lusaka and Chirundu districts of Zambia.’

The purpose of writing to you is to request for permission to conduct the above named study at Chilenje District Hospital, Kanyama District Hospital, George Health Center and Kabwata Health Centre.

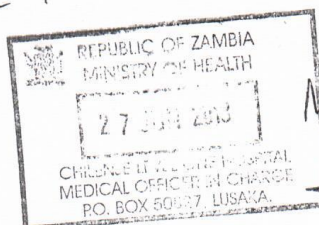
Your consideration on my request is highly appreciated.

Yours faithfully,

Brenda N. Sianchapa
STUDENT

Permission to Conduct Study

0979-187399



MCH in Charge
+ Approved.

(M Chilo)

6th September 2017

Brenda N. Sianchapa
The University of Zambia
School of Nursing Sciences
P. O. Box 50110
LUSAKA

Dear Ms. Sianchapa,

RE: AUTHORITY TO COLLECT DATA IN LUSAKA DISTRICT

We are in receipt of your letter over the above subject.

Please be informed that Lusaka District Health Office has no objection for you to collect data to assist you develop your research proposal on "Effects of HIV induced stress in women diagnosed during pregnancy in Lusaka District, Zambia", however the actual study can only be done after Ethics Approval is obtained.

By copy of this letter, the Medical Superintendents and In-Charges for Chilenge, Kanyama, George and Kabwata Health Facilities are kindly requested to facilitate accordingly.

Yours sincerely

Dr. C. Mbwili-Muleya
PRINCIPAL CLINICAL CARE OFFICER
For/DISTRICT HEALTH DIRECTOR

C.C: The Medical Superintendent: Kanyama 1st Level Hospital
C.C: The Medical Superintendent: Chilenge 1st Level Hospital
C.C: The In-Charge: George Health Centre
C.C: The In-Charge: Kabwata Health Centre
C.C: Lecturer/Research Supervisor: Dr. Patricia Mukwato PhD



NATIONAL HEALTH RESEARCH AUTHORITY
The Health Research Act
(Act No. 2 of 2013)

CERTIFICATE OF REGISTRATION

THIS IS TO CERTIFY THAT

Nambala Sianchapa Brenda

has been registered as a Health Researcher

Dated this 27th Day of December 2022

Registration NHRAR-R-1479/30/12/2022



DIRECTOR
PROF. GODFREY BIEMBA

