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**UNIVERSITY OF GHANA
COLLEGE OF HUMANITIES**

**THE BURDEN OF PRENATAL AND POSTPARTUM DEPRESSION AMONG WOMEN
LIVING WITH HIV IN KAMPALA AND WAKISO, UGANDA**

BY

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ACCEPTANCE

Accepted by the College of Humanities, University of Ghana, Legon, in fulfilment of the requirement for the award of PhD in Population Studies degree.

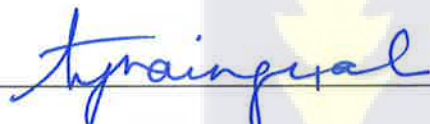
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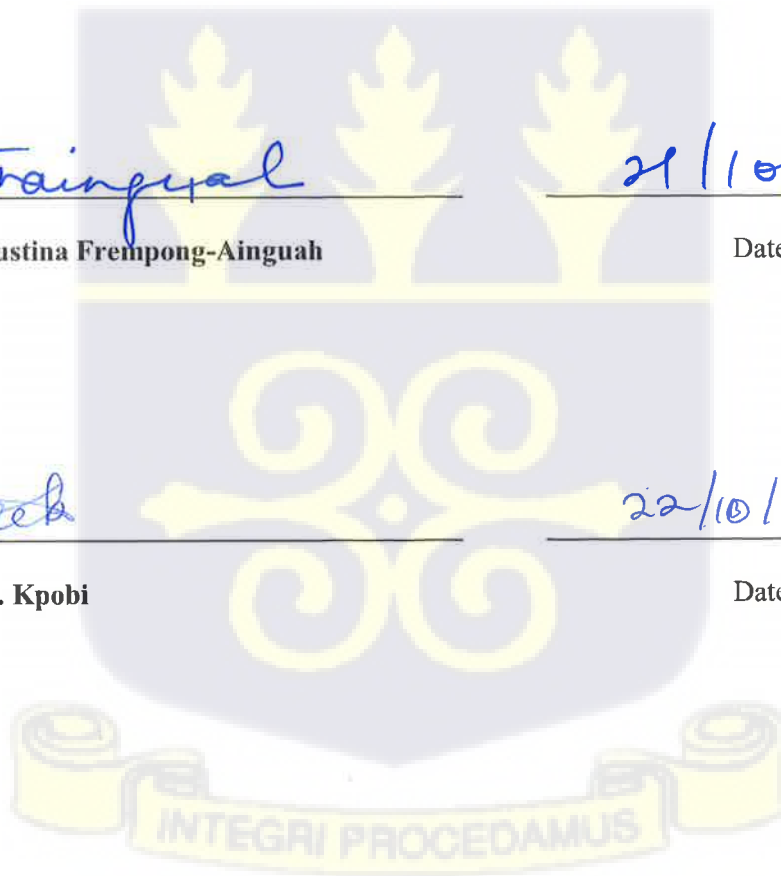
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DECLARATION

I, Clare Kyomuhendo, do hereby declare that, except for references to other people's work, which have been duly acknowledged, this is the result of my own research and it has neither in part nor in whole been presented for another degree.

Clare

21st October 2024

Clare Kyomuhendo

Date



DEDICATION

This work is dedicated to the memory of two remarkable women who were influential in my life: my mother, Nyakato Judith, and my aunt, Nyangoma Eunice. Although they never lived to see this adventure, their unwavering belief in my potential to achieve great heights in life has made this journey possible.



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ABSTRACT

Women and girls living with HIV aged 15+ who are fulfilling their sexual and reproductive desires of having children are increasing in number, which consequently results in high number of pregnant women living with HIV (PWLHIV). Being HIV positive during prenatal and postpartum periods while having complications exposes the women to double burden experiences. This because they have to deal with an HIV diagnosis which causes depression itself and at the same time dealing with the stress that comes with pregnancy and childbirth, which periods further heightens depression risks. The vulnerability to depression risks among prenatal and postpartum women living with HIV is worsened by worry of infecting the baby, caregiving stress, lack of support, economic incapacitation, consequences of disclosing their HIV status like stigmatization, partner abuse, among others. These emotional and social challenges during pregnancy and postpartum periods can increase stress, potentially worsening mental health and reducing women's quality of life if proper support is not provided. This study investigated the burden of prenatal and postpartum depression among women living with HIV in Kampala and Wakiso, Uganda. It sought to examine the prevalence of prenatal and postpartum depression among women living with HIV, assessed their prenatal and postpartum knowledge, explored their prenatal and postpartum experiences, examined the perinatal characteristics and depression levels among HIV- positive women, and assessed the relationship between prenatal and postpartum factors and depression among the women living with HIV. A mixed method approach was adopted using both quantitative and qualitative primary data collected for the study. The data collection was embedded in the biopsychosocial model, and the vulnerability-stress model. This was to provide a more holistic understanding of the women's experiences during these critical stages. For the quantitative part of the study, a survey employing computer-assisted personal interviewing (CAPI) method was used to interview 497 women aged 15- 49 years who were currently pregnant and those who had currently given birth from The AIDS Support Organization (TASO) Mulago, Mildmay Uganda, and Mulago Specialised Women and Neonatal Hospital. Again, qualitative data were obtained from ten (10) pregnant women, eleven (11) women who had recently given birth, and sixteen (16) key informants. Quantitative data was analysed using Statistical Programme for Social Sciences (SPSS) version 23.0, whereas qualitative data were analysed following Attride-Stirling's (2001) thematic analysis concept using ATLAS.ti. The findings of the univariate analysis, bivariate analysis, and multivariate indicate a significant general depression prevalence (64.4%) among women in Kampala and Wakiso, Uganda, regardless of their HIV status. However, women living with HIV displayed pronounced prenatal and postpartum depressive symptoms compared to HIV-negative counterparts. Furthermore, pregnant women living with HIV showed higher depressive symptoms compared to those who had recently given birth. Despite all the women having moderate knowledge about prenatal and postpartum depression mainly from social networks and health professionals, women living with HIV had higher knowledge of both. Furthermore, even though most women preferred professional help and treatment when depressed, some women preferred seeking informal remedies from traditional and faith healers. The study established the role of experiences during pregnancy and childbirth in influencing women's mental health in the study context. Positive experiences, such as financial stability and supportive family relationships, protected the women against depression. Conversely, negative experiences, such as complicated pregnancies, health complications, partner abandonment, and job loss, contributed to depression risk evidenced in the reported emotional and somatic depression symptoms like suicidal and homicide thoughts in some women, among other symptoms. Again, pregnancy plans and expectations played a significant role in women's mental health, with those with planned pregnancies experiencing partner support and overall happiness. However, unplanned pregnancies led to feelings of sadness and mixed emotions. Women living with HIV further faced challenges such as stigma, treatment adherence, and discrimination from healthcare providers. Factors that were statistically associated with prenatal and postpartum depression included HIV positive status, being in the age group of 15–24, lack of social support, food insecurity,

having no dependents, multigravida status, complications after delivery, currently working, violence and abuse, and family alcohol use. Despite the increased risks of experiencing depression among women living with HIV during their prenatal and postpartum periods, diagnosing and treating the condition remains a challenge for healthcare providers. This is due to a lack of standardized procedures, gaps in mental health training, and excessive workloads, among other barriers. Therefore, this study recommends policy makers in collaboration with the Uganda's Ministry of Health, health experts and partners into reproductive health, mental health and HIV/AIDS to design interventions and programmes that encourage the integration of routine screening for depression of prenatal and postpartum women in HIV care. This will enable early detection and intervention for women at risk for better maternal and child health outcomes.



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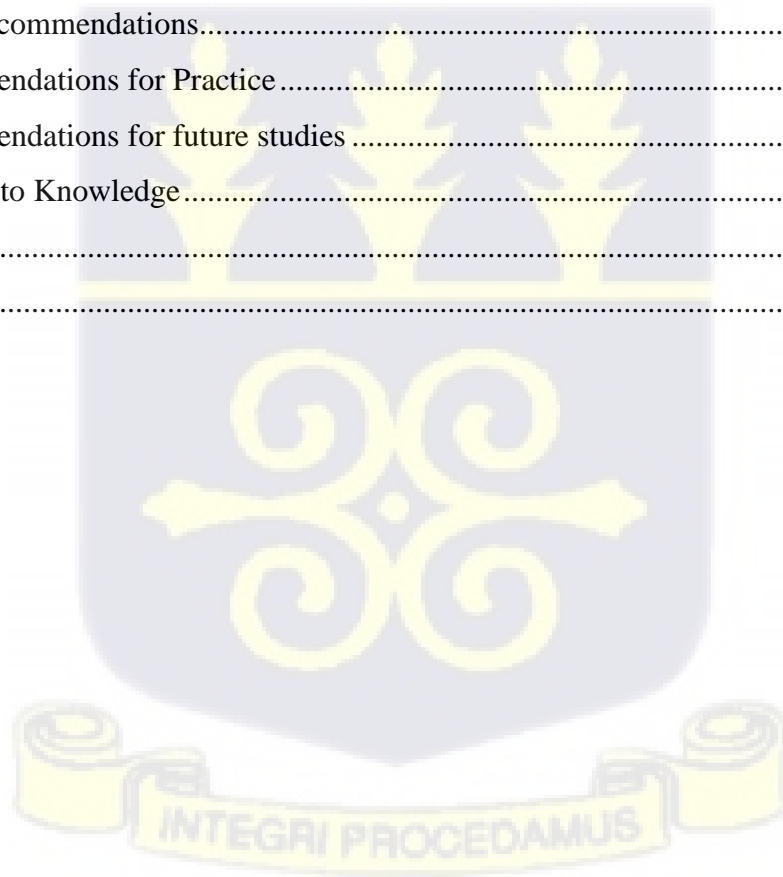
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LIST OF ABBREVIATIONS

ANC	Antenatal care
AIDS	Acquired immunodeficiency syndrome
APA	American Psychiatric Association
ART	Antiretroviral therapy
ARVs	Antiretroviral prophylaxis
CDC	Centers for Disease Control
DALYs	Disability-adjusted life-years
EMTCT	Elimination of mother-to-child transmission of HIV
HIV	Human Immunodeficiency Virus
MOH	Ministry of health
MTCT	Mother-to-Child Transmission
PEPFAR	The United State President's Emergency Plan for AIDS Relief
PLHIV	People living with HIV
PMTCT	Prevention of mother-to-child transmission of HIV
PPD	Postpartum depression
PWLHIV	Pregnant women living with HIV
SDGs	Sustainable Development Goals
SRH	Sexual and reproductive health
TASO	The AIDS Support Organisation
UAC	Uganda AIDS Commission
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UBOS	Uganda Bureau of Statistics
UNFPA	United Nation Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WLHIV	Women living with HIV
YLDs	Years lived with disability



CHAPTER ONE
INTRODUCTION

1.1 Background

The increasing number of people living with HIV (PLHIV) worldwide has been an issue of concern. According to United Nations Programme on HIV/AIDS (UNAIDS) (2021a), there were 37.7 million PLHIV globally in 2020; which was an increase from 36.6 million in 2018. Of the 37.7 million PLHIV, more than half (53%) were women and girls (UNAIDS, 2021a). Sub-Saharan Africa bears the greatest burden of HIV infection, with one in every 25 adults (4.2%) estimated as being HIV positive (WHO, 2017b). Also, there are significant regional differences in both the new HIV infections among women and the proportion of women living with HIV. In sub-Saharan Africa for example, women and girls accounted for 63 percent of all new HIV infections in 2020 (UNAIDS, 2021a).

Uganda like many sub-Saharan African countries is not different, as out of an estimated 1.2 million PLHIV in 2017, women aged 15 years and older had an HIV infection rate of 7.6 percent compared to 4.7 percent in men. Moreover, urban women had a higher HIV prevalence rate of 9.8 percent compared to 6.7 percent of their rural counterparts (Ministry of Health (MOH), 2019). This burden of HIV infection rate among women is a reflection of the global picture where women accounted for more than half the number of people living with HIV worldwide, and 50 percent of all new infections in 2020 (AVERT, 2020; UNAIDS, 2021a). Thus, the high number of women living with HIV (WLHIV) is not surprising, given their biological and sociocultural vulnerability to HIV transmission through sexual intercourse. More so, women are more at risk of HIV infection due to generally lower decision-making power, education, and economic independence (Ramjee & Daniels, 2013; UNAIDS & WHO, 2009).

Additionally, studies have found that particularly women and girls in the reproductive age groups aged 15 - 24 years are increasingly getting infected with HIV (UNAIDS, 2014a; UNAIDS, 2024), which

could increase the number of pregnant women living with HIV (PWLHIV). Also, due to the availability of antiretroviral therapy (ART), HIV prevalence among pregnant women remains elevated since people with HIV are living longer. For instance, globally, 1.3 million women and girls living with HIV become pregnant each year (WHO, 2023). In Uganda, the Uganda AIDS Commission reported that the number of HIV-positive mothers receiving antiretroviral therapy (ARVs) for the elimination of mother-to-child transmission (eMTCT) rose from 112,909 in 2014 to 117,854 by June 2016. This includes mothers who were already on antiretroviral treatment (ART) before pregnancy and those who began treatment under the Option B+ protocol during their pregnancy (Uganda AIDS Commission (UAC), 2017). The growing number of PWLHIV may impact their mental, maternal, and child health outcomes if proper healthcare services are underutilized. It also heightens the risk of mother to child HIV transmission without essential healthcare and family interventions (Hailemariam, 2015).

HIV-positive pregnant women have complex and unique experiences (Gray & McIntyre, 2007; Leyva-Moral et al., 2017; Montgomery, 2003), so safety of both the woman and the foetus must be considered, especially during prenatal and postpartum periods, which are critical periods with higher mental health risks (Hailemariam, 2015; Montgomery, 2003; Torqu, 2012). According to Dedeoglu (2010), African society's dominant discourses on motherhood may contribute to HIV-positive women's mental health issues during and after pregnancy. Although every culture or religion regards motherhood as sacred and assigns child rearing to women, social practices and normative ideals differ culturally and contextually (Dedeoglu, 2010). In traditional patriarchal families, motherhood is rooted in power dynamics and it reinforces the principles of affluence within the household. It promotes “good mothering” (intensive mothering) and establishes standards for mothers. For instance, a good mother is domestic and child-centred and puts her children's needs before her own. Her main responsibility in the family is to raise well-adjusted children by meeting their logistical, emotional, social, economic, and intellectual needs, supporting her children and spouse in all aspects of their lives, and not

exhausting herself (Dedeoglu, 2010). Mothers influence their child's identity, cultural beliefs, and dispositions as role models, societal pressure, and interpersonal support. Due to her biology, parenting is considered a woman's main source of joy, fulfilment, and purpose (Dedeoglu, 2010). Limited understanding, ignorance, fear of stigma, judgement, coping with birth, bonding, and future caring obligations can influence HIV-positive women's childbearing decisions (Miller, 2007). This is because WLHIV feel their HIV diagnosis threatens their cultural and social identity as mothers (Huertas-Zurriaga et al., 2021). Such stigmatisation could further jeopardise the sexual and reproductive rights of HIV-positive women since some believe they should not have children because they may spread the virus (Greene et al., 2017).

Also, when an HIV-positive woman gets pregnant, her conception method and HIV disclosure is questioned by the society (Greene et al., 2017). Again, for women living with HIV, evidence suggests that their sexual and reproductive decisions are modified as their desire for intimacy is reduced, and sexual life changed. They fear disclosing their HIV status to intimate partners, family, and friends as they believe they have lost their sense of normality, worry about health difficulties, and expect unpleasant effects from antiretroviral treatment (Masereka et al., 2019).

Some women view HIV as a death sentence, so the psychological impact on their health and longevity may influence their childbearing decision (Huertas-Zurriaga et al., 2021). For instance, Women confronted with the fear of poor health and death grapple with the difficult choice of whether to have a child who might grow up without a mother or to forgo motherhood altogether (Carlsson-Lalloo et al., 2016; Kirshenbaum et al., 2004; Leyva-Moral et al., 2017). Additionally, women who discover their HIV status after pregnancy may have their relationship disrupted, leading to abandonment and undesired pregnancies (Brittain et al., 2019). Homelessness, poverty, domestic violence, drug abuse, and other marginalising situations can cause instability in WLHIV's lives, making reproductive decisions difficult, including whether to continue unplanned pregnancies or not (Huertas-Zurriaga et al., 2021; UNFPA et al., 2014). These experiences could put pressure on the mothers, causing fear,

guilt, hopelessness, anxiousness, among other mental health problems (Dedeoglu, 2010; Greene et al., 2017; Símonardóttir & Gíslason, 2018).

Generally, mental disorders pose a growing global burden, affecting over one billion people in 2016, constituting 32.4 percent of years lived with disability (YLDs) and 13.0 percent of disability-adjusted life-years (DALYs) (Rehm & Shield, 2019; Vigo et al., 2016; WHO, 2021c). Mental disorders encompass various conditions characterized by abnormal thoughts, emotions, and behaviour. Depression, or major depressive disorder (MDD), stands as the most prevalent mental disorder and a leading cause of disability worldwide (WHO, 2019, 2021c). Clinically, depression involves severe, lowered mood that lasts for two or more weeks; accompanied by cognitive issues, feelings of worthlessness, lethargy, sleep problems, and appetite changes (Ministry of Health (MOH) & WHO, 2010; WHO, 2019). Globally, an estimated 264 million people grapple with depression (WHO, 2019), with a higher prevalence in women (Ferrari et al., 2013; Rehm & Shield, 2019). In sub-Saharan Africa, 5.5 percent of the population experiences depression, with adolescent girls and young women being three times more likely than boys to encounter depressive symptoms (Ferrari et al., 2013; Proscovia Nabunya et al., 2020), making it an issue of great concern in reproductive age groups.

Depression can increase throughout pregnancy and postpartum regardless of HIV status (Bennett et al., 2004; Oates et al., 2004). This is because pregnancy and postpartum are key life events for women that can cause depression. This period is marked by rapid biological, social, and psychological transformation (Shi & Macbeth, 2017). Inequalities in support and services and the HIV diagnosis may increase depression risk in HIV-positive women (Kapetanovic et al., 2014a; Psaros et al., 2009). Depression has short- and long-term harmful impacts on mothers and newborns, including HIV-related outcomes (Bailey et al., 2016; Staneva et al., 2015). For women living with HIV, perinatal depression reduces antiretroviral treatment adherence (Bardeguet et al., 2008; N. T. Do et al., 2010). Depression can cause preterm delivery, low birth weight, small foetal head size, and later physical and mental health issues (Field et al., 2010; Glynn et al., 2008; Sydsjö, 2011). Depression also affects

psychological development, language development, and middle childhood behavioural, emotional, and cognitive problems due to changes in mother-infant interactions (Feldman et al., 2009; Glover & O'Connor, 2006; Nicol-Harper et al., 2007; Nöthling et al., 2013; Quevedo et al., 2012).

Various antenatal initiatives have been implemented to promote good health among all individuals, including pregnant and postpartum women living with HIV. One such measure involves routine HIV counselling and testing during antenatal care to enhance Prevention of Mother-to-Child Transmission (PMTCT) throughout pregnancy, childbirth, and breastfeeding. This aims to reduce the number of newborns contracting HIV and improve maternal and child well-being (MOH & WHO, 2010; WHO, 2007). In 2020, approximately 85 percent of HIV-positive pregnant women accessed antiretroviral drugs globally to prevent HIV transmission to their children, leading to a 53 percent reduction in perinatal transmission (Gilleece & Krankowska, 2021; UNAIDS, 2021a). PMTCT service coverage has grown, reaching 95 percent in Eastern and Southern Africa, and 52 percent in West and Central Africa (UNICEF, 2020). For example, Uganda offers PMTCT services in 3,637 healthcare facilities across the nation, ensuring antiretroviral treatment for HIV-positive pregnant, postpartum/ lactating mothers (Uganda AIDS Commission & MOH, 2016). Furthermore, Uganda adopted the WHO's option B+ to reduce Mother-to-Child Transmission (MTCT) of HIV. This approach involves providing lifelong antiretroviral therapy (ART) to HIV-positive pregnant and breastfeeding women, regardless of their CD4 cell count (Uganda AIDS Commission & MOH, 2016; UNAIDS, 2013). A CD4 cell count is checked to assess a person's immune status. The CD4 cell count is a blood test that assesses HIV disease progression, opportunistic infection risk, and preventive treatment. CD4 counts range from 500 to 1500 cells/mm³ of blood, and they decrease with time in ART non-responders. If the CD4 cell count drops below 200, the person's immunity is significantly impaired, leaving them vulnerable to diseases and death (WHO, 2022).

Other initiatives implemented to promote good physical and mental health among all people relate to human rights. For example, article 16 of the African Charter on Human and People's Rights emphasizes the right to health, obligating state parties to provide medical care to their citizens when ill (African Union Commission, n.d.). Moreover, the UN recognizes health as vital component for sustainable development, as Goal 3 of the Sustainable Development Goals (SDGs) reflects. This goal aims to ensure access to healthcare, prevent and treat non-communicable diseases (e.g. Acquired Immunodeficiency Syndrome (AIDS) and mental health), reduce maternal and newborn mortality, and improve access to essential medications/vaccinations (UN, 2015; Votruba et al., 2016).

While some initiatives have made progress, particularly in enrolling pregnant women in the PMTCT Initiative and reducing perinatal transmission of HIV, the mental health of this population during and after pregnancy has received little attention. Many mental health conditions can be effectively treated at a relatively low cost (WHO, 2021c), but in resource-constrained countries like Uganda, the gap between those in need of mental health care and those with access remains significant, leading to low treatment coverage (WHO, 2021c). In Uganda, routine screening for prenatal and postpartum depression is not part of standard HIV care, and mental health services in the country often carry a stigma. Given the complex interplay of gender, HIV status, and pregnancy, pregnant women living with HIV in Uganda may face more mental health challenges after childbirth than HIV-negative pregnant women. However, in order to put in place proper strategies for managing prenatal and postpartum depression in women living with HIV, there are relevant unanswered questions that need to be researched to increase knowledge. This study, therefore, examines the prevalence, and relationship between prenatal and postpartum factors and depression among women living with HIV, investigates the perinatal characteristics and depression levels among women living with HIV, and explores the women's prenatal and postpartum experiences, as well as the women's prenatal and postpartum depression knowledge.

1.2 Statement of the Problem

Prenatal and postpartum depression in Uganda's general population has been a longstanding concern due to its significant consequences for the well-being of mothers, infants, families, and communities (Arach et al., 2020; Atuhaire et al., 2021; Kakyo et al., 2012). The country's depression rate in pregnant and postpartum mothers is 26.9 percent (Kaggwa et al., 2022). Unfortunately, maternal mental health in the country has not been adequately addressed, resulting in care gaps (Akongo et al., 2024; Nakidde et al., 2023). Uganda faces additional challenges of limited mental healthcare funding, inadequate trained professionals, stigma, and poor treatment access (Kigozi et al., 2010; Molodynski et al., 2017). These factors collectively hinder proper mental health screening, care, and interventions for pregnant and postpartum women. Barriers to effective mental health care in the country presents a double burden for women living with HIV in reproductive age groups. This is because pregnancy and childbirth can lead to depression, regardless of HIV status. Bennett et al. (2004) indicate that while pregnancy often brings positive emotions, some women encounter their first depressive episode during pregnancy, while others with a history of depression face an increased risk of recurrence, continuation, or worsening. This is due to the fears, uncertainties, and expectations that commonly arise during pregnancy, which can complicate physical and emotional well-being (DiPietro et al., 2004; Netshimbupfe, 2016).

Conversely, it is psychologically distressing to be HIV positive whether pregnant or not. For example, depressive disorder is 2-3 times more prevalent in people living with HIV (PLHIV) than in the general population (Bernard et al., 2017). Unfortunately, even though sub-Saharan Africa has the highest number of the PLHIV, mental health concerns among this group are often overlooked, even though they face a greater risk of various mental health disorders (Abas et al., 2014; Breuer et al., 2011; Owe-Larsson et al., 2009). Again, even though PLHIV are at a higher risk of mental health distresses, women living with HIV are more at risk to be depressed. For instance, some studies indicate that the rates of depressive disorder diagnoses are four times higher in women with HIV than in women

without HIV (Morrison et al., 2002; Unnikrishnan et al., 2012). Also, other recent studies have suggested that the way HIV induces immune activation in the brain has the potential to exacerbate symptoms of depression (Waldron et al., 2021).

Uganda as a country could be presented with a dilemma of providing care amidst increasing mental health disorders as well as high HIV prevalence (Kabami et al., 2014). This is especially in the time the country has seen the growing incidence of pregnancy among women receiving routine HIV care and treatment (Nakanwagi et al., 2020; Wibabara et al., 2021). For instance, in 2009 and 2011, Uganda recorded 96,700 pregnant women living with HIV (UNICEF, 2013); with an upsurge observed in 2016 to 117,854 HIV positive pregnant women enrolled for eMTCT (Uganda Aids Commission (UAC), 2017). Although pregnancy does not affect HIV disease progression, women living with HIV and AIDS have a greater risk of certain adverse pregnancy outcomes, such as intrauterine growth restriction and preterm delivery (WHO & UNFPA, 2006). Therefore, knowing such incidents can happen may increase depression. Netshimbupfe (2016) also notes that HIV diagnosis, treatment, and psychosocial difficulties are pressed into women's daily lives and pregnancy experiences. This increases mental health problems as they struggle to accept HIV positive results and live with a chronic, life-threatening condition, women living with HIV may also experience mental health issues throughout pregnancy and postpartum (Cichocki, 2009). Existing research suggests a higher prevalence of depression among women living with HIV during the prenatal and postpartum periods, with a notable link between gender, HIV status, and pregnancy (Collins et al., 2006; Williams et al., 2005). Moreover, Andersson et al. (2006) highlight the presence of depression and anxiety experiences in both the prenatal and postpartum periods, although incidences appear to be less common during the postpartum period compared to pregnancy.

Furthermore, being HIV positive as well as pregnant or a postpartum mother could come with emotional challenges stemming from coping with the diagnosis and the consequences of disclosing

their HIV status (Cichocki, 2009; WHO, 2006). These difficulties can heighten stress during pregnancy and after childbirth, potentially exacerbating their mental health deterioration (Torku, 2012; Waldron et al., 2021). Moreover, HIV positive women may experience fear during and after giving birth. This may come from HIV diagnosis and worry of infecting the expected baby (Boonpongmanee et al., 2003; Hailemariam, 2015), which can be psychologically taxing.

Additionally, women living with HIV are more vulnerable due to their own unique stresses and risks, such as high rates of partner abuse, caregiving stress, and stigma (Basha et al., 2019; Fiorillo, 2021; Waldron et al., 2021). Forms of stigma and discrimination include: perceptions that women living with HIV and AIDS are promiscuous; blamed for bringing HIV into relationships or families; being labelled irresponsible if they desire to have children; and being considered as vectors of HIV transmission to their children (World Health Organisation (WHO) & United Nations Population Fund (UNFPA), 2006). Again, these women often have a high likelihood of experiencing traumatic events, including additional stressors such as loss of social support, and challenges in accessing mental health services (National Institute of Mental Health, 2021). These challenges could potentially effect the mental well-being of this population.

Moreover, health workers may be biased against women living with HIV/AIDS, particularly regarding their sexual and reproductive health practices (WHO & UNFPA, 2006). Because of the stigma surrounding the disorder, women living with HIV can experience internalized stigma. Internalizing HIV stigma increases sadness, severe symptoms of depression and poor mental adjustment to HIV management. Also, internalised stigma and severe depression are linked to reduced antiretroviral therapy (ART) adherence (Waldron et al., 2021). Neglecting these mental health challenges could undermine efforts to promote health, reduce mortality, and prevent perinatal HIV transmission, as poor mental health negatively impacts HIV treatment outcomes and adherence (Barthélémy Kuate Defo, 2014; Gonzalez et al., 2011).

In light of the global research discussions on prenatal and postpartum depression among women living with HIV, the investigations underscore the significant vulnerabilities faced by HIV-positive prenatal and postpartum women in Africa, especially in Uganda where prenatal and postpartum depression prevalence is on the rise. However, the gaps identified show that accurately determining the burden of depression in this category of women remains challenging due to factors like limited screening of the depression symptoms and limited evidence-based data. Given the poor understanding of mental illness, disorders such as depression are often unrecognized and as such, remain untreated. Health beliefs also mean that many may prefer seeking help from traditional healers since mental illness is often ascribed to spirits and witchcraft (Molodynski et al., 2017; Okello & Neema, 2007). Some further gaps in the literature include the fact that most studies document depressive disorders among adolescents/youth and the adult population living with HIV. Secondly, most of the literature identified on prenatal and postpartum depression in women living with HIV target the rural areas of the country, while looking at only one maternal depressive disorder using either quantitative or qualitative research approach (e.g. Abas et al., 2014; Ashaba et al., 2017; Atuhaire et al., 2021; Kinyanda et al., 2017, 2019, 2020; Nakimuli-Mpungu et al., 2011, 2013 etc.). Therefore, there is limited research on prenatal and postpartum depression in women living with HIV in urban Uganda. It is against the above background that this study is on the burden of prenatal and postpartum depression among women living with HIV in Kampala and Wakiso, Uganda, which are urban settings.

1.3 Research Questions

This study seeks to answer the following research questions:

- i. What is the prevalence of prenatal and postpartum depression in women living with HIV in Kampala and Wakiso, Uganda?
- ii. What kind of knowledge on prenatal and postpartum depression do Women Living with HIV in Kampala and Wakiso, Uganda have?

- iii. What are the prenatal and postpartum experiences of Women Living with HIV in Kampala and Wakiso, Uganda?
- iv. What are the perinatal characteristics and depression levels among HIV- positive women in Kampala and Wakiso, Uganda?
- v. What is the relationship between prenatal and postpartum factors and depression among women living with HIV in Kampala and Wakiso, Uganda?

1.4 Objectives of the Study

The general objective of this study is to examine how outcomes of the HIV-positive diagnosis influences depression among women during prenatal and postpartum periods in Kampala and Wakiso, Uganda for the purpose of informing policy decisions and interventions towards improving the mental health outcomes of women living with HIV in reproductive ages in the country. The specific objectives are to:

- i. Examine the prevalence of prenatal and postpartum depression in women living with HIV in Kampala and Wakiso, Uganda.
- ii. Assess the knowledge of prenatal and postpartum depression of women living with HIV in Kampala and Wakiso, Uganda.
- iii. Explore the prenatal and postpartum experiences of Women Living with HIV in Kampala and Wakiso, Uganda.
- vi. Examine the perinatal characteristics and depression levels among HIV- positive women in Kampala and Wakiso, Uganda
- iv. Investigate the relationship between prenatal and postpartum factors and depression among women living with HIV in Kampala and Wakiso, Uganda.

1.5 Rationale of the Study

The prevalence of mental disorders is on the rise, with substantial effects on health, human rights, and the economy. This has led to a growing recognition of the crucial role mental health plays in achieving global development goals, exemplified by its incorporation into the Sustainable Development Goals, particularly Goal 3 (WHO, 2019). Goal 3 of the Sustainable Development Goals mentions mental health three times: first, in the target to reduce premature mortality from non-communicable diseases and promote mental well-being (Target 3.4); second, in the target to strengthen the prevention and treatment of substance abuse, including drug and alcohol abuse (Target 3.5); and third, implicitly in the pursuit of universal health coverage (Target 3.8) (UN, 2015; Votruba et al., 2016). To align with this global mental health target, Uganda has implemented several reforms at the national level to enhance its mental health system. These include decentralizing and integrating mental health services into Primary Health Care (PHC) as included in the Mental Health Policy draft (Kigozi et al., 2017). Despite these positive steps, there are resource and service delivery gaps, including limited funding allocation for mental healthcare, a shortage of trained personnel, and insufficient access to effective treatment (Kigozi et al., 2010; Molodynski et al., 2017). Given this context, it is challenging to provide adequate mental health screening and care, particularly for women living with HIV during pregnancy and postpartum periods. This research is, therefore, important in making recommendations that are based on the evidence and experiences of women living with HIV during prenatal and postnatal periods to inform policy. Additionally, the study will provide information on the burden of mental health disorders in women living with HIV both during pregnancy and after giving birth. This evidence can be used by the Ministry of Health, policy makers and stakeholders to put in place specific mental health policies in HIV care targeting HIV-positive women during their prenatal and postpartum periods.

Furthermore, there are numerous negative short- and long-term effects of prenatal and postpartum depression on pregnant women living with HIV and their babies. Some of these include effects on ART adherence, preterm birth, low birth weight, effects on mother to child interactions, mental health

outcomes in later life, among others (Bardeguez et al., 2008; Do et al., 2010; Field et al., 2010; Nöthling et al., 2013; Quevedo et al., 2012; Sydsjö, 2011). Therefore, this study is relevant in that evidence of prenatal and postpartum depression among women living with HIV will be provided that would inform psychosocial interventions such as identifying stress factors and sources of support. These interventions could be utilized to manage depression and other mental disorders to reduce disability and mortality levels related to poor mental health. The study will further help in understanding the unique and common vulnerabilities as well as the protective factors of women living with HIV during the prenatal and postpartum period. This would enable the identifying and developing of appropriate interventions that are culturally sensitive and cost effective to meet the mental health needs of women living with HIV in reproductive ages.

Finally, this could be the first study on prenatal and postpartum depression WLWH within an urban context and comparing them to a group of HIV-negative women while utilizing a mixed methods approach. Evidence shows that there is limited literature in Uganda about prenatal and postpartum depression in women living with HIV especially in the urban areas employing both quantitative and qualitative research methods (e.g. Abas et al., 2014; Ashaba et al., 2017; Atuhaire et al., 2021; Kinyanda et al., 2017, 2019, 2020; Nakimuli-Mpungu et al., 2011, 2013 etc.). This study examines prenatal and postpartum depression in urban areas, because they are linked to a higher risk of serious mental illness compared to rural areas (Buttazzoni et al., 2022). Literature indicates that urban living exposes individuals to stressors that can worsen mental health issues, such as psychosis and depression, especially among marginalized groups in informal settlements (Greif & Nii-Amoo Dodoo, 2015). Again, urban factors like social isolation, unemployment, and high living costs contribute to a cycle of urban poverty and food insecurity (Litman, 2021; Dewing et al., 2013); and hence, could contribute to poor mental health in prenatal and postpartum women living with HIV. Therefore, this study can provide useful data for Uganda's Ministry of Health, policy makers and stakeholders to provide

interventions supporting urban women living with HIV and their families both during pregnancy and after giving birth; to help lower as well as improve their mental health burden.

Additionally, using mixed research approach in this study provides rich data necessary for policy and interventions. The quantitative aspect will help in identifying the prevalence, and the perinatal characteristics and depression levels among women living with HIV in Uganda. It will also help in establishing the relationship between prenatal and postpartum factors and depression. This will help in identifying the magnitude of the phenomenon, as well as understanding it from the most recent data. For example, it would provide knowledge of the internal and external stressors that bring about psychological difficulties in women living with HIV when pregnant and after giving birth, knowledge on how women living with HIV situate themselves and their pregnancy in a particular social context. This evidence would be useful to policy makers in designing more appropriate interventions that may aid the normalizing of the process of transformation during pregnancy and motherhood.

The qualitative aspect of the study provides an understanding of the knowledge women living with HIV have on prenatal and postpartum depression, in addition to exploring their lived experiences. This in-depth perspective will help in providing historical, social, political, and cultural factors that provide the backgrounds of women's context and experiences. Also, the study would highlight the various strategies women living with HIV use to cope and resist dominant discourses on motherhood, which may determine their decision to commit to change and seek proper support both during pregnancy and after giving birth. This evidence may inform health care providers engaged in the provision of HIV care for HIV positive women during prenatal and postpartum periods, to facilitate the building of a strong safety net for vulnerable women in a timely and meaningful manner. Also, the health care providers may be guided on how to encourage women living with HIV in developing a healthy self-image and self-care that could normalize their experience of pregnancy and motherhood.

1.6 Conceptual Definition of Terms

1. **HIV:** Human Immunodeficiency Virus (HIV) is the virus that weakens the immune system, ultimately leading to AIDS (acquired immunodeficiency syndrome). HIV is transmitted through penetrative (anal or vaginal) sex, blood transfusion, the sharing of contaminated needles in health-care settings and drug injection and between mother and infant during pregnancy, childbirth and breastfeeding (UNAIDS, 2011, 2021b; WHO, 2021b).
2. **AIDS:** Acquired Immunodeficiency Syndrome (AIDS) is an epidemiological definition based on clinical signs, symptoms and infections associated with acquired deficiency of the immune system. Infection with HIV has been established as the underlying cause of AIDS (UNAIDS, 2011).
3. **HIV-positive status:** A person who is HIV-positive has had antibodies against HIV detected on a blood test or gingival exudate test, commonly known as a saliva test (UNAIDS, 2011).
4. **Prenatal period:** It is a time frame that extends from conception to birth (Feldman, 2006; Marcus, 2020).
5. **Postpartum period:** It refers to the days and weeks following childbirth. Usually, the period begins one hour after the delivery of the placenta and continues until six weeks (42 days) after the birth of an infant (Technical Working Group & World Health Organization, 1999; World Health Organization, 2014).
6. **Mental Health:** Mental health is more than the mere lack of mental disorders, and includes subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence and recognition of the ability to realize one's intellectual and emotional potential. It has also been defined as a state of well-being whereby individuals recognize their abilities, are able to cope with the normal stresses of life, work productively and fruitfully, and make contributions to their communities. Mental health is about enhancing competencies of individuals and communities and enabling them to achieve their self-determined goals (WHO, 2003).

7. **Depression (Major Depressive Disorder):** It is characterised by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Depression can be long-lasting or recurrent, substantially impairing an individual's ability to function at work or school or cope with daily life(American Psychiatric Association, 2013; WHO, 2017a, 2019).
8. **Planned/unplanned pregnancy:** A planned pregnancy is when a woman intended or decided either on her own or with her partner to have a child or had discussed having children or deciding to have a pregnancy with her partner before becoming pregnant. On the other hand, unplanned pregnancy is when a woman did not intend or desire on her own or with her partner to have a child, and did not discuss having a child or a pregnancy with her partner before becoming pregnant (T. J. Rochat, 2011a).
9. **Perinatal:** It is globally recognized to cover a timeframe from pregnancy and the first year after childbirth (Garcia & Yim, 2017; NHS England et al., 2018). Nonetheless, certain programmes addressing the well-being of parents and infants take a 'life course approach,' recognizing the vital link between perinatal mental health and the long-term health of infants. This approach spans the First 1000 days of a child's life, which is widely acknowledged as the period from pregnancy to age 3 (Darling et al., 2020; Linnér & Almgren, 2020; Maternal Care Action Group New Zealand (MCAGNZ), 2022). In this study, the perinatal period was extended to one and a half years, primarily for women living with HIV, to capture the child's HIV status. The child undergoes three routine HIV tests: one at six weeks of age, another six weeks after breastfeeding cessation, and a final rapid HIV test at 18 months (Health-Uganda., 2014; Izudi et al., 2016; Kiyaga et al., 2021).
10. **Gravidity:** It refers to the number of times a woman has been pregnant (Creinin & Simhan, 2009).
11. **Primigravida:** Is when a woman is pregnant for the first time (Acheanpong et al., 2022; Tidy & Payne, 2019).

12. **Multigravida:** Is when a woman has been pregnant 2-4 times (Acheanpong et al., 2022).
13. **Grand multigravida:** Is when a woman has been pregnant five times or more (Acheanpong et al., 2022; Tidy & Payne, 2019).
14. **Comorbidity:** Refers to the simultaneous existence of two or more medical conditions (Catalá-López et al., 2018; Rai et al., 2016).

1.7 Organisation of the Study

This study is divided into nine chapters. Chapter One focuses on the introduction of the study. This includes the background of the study, statement of the problem, research questions, rationale of the study, and research objectives. Chapter Two presents the literature review of studies on prenatal and postpartum depression in women living with HIV. This chapter also focuses on the theoretical and conceptual framework for the study. Chapter Three provides information about the study areas and the methodology used in the study. Chapter Four presents the results and discussion on the prevalence of prenatal and postpartum depression in women living with HIV. Chapter Five then looks at the results and discussion pertaining to the knowledge of prenatal and postpartum depression among women living with HIV while in Chapter Six the findings and discussion of the prenatal and postpartum experiences of Women Living with HIV are highlighted. Chapter Seven, on the other hand, presents the findings and discussion of the perinatal characteristics and depression levels among women living with HIV and in Chapter Eight the findings and discussion of the relationship between prenatal and postpartum factors and depression among women living with HIV are shown. Finally, Chapter Nine provides the summary, conclusions, limitations and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on prenatal and postpartum depression in Women Living with HIV, and the identification of knowledge gaps in the literature. The literature review is useful because both historical and current studies are evaluated to provide knowledge that is context specific to the nature of the research being undertaken. The literature review is divided into seven sections to reflect the core objectives of the study: 1) urban living and mental illness; 2) trends of HIV prevalence in pregnant women and those who have given birth; 3) the prevalence of prenatal and postpartum depression in women living with HIV; 4) knowledge of prenatal and postpartum depression; 5) the prenatal and postpartum experiences of women living with HIV; 6) the perinatal characteristics and depression levels among women living with HIV; and 7) the relationship between prenatal and postpartum factors and depression among women living with HIV. In addition, the conceptual as well as the theoretical frameworks guiding this study are expounded.

2.2 Urban Living and Mental Illness

Literature indicates that urban living, compared with rural living, is linked with a higher risk of serious mental illness (Buttazzoni et al., 2021). This is because urbanization exposes people to environmental stressors that potentially contribute to increased stress and mental health issues such as psychotic experiences, depression and stress related disorders particularly in vulnerable people (Lecic-tosevski, 2019; Pelgrims et al., 2021). Urban newcomers may be stressed by the additional noise, stimulation, and interactions with culturally diverse neighbours. Also, despite the dense population and opportunities for social interactions, urban living may cause social isolation, loneliness, and anxiety. This is due to limited close-knit social networks and social cohesion from neighbourhoods and household size which tend to be smaller and more mobile (Lecic-tosevski, 2019; Litman, 2021). More so, the absence of infrastructure

including sufficient space for recreational activities has an effect on the social interaction on urban dwellers, which is a threat to mental health (Kuddus et al., 2020).

The urban environment further represents a complex social context where marginalized groups like refugees, asylum seekers and migrants may live especially in the informal settlements such as slums. These slums are characterized by worse physical environment and quality of life, including sub-standard housing, poor sanitation, limited access to mental health care and a higher risk of flooding. Again, drug abuse/selling which increases insecurity, high crime rates (Greif & Nii-Amoo Dodoo, 2015; Gruebner et al., 2012; Izutsu et al., 2006; Khumalo et al., 2012; Menculini et al., 2021), and risky sexual behaviours that raise the likelihood of HIV infection all happen in these slum areas. These stressors influence poor mental health and contribute to feelings of powerlessness among vulnerable groups, ultimately exacerbating inequality and impeding access to adequate healthcare (Gruebner et al., 2012; Menculini et al., 2021).

Urban areas pose other concentrated mental health risks including unemployment, poverty, and economic stress due to high living costs, creating a cycle of urban poverty (Litman, 2021). These factors lead to food insecurity and poor nutrition among the poor, further impacting the mental well-being of the affected individuals (Dewing et al., 2013; Kuddus et al., 2020).

2.3 Trends of HIV Prevalence during Pregnancy and Postpartum period

The increasing number of pregnant women and those who have recently given birth living with HIV overtime is becoming an issue of concern, as it can come with other public health problems. Globally, UNAIDS et al. (2011) report the 2010 statistics of HIV prevalence among pregnant women to be 1,490,000. In 2020, 1.3 million pregnant women living with HIV were recorded (WHO, 2021a); which was a reduction from 1.5 million women living with HIV noted to have given birth in 2013 (UNAIDS, 2014b). The 1.5 million recorded in 2013 was noted to be static since 2009 (UNAIDS, 2014b).

In sub-Saharan Africa, there has been a slight reduction in the number of pregnant women living with HIV, dropping from 1,370,000 in 2010 to 1,300,000 in 2017 (UNAIDS et al., 2011; UNICEF, 2018). Despite the declined HIV prevalence among the general population and the pregnant women in the region since the late 1990s, substantial variations persist within the sub-regions (Asamoah-Odei et al., 2004; Awopegba et al., 2020; Eaton et al., 2014; UNAIDS, 2012a). For example, HIV prevalence in 148 antenatal clinic sites in Southern Africa increased from 21.3 percent in 1997/98 to 23.8 percent in 2002. In Eastern Africa, however, it decreased from 12.9 percent in 1997/98 to 8.5 percent in 2002. West Africa had the lowest HIV prevalence at 3.5 percent and 3.2 percent for 1997/98 and 2002, respectively (Asamoah-Odei et al., 2004). Again, Ssentongo et al.'s (2020) study observed HIV prevalence among pregnant women ranging from 11.6 percent to 22.0 percent in Southern Africa, 2.2 percent in Western Africa and 3.9 percent in Eastern Africa. A number of factors account for the noted sub-regional variations. Firstly, most sub-Saharan African countries rely on antenatal surveillance data to assess the epidemic's state, yet disparities in HIV testing accessibility for pregnant women persist (Awopegba et al., 2020). Again, the limited and inconsistent data availability also hinders accurate measurement of HIV incidence rates in some sub-Saharan African nations (Awopegba et al., 2020; Ramjee & Daniels, 2013; UNAIDS, 2012a). Therefore, this complicates the global efforts to address HIV during pregnancy for both maternal health and prevention of mother-to-child transmission (Kendall & Danel, 2014).

Uganda specifically has recorded a significant decrease in HIV prevalence during the mid and late 1990s, but has remained stagnant at 5-6 percent from early 2000s (Asamoah-Odei et al., 2004). Nevertheless, an estimated HIV rate among pregnant women attending antenatal clinics (ANC) was 6.2 percent in 2002 and remained at 6.1 percent in 2009 and 2010 (Fabiani et al., 2007; UNICEF, 2013). In 2011, approximately 96,700 women living with HIV in Uganda gave birth (UNICEF, 2013), and in 2014, 6.1 percent of pregnant women who were HIV positive did so (Ndhego, 2021). Moreover, a study by Kaida et al. (2013) in Uganda revealed that nearly one-third of women became pregnant

within three years of starting ART, indicating that some women chose to conceive after testing positive for HIV. For instance, in 2014, 70,904 pregnant women with known HIV-positive status attended ANC for new pregnancies (Uganda AIDS Commission (UAC), 2014). In 2016-2017, the Uganda Population-Based HIV Impact Assessment (UPHIA) reported that HIV prevalence among pregnant women aged 15-49 was 5.7 percent, compared to 7.6 percent among non-pregnant women. Among HIV-positive women who had delivered in the 12 months before the survey, 72.9 percent were already on antiretroviral therapy at their first ANC visit, while 22.3 percent were initiated on ARVs during pregnancy, labour, or delivery (Ministry of Health (MOH), 2019). Further evidence indicates that from 2015 to 2018, approximately 8,485,854 pregnant women in Uganda were tested during ANC, labour, and breastfeeding periods, with 2.4 percent testing HIV-positive. HIV prevalence was highest among pregnant women who tested late, highlighting an increased risk of mother-to-child transmission (Nakanwagi et al., 2020; Wibabara et al., 2021). The above identified statistics indicate an increasing trend of HIV among pregnant women which is alarming.

Nonetheless, Uganda's HIV prevalence among mothers varies by region, age group, and place of residence (urban vs. rural) (Asamoah-Odei et al., 2004; Reuschel et al., 2013). For instance, concerning the place of residence, 62.3 percent of women in urban areas were already on ARVs during their first ANC visit, compared to 77.4 percent in the rural areas. Again, 29.9 percent of urban women were newly initiated on ART during pregnancy, labour, or delivery, compared to 19.2 percent in rural areas (MoH, 2019). Regarding age, the 2001 statistics indicate higher percentage of HIV positive pregnant women in ages 25–29; with higher rates among women aged 20–24 in 2007 (Reuschel et al., 2013). Regionally, the mid-north, central, and few districts in the East, West, and South-western parts of Uganda reported HIV prevalence above 8 percent in pregnant women in 2015 and 2016. In 2018, the highest rates were in the mid-north, particularly Amuru and Dokolo districts at 9.1 percent, and part of the Central Region (Wibabara et al., 2021). The observed regional differences in the rate of HIV prevalence calls for targeted and culturally relevant HIV interventions.

Within the Ugandan districts, HIV prevalence among pregnant and postpartum women differs. Say Gulu District recorded rates ranging from 10 percent and 12 percent among mothers attending antenatal clinics (Ciantia, 2004). In Kampala, the capital city, a high HIV prevalence among pregnant mothers was observed, though it steadily declined since the 1990s, dropping from 30 percent to about 10 percent. Contrary, other areas in Uganda saw their rates decrease from over 10 percent to less than 5 percent in the same period of 1990s (Ciantia, 2004; UNAIDS & WHO, 2000). Within Kampala, sites like Nsambya and Rubaga reported prevalence rates below 13 percent, with increasing rates noted across age groups (U.S. Census Bureau, 2008). Between 2015 and 2018, a nationwide assessment found that out of 8,485,854 pregnant women tested during various stages, 2.4 percent were HIV-positive. Of these, 2.2 percent were from early testing, while 3.2 percent were from late testing (Wibabara et al., 2021). Moreover, districts that had late HIV testing especially in the Mid-north, Central, East, West, and South-western parts of Uganda, reported HIV prevalence above 8 percent in pregnant women during 2015-2016, with Amuru and Dokolo districts reaching 9.1 percent in 2018 (Wibabara et al., 2021). In 2020, a study in Kabarole District, a rural area, revealed a high HIV incidence rate of 2.9 per 100 women, which was three times higher among pregnant women compared to the general Ugandan female population (Schumann et al., 2020). Additionally, in 2021, Mukono District, neighbouring Kampala to the East, reported a 7.0 percent prevalence of HIV/AIDS among pregnant women seeking ANC at Mukono Health Centre IV (Ndhego, 2021).

The above literature indicates that the Central Region of Uganda (comprising districts like Kampala, Wakiso, Mukono, Kalangala among others) consistently reports higher HIV prevalence among pregnant and postpartum women compared to other regions (Wibabara et al., 2021). This situation requires attention, as HIV during pregnancy can have significant impacts on mental, maternal, and child health outcomes if essential healthcare services are not accessed (Hailemariam, 2015). The disproportionate impact of the HIV epidemic on women of reproductive age can be attributed to various factors encompassing biological, social, behavioural, cultural, economic and structural. In

SSA, a combination of these factors has contributed to higher HIV infection rates among women compared to men (Asamoah-Odei et al., 2004; Ramjee & Daniels, 2013). Culturally, harmful gender norms place women at risk of HIV infection including gender inequality and gender based violence (GBV) (Gupta et al., 2008; Ramjee & Daniels, 2013). Dominant patriarchal cultures in Africa exacerbate women's inferiority and health status. Often, women's needs and desires are disregarded, limiting their role in sexual decision-making and expression of their sexuality. Women who refuse sexual advances, initiate intercourse, propose condom use, or negotiate safe sex can face violence (Ackermann & De Klerk, 2002; Buvé et al., 2002). Moreover, masculinity promotes men's patriarchal attitudes, leading to possessiveness and sometimes violence in relationships. Husbands may demand conjugal "rights" and engage in physical and sexual abuse (UNAIDS, 2012b). According to UNAIDS (2012), the proportion of women physically forced into intercourse ranged from 4 percent to 46 percent, while 6 percent to 59 percent of them reported partner sexual abuse.

Structural factors like urbanisation and migration increase susceptibility to HIV infection. In SSA, urban areas often exhibit higher HIV prevalence than rural regions (Maulide Cane et al., 2021). This is because urban poverty exposes women and girls to risky sexual behaviour, and drug abuse, elevating their chances of HIV infection (Magadi, 2013, 2017; Ramjee & Daniels, 2013). Migration also contributes to vulnerability as it leads to social instability, reduced access to social services, and sometimes economic hardship (Ramjee & Daniels, 2013). Mabala (2006) notes that people migrate for various reasons, including seeking employment, better education, or escaping adverse conditions from home. However, many migrants, especially women, often end up in urban slums and informal settlements with low-paying jobs. This may compel their engagement in transactional sex as a survival strategy and risky behaviour like reduced condom use, alcohol misuse affecting decisions, and condom negotiation skills (Buvé et al., 2002; Ramjee & Daniels, 2013; Scorgie et al., 2012).

Biological risks in women are linked to their physiological characteristics, including a larger mucosal surface exposed to pathogens and infectious fluids during sexual activity (Ackermann & De Klerk, 2002). They also face a higher potential for tissue injury during sexual intercourse, which increases their susceptibility to HIV compared to men. Additionally, women face elevated risks of asymptomatic STIs, which can lead to chronic infections and complications, increasing HIV susceptibility (Ackermann & De Klerk, 2002). Finally, socioeconomic susceptibilities to HIV transmission in women relate to poverty (UNAIDS, 2012b). This is because research has associated lower economic status to early sexual debut, reduced condom use, multiple partners, non-consensual sex, and engagement in transactional or forced sex with older men (Mabala, 2006; Ramjee & Daniels, 2013; Scorgie et al., 2012; UNAIDS, 2012b).

2.4 Prevalence of Prenatal and Postpartum Depression in Women Living With HIV

Depression as defined earlier in chapter one refers to a severely lowered mood that lasts two or more weeks. It is accompanied by problems with thinking, and concentration; feelings of worthlessness and lack of pleasure, lethargy, sleep difficulties, and appetite disturbances (American Psychiatric Association, 2013; WHO, 2019). Depression ranks as one of the most incapacitating conditions for women of reproductive age, which could be due to various social, biological, and cultural vulnerabilities experienced. Globally, among women aged 15 to 44 years, it is the second leading cause of total disability, after HIV and AIDS (O'Hara, 2009).

Depression can intensify during both the prenatal and postpartum periods, regardless of one's HIV status (Bennett et al., 2004; Oates et al., 2004). This is because these phases constitute significant life events for women, involving rapid and substantial changes encompassing biological, social, and psychological aspects (Shi & Macbeth, 2017). For HIV-positive women, the risk of depression may be exacerbated by disparities in access to support and services, as well as the HIV diagnosis itself (Kapetanovic et al., 2014a; Psaros et al., 2009).

2.4.1 Prevalence of Prenatal Depression in Women Living with HIV

Prenatal depression, which begins during pregnancy, exhibits symptoms such as crying, sleep disturbances, fatigue, altered appetite, anxiety, weakened foetal attachment, irritability, and more (Robertson et al., 2003; Santoro & Peabody, 2010). According to Baron et al. (2016), the prevalence of depression is typically higher during pregnancy. This poses significant global challenges with detrimental effects not only on mothers but also on children and families (Dadi et al., 2020). A study conducted in Denmark, Finland, and Sweden found that pregnant women with HIV, in comparison to those without HIV, reported poorer outcomes across various psychosocial measures. Loneliness and insufficient social support were linked to increased risk of depression during pregnancy among women with HIV, suggesting the need for targeted support interventions (Moseholm et al., 2022).

Dadi et al. (2020) note that in Africa, the combined prevalence of antenatal depression stands at 26.3 percent, meaning one in four pregnant women experiences depression. Factors contributing to prenatal depression include economic hardships, unfavourable marital situations, inadequate family support, previous pregnancy complications, and history of mental health issues (Dadi et al., 2020). Furthermore, research spanning selected districts in Ethiopia, India, Nepal, South Africa, and Uganda revealed that KwaZulu Natal (South Africa) and Northern Uganda reported a prenatal depression prevalence of 35.8 percent (Baron et al., 2016). Current literature in Uganda highlights increased depression in general population to 30.2 percent and among postpartum or pregnant mothers to 26.9 percent (Kaggwa et al., 2022). In Tanzania, many pregnant women displayed depressive symptoms with 78.2 percent of the 1,180 surveyed women affected, emphasizing the need for mental health screening during prenatal care (Mahenge et al., 2015).

In West African countries like Ghana, Lillie et al. (2020) revealed that 19.7 percent of pregnant women experienced moderate to moderately severe depression, underscoring the importance of addressing depression during pregnancy. While none fell into the severe depression category, 14 percent reported thoughts of self-harm or suicidal ideation within the past two weeks, emphasizing mental health

challenges faced during pregnancy (Lillie et al., 2020). Factors like hopelessness, household hunger, emotional and physical/sexual intimate partner violence, and inadequate support from female relatives influence depression (Lillie et al., 2020). Also, untreated prenatal depression strongly predicts postpartum depression (Baron et al., 2016).

2.4.2 Prevalence of Postpartum depression in Women Living with HIV

Postpartum depression is a major episode that typically emerges within four weeks after childbirth. It is characterized by a persistent sad mood, loss of interest in activities, changes in weight, sleep disturbances, agitation or slowed movements, fatigue, feelings of worthlessness, impaired concentration, and recurrent thoughts of death (Dlamini et al., 2019). Other symptoms are crying, heightened empathy, anxiety, feeling overwhelmed, frequent headaches, body pain, and muscle aches (Robertson et al., 2003; Santoro & Peabody, 2010).

Globally, postpartum depression (PPD) is a widely prevalent and severe yet often overlooked (Lillie et al., 2020). In Africa, PPD is the most common postnatal psychological disorder, prevalent at 18.3 percent (Evagorou et al., 2016). Among HIV-infected women, those with HIV-infected infants had higher PPD rates. Over the first year postpartum, the likelihood of experiencing PPD was estimated at 33.5 percent for HIV-infected mothers with HIV-infected infants, compared to 22.5 percent for those with uninfected infants and 23.2 percent for HIV-uninfected mothers (Dow et al., 2014). A systematic review in six African countries showed incidence rates of depression from 3.7 percent to 20.9 percent in Nigeria, 5.6 percent to 20.1 percent in Morocco, 3.2 percent to 6.9 percent in The Gambia, 34.7 percent to 48 percent in South Africa, 12 percent in Ethiopia and 10 percent to 43 percent in Uganda. In Egypt, depression showed a prevalence of 17.9 percent (Evagorou et al., 2016). Atuhaire et al. (2020) in their study reported increased postpartum depression which ranged between 6.1 percent and 44 percent; with the country specific prevalence reported as follows: Ghana (7%), Burkino Faso (44%), Nigeria (13.1-33.3%), Uganda (6.1%) and Ethiopia (22.9%).

In Southern Africa, notably Zimbabwe and Eswatini, high rates of postpartum depression have been observed among women with HIV. In Zimbabwe, 54 percent of 31 HIV-positive mothers met DSM-IV criteria for depression (Chibanda et al., 2010). In Eswatini, almost half (47.4%) of 114 participants screened positive for postpartum depression, with 19 percent reporting thoughts of harming themselves or the baby during the postpartum period (Dlamini et al., 2019).

Postpartum depression significantly causes maternal morbidity and has far-reaching consequences on the well-being of mothers, infants, families, and communities (Atuhaire et al., 2021). It can lead to long-term maladjustment and disrupt the mother-child relationship, affecting the child's psychological and language development, with lasting effects even after the depression subsides (Alder et al., 2007; Feldman et al., 2009; Nicol-Harper et al., 2007; Nöthling et al., 2013; Quevedo et al., 2012). Again, severe cases may lead to postpartum psychosis, suicide, and, rarely, infanticide (Atuhaire et al., 2021).

2.4.3 Comparison of the prevalence of prenatal and postpartum in women living with HIV

Evidence from literature indicates that even though there are general experiences of prenatal and postpartum depression, the prevalence is varied across the two periods due to the HIV-infection or poor pregnancy outcomes (Endomba et al., 2021). There is research evidence that depression is more common during pregnancy than in the postnatal period (Baron et al., 2016; Brittain et al., 2019; Elrassas et al., 2022; Giardinelli et al., 2012; Glover & O'Connor, 2006; Melo Jr et al., 2012). In addition, pregnancy is a period during which stresses between partners and domestic violence may be elevated in women living with HIV. For example, sub-Saharan African women living with HIV are faced with unique stressors when pregnant (Jones et al., 2021) like HIV stigma, unplanned pregnancy, lack of support, among others; which may cause higher depression levels than after giving birth (Mokhele et al., 2019; Sawyer et al., 2010). This is observed in a longitudinal cohort study across the 12 clinical care centres in Kenya, Tanzania, Uganda, and Nigeria where depression at pregnancy was 6.3 percent compared to postpartum depression experiences at 3.4 percent (Jones et al., 2021). Similar findings were observed in South Africa where the proportion of women with elevated

depressive symptoms was high prenatally, but decreased during the postpartum period (Brittain et al., 2019). However, a study in Uganda by Kaida et al. (2014) had a contrasting finding whereby depression scores during the postpartum were rather slightly elevated compared to periods of pregnancy. The observed mean depression symptom severity score was 1.29 during pregnancy, and 1.34 during postpartum periods. In comparing sub-Saharan African countries like Ethiopia, South Africa and Uganda together with Asian countries like India, prenatal depression prevalence was recorded more in South Africa (49% and Uganda (35.8%), while Ethiopia (12.0%), and India (9.2%) came last (Baron et al., 2016). Records of prevalence from the postnatal depression indicate a reduction in some countries which had higher prenatal depression, while other countries had an increase. For example, India's postpartum depression rate was 23 percent, while countries like South Africa, Uganda, Ethiopia, and Nepal reported slightly reduced levels of postpartum depression of 35 percent, 6.1 percent, 4.6 percent, and 3.1–4.9 percent respectively (Baron et al., 2016).

Also, depending on the underlying physical and structural factors, some women are prone to experiencing repeated cycle of depression both during pregnancy and after birth. According to Kapetanovic et al. (2009) for instance, among 273 HIV-infected women, 61 (22%) experienced antenatal depression during one or more of their pregnancies. Again, there is new evidence of heightened antenatal and postpartum depression among women living with HIV as compared to HIV negative women. For example, Zhu et al. (2019) noted 36 percent antenatal and 21 percent postnatal depressive symptoms in HIV positive women as compared to 26 percent antenatal and 16 percent postnatal depressive symptoms in HIV women.

On the other hand, 50 women (18%) had a diagnosis of depression within four weeks postpartum, either as a continuation of their antenatal depression or as a new episode (Kapetanovic et al., 2009). Some of the countries that are noted to have data on the continuity of antenatal depression onto postpartum depression include: India (65.5%), South Africa (23.2%), Ethiopia (21.4%), and Nepal (19%) (Baron et al., 2016). Unfortunately, countries like Uganda where both the rates of HIV infection

and depression among women are high, there is unknown data for those who continue from prenatal depression and postpartum depression (Baron et al., 2016). Also, in the same study by Baron et al. (2016), Nepal had no known data on the prevalence of antenatal depression in the country in 2016.

2.5 Knowledge of Prenatal and Postpartum Depression of Women Living With HIV

Health services and knowledge of professional expertise are needed to diagnose and treat mental disorders in pregnant and postpartum women. Other important elements include attitudes that promote recognition and appropriate help-seeking; and knowledge on depression and psychosis causes and treatment (Nakku et al., 2016). Although prenatal and postpartum depression is common and dangerous for mother and child, it is highly underdiagnosed (Manso-Córdoba et al., 2020). Due to depressive stigma and shame, several women avoid medical assistance (Manso-Córdoba et al., 2020). For instance, Nakku et al.'s (2016) Ugandan study found that health personnel stigmatised and discriminated against women with mental illness, believing them to be bewitched and useless. For fear of being judged, mistreated, and having their babies taken away, women in the study did not disclose even the most severe mental health symptoms, making it difficult for postpartum depressive mothers to obtain care. Nonetheless, pregnant and postnatal women were able to describe some behavioural symptoms of mental health problems in a mother, indicating that they were knowledgeable that mental health problems occur during pregnancy and after childbirth. Causes of poor mental health given included 'thinking too much' or 'not loving their husband enough' (Nakku et al., 2016).

In Africa, there are significant gaps in knowledge about mental health problems amongst both perinatal women and health care providers who were the key informants (Nakku et al., 2016). On the side of the health care providers, findings by Hatcher et al. (2014) in South Africa indicate that health workers often failed to notice the mental health dynamics of intimate partner violence (IPV) in pregnancy, choosing instead to focus on the physical health sequelae of pregnancy. This explains why when one health provider was asked about stress related to IPV, the response was only in terms of how stress impacts hypertension while ignoring the relevant impact on a woman's mental health. Additionally,

many healthcare providers tend to associate mental health solely with severe psychopathological conditions that require pharmacological treatment. As a result, they tend to miss out symptoms of mental health disorders within individuals (Abigail M. Hatcher et al., 2014). This limited mental health knowledge among healthcare providers can significantly impact the diagnosis and treatment of depression in women living with HIV during both the prenatal and postpartum periods.

Additionally, there is a significant knowledge gap among perinatal women regarding mental illness, including its causes and treatment, which can affect their healthcare-seeking behaviours (Manso-Córdoba et al., 2020). In Uganda, many women noted lacking awareness of the effects of mental illness on themselves or their babies. However, some associated mental illness with extreme distress, loss of consciousness, leading to suicide (Nakku et al., 2016). This highlights the need for perinatal mental health services that address mental health literacy among pregnant and postpartum women to influence their attitudes and healthcare-seeking behaviours (Nakku et al., 2016). Furthermore, cultural beliefs and postpartum practices in Africa, often unnoticed, can influence depression (Nakku et al., 2016). As demonstrated by Evagorou et al. (2016) in various countries, these beliefs and practices impact treatment-seeking behaviours. For example, in Egypt, women undergo a 40-day period of isolation and relaxation after childbirth, receiving help from female relatives. However, if a female child is born, criticism and even divorce from the husband's family may occur (Evagorou et al., 2016). This criticism and isolation can limit social interactions, potentially leading to or worsening postpartum depression.

Furthermore, Evagorou et al. (2016) highlight cultural practices that affect perinatal women's access to healthcare in different contexts. In Mozambique, women are required to stay with their families during pregnancy for protection from evil spirits, limiting access to prenatal and postnatal care. Similarly, among the San Bushmen in South Africa, women give birth alone outside their communities, continuing their routines without support, potentially leading to birth complications and depression unknowingly. These cultural beliefs shape women's approach to healthcare and may hinder mental health diagnosis and treatment by healthcare professionals (Evagorou et al., 2016). Conversely, health

professionals think that mental health problems are experienced in a similar way, which may hinder their diagnosis and treatment (Evagorou et al., 2016). Another cultural limitation to mental health care is the belief that it is as a result of witchcraft (Sokhela, 2016). Such beliefs influence where people seek medical help, often turning to witchdoctors and traditional healers. To address this, there is a need for extensive education and awareness campaigns, particularly in communities that strongly associate mental illness with witchcraft. Such efforts are crucial for enhancing the mental well-being of perinatal women during both prenatal and postpartum periods (Nakku et al., 2016).

2.6 The Prenatal and Postpartum Experiences of Women Living With HIV

2.6.1 Structural and health service-related challenges

In Uganda and many low-income countries, women living with HIV face significant barriers to accessing integrated healthcare services, particularly for HIV, prenatal, and postpartum care (Nakku et al., 2016). A major challenge is the long distances to healthcare facilities, which increases vulnerability for individuals with HIV (Jones, 2012; Kyomuhendo et al., 2020). Findings in Ugandan studies, note that families often lack cars, forcing pregnant and postpartum women to walk five or more kilometres or hire cars to reach health centres. Poverty also prevents many from affording transportation costs, resulting in missed healthcare appointments (Nakku et al., 2016; Opio et al., 2019). This increases fears of HIV transmission to their babies. Again, the clinic procedures and long waiting times at healthcare facilities are taxing for women living with HIV and their caregivers (Kyomuhendo, 2018; Opio et al., 2019). These extended waiting periods are primarily due to understaffed clinics struggling to manage a high volume of patients. Such conditions can potentially impact the quality of care provided to HIV-positive mothers during pregnancy and postpartum periods. This aligns with Maman et al.'s (2011) South African study, where clinic procedures created an uncomfortable environment for men accompanying their partners due to long waits in less-than-ideal conditions. These procedures included early registration, mandatory nightgown changes, and limited space in the waiting room, forcing women and their partners to stand (Maman et al., 2011).

Service-related challenges included inadequate staffing, burdensome workload for health workers, especially midwives, and inadequate training in mental health and HIV counselling. These factors impede the health care system from meeting the needs of prenatal and postpartum women with mental health challenges (Nakku et al., 2016). Ahumuza et al. (2016) report similar challenges, which limit the provision of essential services for mothers and their infants. Moreover, the shortage of staff adversely affects the quality of healthcare services, long waiting times, and failure to provide critical information to promote the health of mothers and babies (Ahumuza et al., 2016). Additionally, knowledge gap is experienced, in HIV, mental health and this increases the vulnerability to mental distress for HIV positive mothers in their prenatal and postpartum periods (Manso-Córdoba et al., 2020; Nakku et al., 2016). This relates to a Ugandan study where the HIV positive women lacked enough knowledge on the evolving recommendations on breastfeeding duration, infant health and survival, and infant HIV exposure (Dunkley et al., 2018). In the new WHO 2016 guidelines, initiating breastfeeding, exclusive breastfeeding in months 0–6, and mixed feeding during months 6–12 and beyond is recommended for WLWH accessing supportive care for ART adherence. Therefore, breastfeeding duration for WLWH is not restricted and can continue up to 24 months and beyond, as it improves HIV-free survival among HIV-exposed infants; while mothers are virally suppressed. This is a step away from the earlier WHO (2001, 2006) recommendations to avoid mixed feeding at any time in the postnatal period (Dunkley et al., 2018). Hence, Dunkley et al. (2018) found that the mothers living with HIV had a stressful postnatal period full of confusion, fear, and mistrust about the recommendation of exclusive breastfeeding and mixed feeding as they expose the infant to HIV infection for a long time (Dunkley et al., 2018). Another knowledge gap is cultural and spiritual beliefs, with clients seeking healing from traditional healers and prayers, leading to abandoned medical treatment and worsened conditions (Opio et al., 2021).

Another service challenge highlighted is the poor relationship between women living with HIV and healthcare providers (Ahumuza et al., 2016). Some healthcare workers are reported to force expectant

mothers to take medication, especially deworming tablets, and exhibit rudeness. This has led to mothers feeling uncomfortable with such practices, particularly when they are required to swallow tablets at the healthcare facility. The lack of clear communication and inadequate information from healthcare workers has contributed to misunderstandings among mothers. Also, some healthcare workers resort to shouting and blaming clients for their pregnancies during antenatal clinics, creating fear and hindering open communication and proper health-seeking behaviours among the mothers (Atuyambe et al., 2005). Again, pregnant and postpartum mothers living with HIV face challenges related to confidentiality at healthcare facilities (Ahumuza et al., 2016). Maintaining confidentiality becomes problematic when HIV-positive mothers are separated from HIV-negative mothers, leading to potential suspect of their sero-status. Furthermore, the process of HIV testing and counselling sometimes lacks privacy, as health workers call out names and refer HIV-positive mothers to ART units, increasing the risk of stigma and fear. Opio et al. (2021) also highlight unprofessional behaviour by health workers, including rudeness, abusive, and gossiping, eroding trust among clients. Atuyambe et al. (2005) in their Ugandan study similarly noted breaches of client confidentiality.

2.6.2 Household-related challenges

Poverty poses significant challenges for prenatal and postpartum mothers in Uganda. Limited financial resources hinder the utilization of maternal health services, with only 60 percent attending one antenatal visit and 30-40 percent attending any postnatal visit due to transport affordability issues (Nakku et al., 2016). Additionally, poverty negatively affects the feeding practices of pregnant and postpartum mothers, often resulting from the socioeconomic status of their families and neglect or resentment from husbands (Atuyambe et al., 2005). This can take a toll on mothers' mental health when they must take medication after eating.

The lack of support for pregnant or postpartum women from their partners is associated not only with a higher prevalence of maternal health issues but also with reduced access to treatment (Nakku et al., 2016). This can be due to factors like partner's poverty, which may make them unable or unwilling to

provide financial support, or polygamous relationships where the partner has multiple family responsibilities, limiting their economic capacity to adequately support all families (Atuyambe et al., 2005). There is a need for initiatives involving male partners in mental health literacy programmes to emphasize their role and encourage their support.

2.6.3 Stigma-related challenges

Stigma is a widespread issue affecting individuals with various chronic illnesses, including neurological, autoimmune, and HIV-related conditions, leading to negative impacts such as social isolation, strained relationships, and reduced self-esteem (J. Huang et al., 2020; Owusu, 2020). A similar pattern of stigma is observed in a Ugandan study conducted by Nakku et al. (2016). For women living with HIV, stigma poses an additional vulnerability that can further hinder their access to maternal healthcare services (Nakku et al., 2016; Opio et al., 2019). It may result in nondisclosure of HIV status to partners, leading to secretive medication use and missed clinic appointments (Masereka et al., 2019). To support mothers during their perinatal and postpartum periods, interventions targeting stigma associated with both HIV and mental health are crucial. Such interventions can improve the likelihood of timely diagnosis and adherence to treatment (Manso-Córdoba et al., 2020).

2.6.4 Gender role expectations

Postpartum depression is particularly distressing for new mothers because childbirth is culturally celebrated, creating an expectation of joy for parents, especially mothers. However, new mothers face significant demands, including round-the-clock care for their newborns, managing older children, household responsibilities, and after a brief maternity leave. These responsibilities are challenging even under normal circumstances, and they become even more difficult when compounded by the disabling symptoms of depression, such as sadness, loss of interest, slowed motor skills, and difficulty concentrating (O'Hara, 2009).

2.6.5 Coping Strategies

Developmental patterns in coping (e.g., problem-solving, distraction, support-seeking, escape) were scrutinized with a focus on changes in age (Zimmer-Gembeck & Skinner, 2011). Coping refers to cognitive and behavioural responses to external or internal risks to well-being (Freire et al., 2020). A wider range of coping methods are adopted for tough situations (Kotzé et al., 2013). Problem-solving strategies, which involve doing something active to reduce stress, and emotion-focused coping strategies, which involve regulating the emotional effects of stressful or potentially stressful events, are identified by Lazarus & Folkman (1984). To understand coping among women with HIV, a study among Ugandan women living with HIV indicates that averagely, women reported using seven emotion focused coping strategies, and/or four problem-solving strategies in the last two weeks. Also, family and community support was reported (Seffren et al., 2018). Additionally, Doucet & Letourneau (2009) identified a link between postpartum depression coping methods and suicidal ideation. Postpartum mothers with emotion-focused coping had higher suicidal ideation rates. However, using emotional support to vent one's feelings is a passive approach to addressing a problem, and is often not adaptive, and thus associated with postpartum depressive symptoms (Gutiérrez-Zotes et al., 2015). In contrast, the adaptive use of emotional support often entails reassurance during periods of acute stress, the transition to move to more active coping approaches can be enhanced (Doucet & Letourneau, 2009). Hence in Doucet and Letourneau's (2009) study, women who used emotional support as a coping approach were protected from having suicidal ideations. Still under emotion-focused coping, avoidance-focused coping was reported (Doucet & Letourneau, 2009).

Again, religious coping characterized by spiritual and mystical feelings and thoughts have been indicated as a means to cope in times of mental distress. If one believes they can solve the situation, problem-focused coping may work. In addition, problem-focused coping works best when the unpleasant event is deemed manageable. PPD women may not see their condition as changeable and may utilise problem-focused coping less. However, religious coping may both promote and prevent

suicide (Doucet & Letourneau, 2009). Kotzé et al. (2013) also reported similar findings of active or avoidant coping in women diagnosed with HIV during pregnancy. Generally, the most frequently used coping strategies included acceptance, direct action, positive reframing, religion and distraction (Kotzé et al., 2013).

Women Living With HIV in rural Africa can use positive coping methods to manage pregnancy and postpartum problems (Ashaba, Kaida, Burns, et al., 2017). These aid in addressing extreme social and psychological problems that improve pregnancy outcomes. Personal acceptance of HIV sero-status and self-reliance were noted. HIV-related internal stigma caused self-isolation and reduced HIV care during pregnancy. In cases where their spouses disputed responsibility for the pregnancy and left, HIV-positive women depended on their own talents and assets to support themselves and their children (Ashaba et al., 2017). Financial, emotional, and social support from partners, family, and friends improved pregnancy and postpartum outcomes. Organisational coping included HIV-related healthcare delivery and system supports like PMTCT. Some women said this support helped them overcome perinatal transmission anxieties, get HIV care, and have an HIV-free child (Ashaba et al., 2017). Also, church community support, personal religious views, and spirituality to overcome obstacles including suicidal thoughts and attempts were noted (Ashaba et al., 2017).

In contrast, other research indicate coping through substance use (Chersich et al., 2008; Onyemaechi et al., 2017). South African women reported drinking two or more alcoholic beverages on at least one occasion (Rodriguez et al., 2018). Another comparative study for Uganda and South Africa found that WLWH with more depressive symptoms were more likely to drink, with nearly 25 percent of pregnant WLWH engaging in heavy/hazardous perinatal drinking (Raggio et al., 2019). Heavy episodic drinking during pregnancy is linked to low birth weight and long-term neurodevelopmental impairments in children, some of which continue throughout adulthood (Raggio et al., 2019). Alcohol consumption is used as a coping mechanism for stressors and unpleasant emotions, including disappointment or humiliation, fear of HIV disclosure and the baby's HIV status, fear of mortality, and physical violence.

Other women used alcohol as a way to retain social connection as well as peer influence (Watt et al., 2014). Therefore, alcohol use counselling and reduction interventions could be integrated in women's health care, HIV care, and ANC settings. Healthcare providers can do this in clinics or through community-based support groups (Raggio et al., 2019).

2.7 The relationship between perinatal characteristics and depression among women living with HIV

In general, pregnancy and childbirth introduce significant biological, physical, and psychological changes that can lead to heightened anxiety and uncertainty regarding what to anticipate before and after delivery (DiPietro et al., 2004; Kogo, 2018; Netshimbupfe, 2016; Shi & Macbeth, 2017). For certain women, pregnancy marks their initial encounter with depression, while those with a history of depressive episodes face an elevated risk of its recurrence (Bennett et al., 2004). On the other hand, extensive research has consistently shown a strong connection between depression and HIV, often co-occurring (Goin et al., 2020; Manikkam & Burns, 2012; Nöthling et al., 2013). HIV is believed to trigger immune activation in the brain, potentially worsening depressive symptoms (Waldron et al., 2021). Additionally, the fear associated with an HIV diagnosis, given its life-threatening nature requiring lifelong management and medication, can significantly impact the mental well-being of those affected (Goin et al., 2020). Moreover, HIV-related stigma amplifies depression through heightened feelings of social rejection, isolation, concerns about job loss, and relationship strain (Goin et al., 2020; Rodriguez et al., 2018). From this evidence, there is no doubt that there is a linkage between HIV-positive status, pregnancy, childbirth, and mental health. Besides, Duby et al. (2021) note that depression is interconnected with HIV and pregnancy. This is because childbearing women are at an increased risk for both HIV and psychiatric disorders, specifically depression and post-traumatic stress disorder (PTSD) (Nöthling et al., 2013). For example, a study in Malawi indicated that at the 10-14 week visit, the prevalence ratio for the association between maternal HIV and PPD was 1.18 (95% CI 0.68, 2.08) (Dow et al., 2014).

Women living with HIV experiences of prenatal and postpartum depression are associated with numerous factors. Some of these include the struggle for women who test for HIV during pregnancy to accept the HIV positive results, and also adapt to live with a chronic and life threatening illness for life (Cichocki, 2009). This struggle could make coping difficult for the women as they have to incorporate their new HIV diagnosis, treatment, and psychosocial issues into their day-to-day life responsibilities as well as pregnancy experiences (Netshimbupfe, 2016). For example, a study in rural South Africa indicates that half of women (54%) were diagnosed with HIV in their current pregnancy (Rodriguez et al., 2018). This results in a difficult emotional event and sometimes to personal experiences with suicidal ideation in this situation (Duby et al., 2021; Abigail M. Hatcher et al., 2014). This is also noted in Tanzania by Antelman et al. (2007) where a high prevalence of depressive symptoms (43%) was recorded in asymptomatic HIV-infected pregnant women two months after learning about their HIV status. Even in Zambia, women whose HIV was diagnosed during pregnancy showed severe depressive episodes while those who knew their HIV status before becoming pregnant did not show depressive signs aside anxiety about the HIV status of their babies (Kwalombota, 2002).

HIV diagnosis during pregnancy comes along with other emotional and social problems like abuse resulting from disclosure of HIV status, which could affect their mental well-being (Cichocki, 2009). According to Rodriguez et al. (2018), women disclosing their HIV status receive both supportive and unsupportive reactions from their partners, including Intimate Partner Violence (IPV), which may increase mental challenges (Rodriguez et al., 2018). This is evidenced in a Nigerian study where 74.0 percent of HIV-positive pregnant abused women had their HIV negative partner start abusing them after disclosing their HIV-positive diagnosis, thus leading to depression (Ezechi et al., 2009). Some of the common forms of abuse reported included verbal abuse (51.7%), threat of violence (22.9%) and sexual deprivation (21.5%) (Ezechi et al., 2009). The traumatic exposure to IPV increases feelings of anxiousness and depression; as well as worsened HIV-related health like poor PMTCT adherence (Duby et al., 2021; Abigail M. Hatcher et al., 2014; Manongi et al., 2020).

Other stressors experienced by women living with HIV that could heighten depression both during pregnancy and after giving birth are stigma, discrimination, loss of social support, low self-esteem, and lack of anyone to trust or confide in (Duby et al., 2021; National Institute of Mental Health, 2021; Stranix-Chibanda et al., 2005). With regard to stigma, the Canadian Sociologist Erving Goffman theorized social stigma as a phenomenon in which an individual with a highly discredited attribute is rejected as a result of the attribute (Goffman, 1963). Stigma in people living with HIV can either be social/public stigma or internalized/self-stigma (Waldron et al., 2021). For women living with HIV, social/public stigma includes judgments about their perceived promiscuity, blame for transmitting HIV in relationships, and negative attitudes towards their sexual and reproductive choices (Greene et al., 2017; WHO & UNFPA, 2006). These stigmatizing experiences limit their social support and harm their mental health and self-esteem during pregnancy and postpartum periods (Duby et al., 2021). This is noted by Audet et al. (2013) where HIV-related public stigma included friends avoiding contact, family members segregating utensils, and employers finding ways to avoid working with HIV-positive individuals due to misconceptions about HIV transmission (Audet et al., 2013).

It is important recognizing that social stigma experienced by individuals living with HIV can also result in internalized or self-stigma, a phenomenon where individuals start believing and applying negative stereotypes about themselves (Drapalski et al., 2013; Geibel et al., 2020). People with HIV may internally struggle with feelings of hopelessness, shame, guilt, or the need to hide their HIV status due to societal prejudices. Some may even feel worthless or unclean because of their HIV infection (Greene et al., 2017; The Centers for Disease Control and Prevention, 2018). For instance, a study in Bangladesh by Hasan et al. (2012) revealed that a significant proportion of participants experienced shame, guilt, and self-blame related to their HIV status, potentially leading to depression and thoughts of self-harm (Duby et al., 2021; Huang et al., 2020). Additionally, Turan et al. (2014) in their Kenyan study highlighted how internalized stigma among pregnant women with HIV could result in postpartum depression, as they grappled with the dual challenges of managing HIV and pregnancy

within two different healthcare systems. This underscores the critical link between social stigma, self-stigma, and adverse mental health outcomes for individuals living with HIV (Psaros et al., 2009).

Again, a body of research has established additional factors that could influence depression among prenatal and postpartum women living with HIV to include: unplanned pregnancies, having a chronic condition or a complication, child's HIV status, alcohol use, food insecurity, among others (Aaron et al., 2015; Collin et al., 2006; Khoshgoo et al., 2020; Madeghe et al., 2022; Manikkam & Burns, 2012; Manongi et al., 2020; Mokwena & Mbatha, 2021; Tachibana et al., 2015). This literature evidence makes the conclusion by Kapetanovic et al. (2014) clear that psychiatric symptoms, particularly depression, and mental health vulnerabilities (e.g., inadequate coping skills) are widespread among pregnant HIV positive women globally and have a potential to affect psychological well-being, quality of life and salient clinical outcomes.

2.8 Relationship between Prenatal and Postpartum factors and Depression among Women Living with HIV

Generally, pregnancy is a time of increased vulnerability for the development of depression (Biaggi et al., 2016). Moreover, there are a variety of physical and psychosocial stressors surrounding pregnancy and childbirth that are unique to women with HIV, which can have significant deleterious effects of depression on maternal and infant health (Do et al., 2010; Momplaisir et al., 2018). Therefore, having knowledge of these factors may facilitate earlier identification and treatment of prenatal and postpartum depression among women living with HIV in order to reduce the adverse maternal and infant effects (Ghaedrahmat et al., 2017).

2.8.1 Relationship between Prenatal Factors and Depression among Women Living with HIV

A high burden of adverse psychosocial outcomes are greatly observed in pregnant women living with HIV compared to pregnant women without HIV (Aaron et al., 2015; Moseholm et al., 2022). Literature across the globe notes various factors that are associated with prenatal depression. Some of them include loneliness, history of abuse or of domestic violence, personal history of mental illness,

unplanned or unwanted pregnancy, adverse events in life and high perceived stress, present/past pregnancy complications (Biaggi et al., 2016; Kapetanovic et al., 2009; Manongi et al., 2020; Moseholm et al., 2022). A study by Ghaedrahmat et al. (2017) for instance found that 48 percent of their sample had a history of depression before the current pregnancy, with 29.5 percent experiencing it solely during past postpartum periods. This history makes women more vulnerable to depression during pregnancy due to hormonal changes (Ghaedrahmat et al., 2017). Also, Kapetanovic et al. (2009) in a Los Angeles study noted that substance use during pregnancy was significantly associated with a higher likelihood of prenatal depression (Kapetanovic et al., 2009). This is similar to Ghaedrahmat et al. (2017) who found that about a quarter of women reported using drugs.

Pregnant women who come to know their HIV status during the antenatal visit have heightened vulnerability to depression due to the fear of disclosing their HIV status (Brittain et al., 2019). The fears about disclosing among women living with HIV are due to concerns about abandonment, gossip, and discrimination from their communities (Brittain et al., 2019). The fear of disclosure stems from having relationship conflicts, particularly regarding perceived infidelity, misconception that they are responsible for HIV transmission, as well as anxiety about transmitting HIV to their children (Aaron et al., 2015; Abigail M. Hatcher et al., 2014). Unplanned or unwanted pregnancy is reported to increase depression as it can lead to pregnancy-related anxiety as well as negative attitude toward the recent pregnancy (Ghaedrahmat et al., 2017; Sheeba et al., 2019). Ashaba et al. (2017) indicate that some women reported that pregnancy resulted from their partners and partners' families wanting children, rather than their own desire to have children. Even when women did not want to conceive, they had to comply with and fulfil their partners' desires. This was attributed to the cultural norms that deny women reproductive autonomy, which prevented them from making decisions concerning having children and utilizing available contraception methods (Ashaba, Kaida, Coleman, et al., 2017). In South Africa, it was found that unintended pregnancy was associated with lack of social support, which was itself linked to antenatal depression, HIV stigma, and low income (Choi et al., 2019). Additionally,

Brittain et al. (2019) found in their study that aside pregnant women knowing their HIV status during antenatal visit leading to depression, the pregnancy being unintended also contributed to increased experiences of depression.

2.8.2 Relationship between Postpartum Factors and Depression among Women Living with HIV

Postpartum depression (PPD) is believed to occur three times more commonly in developing countries than in the developed world and is more prevalent among women in the first six weeks after birth (Ndege, 2018). One of the major risk factors for postpartum depression is culture. In African and many Asian countries such as Japan, China, India, Turkey and Jordan, where social preference is given to male children, giving birth to a female child is an additional factor to postpartum depression (Evagorou et al., 2016). A study in Ethiopia (Azale et al., 2018) indicates the husband's preference for a baby boy, was associated with postpartum depressive symptoms (Azale et al., 2018). Such practices can lead to the mother's low self-esteem with increased impact on parenting stress, i.e., postpartum depression (Ghaedrahmat et al., 2017). Also, other issues that may arise are the hostility and violence within the family, as well as the resentment of the husband and his family for the child's gender/rejected paternity (Evagorou et al., 2016). Additional risk factors unique to the sub-Saharan African context are negative cultural perception of others, the threat of spiritual attack and adhering to African cultural traditions, polygamy, among others that are associated with an increased risk of developing depression (Wittkowski et al., 2014). Hence, beliefs about rituals or cultural practices need to be considered when assessing depression in women living with HIV.

Again, self-esteem plays a vital role, potentially influencing responses to postpartum depression. Women with high self-esteem possess self-worth, confidence, optimism, and a positive self-perception, which enables them to effectively cope with challenges like postpartum depression. For instance, a lack of unconditional love and acceptance from a spouse and family, especially following

a significant life event like childbirth, can hinder a woman's self-worth and well-being, potentially damaging her self-esteem (Onyemaechi et al., 2017).

The postpartum depressive situation of mothers living with HIV is worsened when the born child is infected with HIV. A study in Malawi by Dow et al. (2014) records the prevalence of postpartum depression higher among HIV-infected women with infected infants (18.9%). Overall, the cumulative probability of experiencing postpartum depression over the first 12 months post-partum was estimated to be 33.5 percent for HIV-infected mothers with HIV infected infants, compared with 22.5 percent for HIV-infected mothers with uninfected infants. In Uganda, women struggled with distressing thoughts about their young children taking ARVs, the children's ability to tolerate the medication side effects; as well as the medication effects on children's growth and development (Ashaba et al., 2017).

Another factor that might increase postpartum depression amongst pregnant women living with HIV is complications (Ndege, 2018). Some of these risks include the number of delivery; underlying health conditions which could lead to performing emergency caesarean section or hospitalization during pregnancy, among others (Ghaedrahmat et al., 2017). Also noted are the lifestyle factors like food intake patterns, sleep status, exercise, and physical activities, among others which may affect postpartum depression. It was observed that sufficient consumption of vegetables, fruits, legumes, seafood, milk and dairy products, olive oil, and a variety of nutritious foods may reduce postpartum depression by 50 percent (Ghaedrahmat et al., 2017).

Severe sleep deprivation commonly occurs in postpartum women with depression, impacting various aspects of health, including glucose metabolism, inflammation, mental well-being, and overall quality of life. Additionally, acute sleep deprivation affects the immune system. Evidence suggests that physical activity offers substantial benefits in reducing depression symptoms, comparable to medication. Moderate exercise during the third trimester of pregnancy has been associated with lower postpartum depression scores at six weeks post-delivery. Exercising involves enhancing mental health

through increased endorphins, self-confidence, problem-solving abilities, and environmental focus (Ghaedrahmat et al., 2017).

2.8.3 Relationship between both prenatal and postpartum factors and depression

One of the major risk factors for both prenatal and postpartum depression is stressful life events (O'Hara, 2009; Sheeba et al., 2019). A study by Ghaedrahmat et al., (2017) for example indicates that more than half of women (55%) experienced unstable housing while pregnant and many had poor partner (40%) or family (30%) support. Other stressful life events noted in the literature that are associated with prenatal and postpartum depression are unexpected death of a child or spouse, having both parents deceased, and poverty most especially those in the rural setting (Atuhaire & Cumber, 2018; Chibanda et al., 2010).

Literature indicates the relationship between age and prenatal and postpartum depression. Young age during pregnancy and giving birth increases the risk of depression, and may lead to poor growth and development in children born to these mothers (Ghaedrahmat et al., 2017; Ndege, 2018). Studies in Uganda and South Africa have indicated mothers of ages below 20 years and advanced maternal age have higher risks of experiencing prenatal and postpartum depression (Atuhaire et al., 2021; Atuhaire & Cumber, 2018; Brittain et al., 2019). These results highlight the importance of prioritizing adolescents as a distinct age group when it comes to implementing specialized maternal healthcare interventions for the detection and treatment of depression (Ndege, 2018; Sawyer et al., 2010).

Pregnant women living with HIV could have experiences of depression because of the added stress of the unknown regarding the health status of the unborn baby (Boonpongmanee et al., 2003; Hailemariam, 2015). The fear results in the prospect of the infant acquiring HIV (Goin et al., 2020; Hailemariam, 2015), as well as the fear that their babies would die soon after birth due to HIV (Ashaba, Kaida, Coleman, et al., 2017). Even after giving birth, mothers can continue to experience the uncertainty until a negative HIV test result of the baby is announced (Shannon & Lee, 2008). This is

noted by Dunkley et al. (2018) in their Ugandan study where fear of postnatal HIV transmission remained at the forefront of WLWH's postpartum experiences and that prolonged infant HIV exposure while breastfeeding was not readily accepted as they desired to cease breastfeeding and receive the last test to know an infant's HIV status (Dunkley et al., 2018). Furthermore, fear amongst women living with HIV comes from the fear of their own health as mothers. For instance, a Ugandan study by Ashaba et al. (2017) indicates that the distress and fear about the babies' health were increased by the women's own deteriorating health during pregnancy as women feared they would not be strong enough to work and provide for themselves and their children, or that their children may end up as orphans. Also, participants had distressing thoughts about how they take care of an HIV positive child knowing he/she would die and also worried about who would give appropriate care to the children if the mother died (Ashaba et al., 2017).

Lack of support is associated with poorer mental health in women living with HIV. A Nigerian study by Onyemaechi et al. (2017) records that mothers with low social support experienced more postpartum depression than mothers with high social support. Also, Ghaedrahmat et al., (2017) found that 26 percent of women with HIV endorsed inadequate support, compared to 12 percent of women without HIV. This difference was statistically significant, indicating that women with HIV perceived less social support than women without HIV. On the other hand, mothers with high social support tend to have the ability to use effective coping strategies to handle postpartum depression (Onyemaechi et al., 2017). Social support serves as a reserve and the difference in this level of reserve may affect how an individual reacts to stressful situations like postpartum depression. For example, mothers who have high social support may feel deeply loved and supported by family and friends which will serve as a protective measure against postpartum depression (Onyemaechi et al., 2017; Psaros, Smit, et al., 2020).

The association between domestic violence and depression is well known (Osborn et al., 2022; Sheeba et al., 2019). A study conducted in Zimbabwe records a total of 22.7 percent participants noting intimate partner violence (IPV) and childhood sexual abuse (CSA) (Nyamukoho et al., 2019). In

Cameroon, most participants (62.6%) reported experiencing at least one form of emotional, physical, or sexual IPV and 14.3 percent reporting to be experiencing all three forms of IPV. Specifically, moderate controlling behaviours (57.3%), emotional IPV (44.5%), physical IPV (36.6%) or sexual IPV (31.3%) were noted (Parcesepe et al., 2021). In South Africa, more than 20 percent of all women experienced at least one act of physical, psychological or sexual IPV during pregnancy. Nearly one-quarter of all women experienced at least one act of physical, psychological or sexual IPV during the first nine months postpartum. Psychological IPV was the most prevalent type of IPV during pregnancy and the first four months postpartum. Age and previous violence within the relationship were associated with IPV during pregnancy and IPV during the postpartum period (Groves et al., 2015). Ashaba et al. (2017) note experiences of violence, particularly after informing their partners of a pregnancy. Verbal and emotional abuse by partners was common especially when women conceived without their partners' knowledge. Some participants were denied access to treatment by their partners which interrupted their treatment adherence and others were denied a chance to work in order to provide for themselves during pregnancy and the postpartum.

Also, the presence of spousal sexual violence and its contribution to the risk factors for prenatal and postnatal depression cannot be overlooked (Sheeba et al., 2019). A Ugandan study in 2016 notes that Ugandan women living with HIV followed over two years, were found to experience forced-sex victimization, and this was associated with a subsequent increased level of depression symptom severity, increased risks of probable depression and heavy drinking, and reduced mental health–related quality of life (Tsai, Wolfe, et al., 2016). The childhood experience of sexual abuse has an implication for depression in women during later years in life. Ghaedrahmat et al. (2017) in their study record that 26 percent of the sample had experienced childhood sexual abuse. About 50 percent of women with HIV experienced childhood sexual abuse, as compared to 15 percent of women without HIV.

Various sociodemographic factors are linked to psychological well-being during and after pregnancy (Sawyer et al., 2010). For example, a study conducted in Bangalore indicates that majority of the study

participants belonged to the low income group, which increases the likelihood of poor living conditions, financial struggle and influences (Sheeba et al., 2019). Other sociodemographic factors identified to contribute to prenatal and postnatal depression include unemployment, lower perceived wealth, being the first-time mothers, low education, and poor social support (Atuhaire et al., 2021; Azale et al., 2018; Dlamini et al., 2019; Do et al., 2018; Evagorou et al., 2016). For women in adverse socioeconomic circumstances, instrumental support may be lacking if friends and family are similarly living in poverty. Alternatively, women may require additional support to request assistance from friends and family, especially in contexts where stigma is prevalent (Brittain et al., 2017). With regard to marital status, a study done across Africa by Sawyer et al. (2010) notes that marital status was associated with depression. Specifically, women who were depressed were more likely to be either single, separated/divorced or in a polygynous marriage (Sawyer et al., 2010).

Furthermore, household food insecurity affects hundreds of millions of individuals in sub-Saharan Africa, a region that experiences a disproportionate burden of the HIV pandemic. Both maternal HIV diagnosis and household food insecurity may be linked with maternal stress. This in turn may lead to unhealthy coping behaviours (Garcia et al., 2013). In South Africa, food insufficiency had a strong and statistically significant association with depression, suggesting a 6.5 percent relative difference in depression symptom severity per day of hunger. In stratified analyses, food insufficiency had a statistically significant association with depression only among women with low levels of instrumental support (Tsai et al., 2016).

2.9 Gaps Identified in the Literature

The discussion from literature suggests that women who are HIV-positive as well as pregnant are exposed to multiple vulnerabilities. However, even though depressive disorder during prenatal and postpartum periods in women living with HIV is increasing in low-income countries such as Uganda, determining the actual prevalence remains problematic. This is due to limited or lack of screening, diagnosis and under-reporting during HIV care clinics. Also, in Uganda, there is scanty literature

regarding prenatal and postpartum depression in women living with HIV. Majority of the studies on depression target adolescents, youth and the adult population living with HIV. The few studies that have been conducted on this topic have mainly focused on the rural areas of Uganda. Moreover, the studies tend to look at one aspect of either prenatal or postpartum depression, while almost none of the studies uses a mixed method of both qualitative and quantitative research design to explore the phenomenon (e.g., Abas et al., 2014; Ashaba et al., 2017; Ashaba et al., 2017; Atuhaire et al., 2021; Kaharuza et al., 2006; Kaida et al., 2014; Kinyanda et al., 2017, 2019, 2020; Nakimuli-Mpungu et al., 2011, 2013; Nakimuli-Mpungu & Munyaneza, 2011; Raggio et al., 2019). It is in response to these gaps, this study is being carried out to examine how HIV-positive diagnosis could affect the mental health of women living with HIV in the urban areas of Kampala and Wakiso, Uganda, during both prenatal and postpartum periods. A mixed-methods approach is employed to provide a more holistic understanding of the women's experiences during these critical stages.

2.10 THEORETICAL CONSIDERATIONS

2.10.1 The biopsychosocial model

It was propounded by George Engel, an American pathologist and psychiatrist in 1977. The model emphasizes the importance of considering a person's overall well-being by integrating biological, psychological, and social aspects of their life. It views illness as affecting the person as a whole, rather than isolated organs. This model also highlights the significance of a patient's personality, emotional resilience, and environmental conditions (Benning, 2015; Papadimitriou, 2017).

The theory postulates that health and mental illness are not solely determined by individual factors (biological, psychological, or social) in isolation but rather by their interactions. On the biological front, genetic factors, infections, physical attributes, nutrition, hormones, and toxins all contribute to mental health. The psychological dimension recognises the impact of personal factors, like emotions, behaviours, thoughts, and experiences like trauma or negative thinking. Social factors encompass a person's social context, like relationships, religion, economic background, and cultural environment,

all of which influence mental well-being. In essence, this theory highlights the interconnectedness of these factors in shaping a person's mental health (Babalola et al., 2017; Cardoso, 2013).

The model can be applied in this study about the mental health among prenatal and postpartum women living with HIV in Uganda. Generally, HIV disease is a condition accompanied by multiple stressors which include the stressful management of treatment regimens that have become increasingly complex, while long-term benefit of pharmacotherapies remain a source of uncertainty. Additionally, the psychosocial stressors women living with HIV might experience during prenatal and postpartum period are associated with fears of being diagnosed with a life-threatening chronic illness. These multiple, severe, and often unrelenting stressors can profoundly affect the individual's quality of life (Tuck et al., 2001; Winiarski, 1997). Therefore, the biopsychosocial model is relevant when assessing patients for ART, to ensure that all the circumstances of the patient are evaluated. This model enables the health care professionals to understand the patient, which leads to designing an appropriate treatment plan that is responsive to the needs of PLHIV and ultimately improvement of quality of life.

In practice, people living with HIV especially HIV- positive women who are pregnant and after giving birth need attention and care beyond being given ART medication. For example, when it comes to psychological well-being, many PLHIV still unfamiliar with HIV react with the belief they have been given a death sentence, which is a sign of hopelessness. Even those who cognitively know that HIV and AIDS are chronic are likely to have a strong psychological response that may include despair, fear, dread, guilt, shame, or even relief that comes with knowledge. The reactions of those who love that person, who go to church with the person, the support they get from the family, or are estranged from the person, all affect the mental well-being of people living with HIV. In applying the biopsychosocial model in this scenario, health care professionals must carry out a comprehensive assessment which leads to sophisticated treatment and case management. To respond in a sophisticated manner, the health practitioner needs to survey the entire landscape by way of a complete assessment to group the

issues under the three dimensions of the psychological, physiological and social. This is because HIV infection is a disease that impacts the well-being of individuals through all these dimensions, and hence assisting individuals who are living with HIV requires attention to the whole person.

Nonetheless, the biopsychosocial model has faced criticism for being vague, overly broad, and lacking substantial scientific insight into the causal factors of illness (Bolton & Gillett, 2019; Roberts, 2023). Critics argue that it imposes a conceptual framework that can be both unhelpful and often inaccurate. The model presents health and its determinants as a simplistic, single-layered system that is static, representing only a single moment in time without addressing how systems can evolve or improve. Additionally, it does not provide clear guidance on how to enhance health (Benning, 2015; Card, 2023). This limitation constrains the understanding of how protective factors and interventions, such as support systems and positive coping strategies, can improve mental health and assist in overcoming depression among prenatal and postpartum women living with HIV.

Despite the critiques, the biopsychosocial model has been used as applied in the fields of psychology, social work, and medical practice to understand mental illness (Bolton & Gillett, 2019). Therefore, the model is highly relevant in this study as it offers a comprehensive understanding of patients, considering various aspects of their lives. It aids healthcare professionals in comprehending how factors at different levels, from societal to molecular, impact suffering, disease, and illness. In this thesis, biologically, the model helps in conceptualising the study in terms of age, number of children, history of depression, history of chronic illnesses, pregnancy history, and complications. The psychological dimension helps explain the behaviours, thoughts, emotions, moods, personality, and history of abuse or trauma of women living with HIV during their prenatal and postpartum periods. Finally, the social aspect helps in contextualising the study in terms of the marital status, religious and cultural beliefs, education and economic backgrounds, stigma, and social support available. By

incorporating these dimensions, healthcare providers can better diagnose, support, and intervene effectively for these patients, promoting improved health outcomes.

2.10.2 Vulnerability-stress model

It is a model developed by Monroe and Simons in 1991. The vulnerability-stress model is a psychological model which explains depression as both a result of biological or genetic vulnerabilities and life experiences or stressors. Biological vulnerability refers to one's genetic predisposition where by depression is passed down in families in addition to experiences that could have occurred in the womb or as a child (Demke, 2022; Flint & Kendler, 2014; O'Connell & Coombes, 2021). Vulnerability-stress models take a developmental perspective to psychopathology (Abela & Hankin, 2008). From this perspective, a predisposition or innate vulnerability interacts with the environment and life experiences (or stressors) which trigger psychological disorders, such as depression. In the vulnerability-stress model, the greater the underlying vulnerability, the less stress is needed to trigger depression. Conversely, where there is a smaller genetic or biological contribution, the greater life stress is required to produce depression (Gibb & Abela, 2008). The vulnerability-stress model of depression has not only improved our understanding of depression, but also influenced the development of depression interventions (Ingram & Price, 2001). Vulnerability-stress approaches aim to manage depression in two ways including:

- (i) Reducing biochemical vulnerability through the use of psychopharmacological medication, therefore allowing the individual greater resilience to life stressors (Kopelowicz et al., 2003; Kopelowicz & Liberman, 2003).
- (ii) Reducing negative cognitions and interpersonal conflict that arise in response to stressful life events or frame the interpretation of stressful events (Gotlib & Hammen, 1992; Ingram et al., 1998).

Cognitive behavioural or interpersonal therapy interventions are, thus, employed to adjust negative cognitions, perceived social roles and the associated quality of interpersonal interactions in the

presence of a stressor or stressors, and in doing so reduce the overall risk or impact of depression despite biological vulnerabilities (Ingram & Price, 2001). Research has demonstrated that combined approaches including psychopharmacology to address biological vulnerabilities and therapeutic interventions to address cognitive, psychological and interpersonal stressors, and to build protective attributes are more effective than either approach alone, although psychological interventions alone have a slightly greater efficiency than pharmacological interventions alone (Cook, et al., 2006).

Kopelowicz et al. (2003), in a rehabilitative work with severe psychiatric morbidity, adapted the vulnerability-stress model to include a third component called protective factors. They propose that particular protective factors resulting from personal attributes which may be supported or skills learnt through intervention are able to reduce biological vulnerability (e.g. improved compliance to psychopharmacological interventions). Again protective factors are able to reduce the impact of stressors or risk factors (e.g., through improved self-efficiency, coping skills, social support or adapted appraisal of the stressor). As a result, these protective factors can mediate future risk of onset or relapse and should be incorporated into psychological and social interventions.

The vulnerability-stress model however has faced some criticisms. One major critique is that its focus on vulnerability can divert attention from the actual harm and may be disempowering (Demke, 2022). Additionally, the model's assertion that vulnerability to depression is primarily due to genetic predisposition may be problematic, as susceptibility to depression can also develop over time through exposure to various environmental factors (Rudnick et al., 2012). Therefore, prenatal and postpartum depression involves a complex interplay of factors that the model may not fully address. For example, hormonal changes, cultural and societal factors, among others can all interact to influence depression in these women.

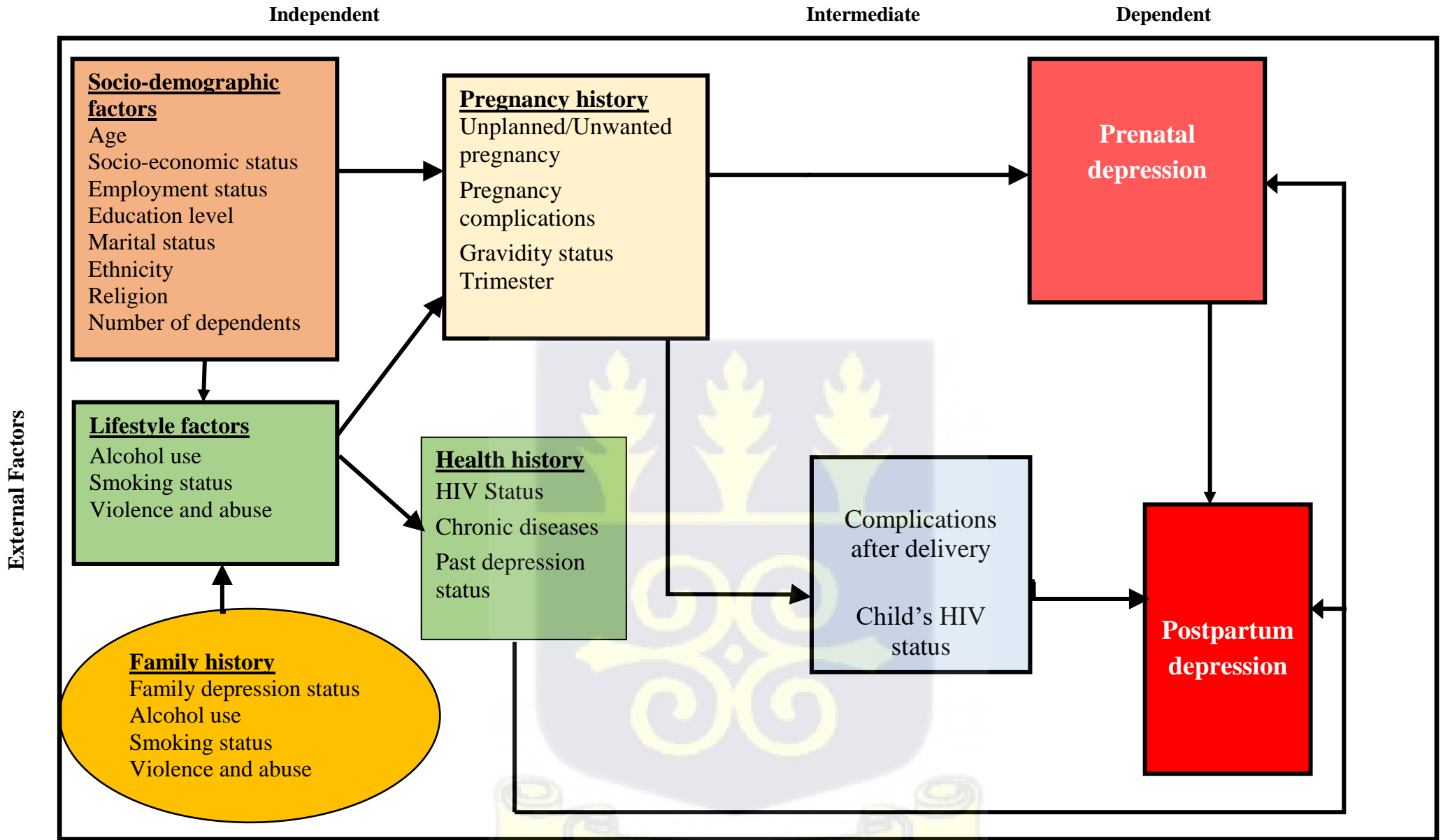
Although the model being critiqued, applying it in this study helps to understand underlying stressors or factors which trigger depression in women living with HIV. For example, when it comes to the biological vulnerability, the model helps in conceptualizing the study in terms of a genetic factors

passed down in families or experiences that could have occurred in the womb or as a child such as family history of depression, family history of alcohol use, or family history of violence and abuse. For life stressors, variables applied in this study include the mother's substance (alcohol abuse, smoking), spousal violence and abuse, as well as experiencing major illnesses like HIV among other chronic conditions (like high blood pressure, diabetes, etc.), food insecurity, among others. More so, the vulnerability-stress model will help in explaining some of the variables under the protective factors like social support system and services availed to women living with HIV to deal with depression during their prenatal and postpartum periods; as well as the coping strategies as well as the coping strategies employed during the prenatal and postpartum period. This evidence would provide a guidance on suggesting suitable interventions for depression that are culturally relevant.

2.11 Conceptual Framework

The conceptual framework in this study is developed from integrating numerous constructs and propositions from previous literature and the theoretical perspectives reviewed. This framework guides this thesis by describing a set of interacting variables required for the study of the burden of prenatal and postpartum depression among women living with HIV in Kampala and Wakiso, Uganda. This framework takes into account HIV- related factors, and other varying factors including socio-demographic, lifestyle factors, family history, health history, pregnancy history, child's HIV status, complications after delivery, food security, social support, living conditions and depression. All of these are known to influence the prenatal and postpartum depression in developing countries. The variables are interconnected to the extent that any change in one of them would most likely affect the others. Figure 2.1 presents the conceptual framework for the study.

Figure 2.1 Conceptual framework examining prenatal and postpartum depression in women living with HIV



Source: (Author's construct, 2022)

From the existing conceptual knowledge about prenatal and postpartum depression in women living with HIV, the conceptual framework was developed showing the relationship established between the concepts of interest. In the framework, the socio-demographic factors (e.g. age, socio-economic status, employment status, education level, marital status, ethnicity, religion, and number of dependents) influence the women's pregnancy history including unplanned/unwanted pregnancy, pregnancy complications, gravidity status, and trimester, which all influence complications after delivery, and the child's HIV status, as well as prenatal depression. Again, the socio-demographic factors have a direct influence on lifestyle factors (alcohol use, smoking status, and violence and abuse). Contrary, lifestyle factors have a direct effect on the women's pregnancy history on one side, which can influence prenatal depression. Another direct effect of lifestyle factors is on the individual's health history (HIV status, chronic diseases, and past depression status), which can lead to prenatal and postpartum depression.

Also, pregnancy history directly influences complications after delivery and the child's HIV status, which influences postpartum depression. For example, a woman who has given birth to many children may feel she is experienced with childbearing and thus may develop poor health seeking behaviours like presenting late for antenatal care or failure to receive skilled birth services. With these, the mother is likely to fail to follow appropriately the recommended PMTCT interventions which are likely to expose the baby to HIV infection. Again if the HIV-positive mother had complications like high viral loads due to failure to respond to ARVs, her breastfeeding decisions may be restricted to reduce the risks of perinatal HIV transmission. This could cause heightened stress, anxiety, and uncertainty, leading to depression. Conversely, the waiting period before the baby's HIV status is confirmed could increase anxiety and depression symptoms among the mothers for fear of having infected the child. When the child's HIV results return positive the mother may be depressed, leading to postpartum depression. In the reverse direction of the relationship, family history which includes family depression status, alcohol use, smoking

status, and violence and abuse, will determine the women's lifestyle factors which in the end may have an influence on their pregnancy history as well as health history. Some individuals may inherit genetic factors that may increase their vulnerability to depression, and substance abuse (Cecil et al., 2016; Nawi et al., 2021). Again, children acquire behaviours from their family, and growing up in an environment where alcohol and smoking are common can lead them to adopt these behaviours. Moreover, substance-abusing parents are linked to family history of violence and abuse while growing. As adults, these parents are more likely to engage in unhealthy and abusive relationships leading to depression (Kropenske & Howard, 1994; Wathen, 2012). Also, a mother experiencing prenatal depression, and depending on her ability to cope, is likely to experience postpartum depression. Finally, external factors like food security, social support, living conditions, access to health care could interact with all the other factors to influence depression. These experiences could have adverse effects on the mother and the baby.

2.12 Hypotheses

From the literature examined, the following four hypotheses will be tested.

- i. Women living with HIV are more likely to experience prenatal and postpartum depression compared to HIV negative women.
- ii. Women living with HIV who wanted/planned for pregnancy are less likely to experience depression compared to those who did not want/ plan getting pregnant.
- iii. Women who are living with HIV and knew their HIV status before getting pregnant are less likely to be depressed compared to those who knew their HIV status during pregnancy and after giving birth.
- iv. Women living with HIV having social support are less likely to experience depression compared to those without social support.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the methodology for the study. This will include the study area, study sites, study design, data and methods, and how the variables considered in this study are measured. Also discussed are the methods of data analysis and the study limitations. In the presentation, the quantitative methodology is discussed first, followed by the qualitative methodology.

3.2 Study Areas

3.2.1 Kampala

Kampala is the capital city of Uganda, situated 40 km north of Uganda's international airport at Entebbe on Lake Victoria. Kampala City is the largest city in Uganda covering a surface area of 195 sq km, and is divided into five divisions namely, Central, Kawempe, Makindye, Rubaga and Nakawa. It is one of the fastest growing cities in Africa, with an annual population growth rate of 4.03 percent; having a population of 1,507,080 (712,762 males and 794,318 females) from diverse ethnic groups (Kampala Capital City Authority (KCCA) & UBOS, 2019; Uganda Bureau of Statistics (UBOS), 2016). Additionally, Kampala has 62 recognised informal settlements, comprising of a population of 560,000 households with poor quality housing. Slums such as Bwaise, Katwe, Kisenyi, Kibuli, Katanga, Nakulabye, Naguru II, Nsambya and many others, have houses that lack basic necessities such as clean water, proper sanitation and planned structures (KCCA, 2015; Kiwawulo & Tenywa, 2010; Uganda Bureau of Statistics (UBOS), 2016). As the city grows, HIV remains one of its biggest health issues, especially in terms of prevalence and sustainability of awareness programmes among the poor and least educated. For example, compared to the national average of 6.2 percent, Kampala's adult HIV prevalence rate was 6.6 percent –6.9 percent in 2017. In 2018/19, 87 percent of HIV-positive pregnant women started ART for Elimination of mother-to-

child transmission (EMTC), up from 72 percent in 2015/16 (Kampala Capital City Authority (KCCA) & UBOS, 2019; Uganda AIDS Commission, 2015; UPHIA, 2017). Also, the fertility rate in Kampala is 3.5 births per woman, and pregnancy-related mortality of 394 per 100,000 live births (Kampala Capital City Authority (KCCA) & UBOS, 2019; UBOS, 2017b; UBOS & ICF, 2018).

3.2.2 Wakiso

Wakiso District is found in the Central Region of Uganda, and it encircles Kampala the capital city, bordering Nakaseke and Luweero districts to the north, Mukono District to the east, Kalangala District and Lake Victoria to the south, Mpigi District to the southwest and Mityana District to the northwest (Nalwoga-Mukwaya et al., 2020; Ssemukasa & Kearney, 2014). In the 2014 national census, the district was the most populous with about two million people, of whom 1,048,383 (52.5%) were female (UBOS, 2017a; Uganda Bureau of Statistics (UBOS), 2016). Wakiso includes a mixture of urban, suburban and rural settlements, and the activities engaged in by the people include fishing and fish mongering, crop husbandry and livestock keeping, commercial trade, brick making, stone quarrying and sand mining (Kalibbala et al., 2022; Ssemukasa & Kearney, 2014; Twebaze, 2010). HIV is a widespread disease in the area because it is in Uganda's Central Region, which has a higher HIV prevalence than other regions (Twebaze, 2010; Wibabara et al., 2021). The district had a 7.7 percent HIV prevalence rate in 2020, compared to 5.4 percent national rate (Uganda AIDS Commission, 2021). The high rate of HIV in Wakiso District could be attributed to its bordering of Lake Victoria, hence hosting a high number of fishing communities, which communities record high rates of HIV in the country (The Republic of Uganda et al., 2016); as well as increased sex workers (Uganda AIDS Commission (UAC), 2009). High poverty levels in fishing communities push vulnerable women to engage in transactional sex as a means to secure resources (Béné & Merten, 2008; Fiorella et al., 2015). Additionally, the dominance of men in the fishing industry and their control over fish production can lead female traders to exchange sex with fishermen for better access and prices for fish (MacPherson et al., 2012). This power imbalance leaves women unable

to negotiate safe sex practices, increasing their risk of HIV infection (Kyei-Gyamfi, 2022; MacPherson et al., 2012).

3.2.3 Justification for selection of the study districts

Kampala was chosen as one of the study areas based on many factors. First, it is Uganda's capital and one of Africa's fastest-growing cities, with people from all backgrounds. This urban living exposes vulnerable populations to mental health stressors like limited close-knit social networks, poor housing, drug abuse, poverty, among others that cause depression. Second, Kampala was chosen for its high HIV prevalence of 6.9 percent, above the national average of 6.2 percent, and 87 percent ART enrollment of HIV-positive pregnant women for EMTC. Thus, a pregnant HIV-positive woman in an urban setting may experience depression due to the intersectionality of vulnerabilities. A combination of these factors will explain the burden of prenatal and postpartum depression in women living with HIV and their experiences.

Wakiso was chosen as another study region because of its proximity to Kampala, Uganda's capital, and various fishing communities. This is anticipated to promote social and economic connection between people from different origins in these places, which could boost HIV transmission through sex networking. Besides being Uganda's most populous district, Wakiso has some of the country's largest urban centres, with around 1,182,901 residents (Uganda Bureau of Statistics (UBOS), 2016). The process of urbanization across the globe is associated with challenges, like inadequate housing, poverty, and social issues like drug abuse and commercial sex work. Wakiso District, located in a developing country like Uganda, is no exception to these challenges. More so, the high HIV prevalence in Wakiso, which is highest amongst females of reproductive ages probably due to its urbanization and location close to the capital city Kampala (Kiwanuka et al., 2014), heightens the likelihood of encountering risk factors that can contribute to poor mental health, including depression.

3.3 Profile of Study Sites

Three study sites that were used for this study included, The AIDS Support Organisation (TASO) Mulago, Mildmay Uganda, and Mulago Specialised Women and Neonatal Hospital. In order to provide a good picture of the study sites, each site is discussed separately.

3.3.1 TASO Mulago

The AIDS Support Organisation (TASO) was established by Noerine Kaleeba, a Ugandan physiotherapist, educator and AIDS activist. Noerine founded TASO after her husband Christopher Kaleeba, faced discrimination and poor treatment in Mulago Hospital before dying from AIDS in 1986. As a result, Noerine and 15 other volunteers, seven of whom were HIV-positive, began reaching out to HIV/AIDS patients and their families. This established the first AIDS clinic in Uganda in April 1987 at Mulago Hospital at the Polio Clinic, and people infected and affected by HIV/ AIDS met here. Also, support and counselling were extended to people living with AIDS within the hospital wards (Global Health Delivery Project, 2011; TASO, 2015).

The group soon came to be known as “the AIDS Support Organization,” or “TASO.” The TASO philosophy revolved around “living positively with HIV and AIDS” and “dying with dignity.” TASO’s mission was to contribute to the process of preventing HIV infection, restoring hope, and improving the quality of life of persons, families, and communities affected by HIV infection and disease. In 1991, TASO became an NGO and expanded from a small support group to open clinics in government facilities to boost the national HIV/AIDS response. By 2001, TASO provided training, social assistance, counselling, limited medical treatment, community mobilisation, advocacy, and networking. TASO has decentralised its services and management into four regional service centres, one capacity building project, one training centre of excellence, and 11 service delivery centres outside Kampala (Global Health Delivery Project, 2011; The AIDS Support Organisation (TASO), 2015).

TASO Mulago, which also acts as the headquarter, is still at Mulago National Referral Hospital in Kampala, opposite the psychiatry ward. It serves a cross section of people, transient and migrant population, teens at high risk of HIV, and emerging city entertainment venues (TASO, 2020). Also, it operates within a 75 km radius and its catchment area covers the districts of Kampala, Mityana, Mukono and Wakiso. TASO Mulago helped 7,901 clients, including 5,733 women and 2,168 men, their families, and communities by June 2018. TASO Mulago provides psychosocial and therapeutic services to children, adolescents, youth, and adults to achieve the TASO vision of a world without HIV and AIDS. TASO, Mulago has clinic days for certain groups. These include Mondays for community interventions and drug distribution, Tuesdays and Thursdays for general clinic services, Wednesdays for the ART Clinic and community drug distribution. Again, the first Wednesday of every three months is allocated for facility drug distribution, while the second and third Wednesdays of each month are designated for the eMTCT clinic. More so, the fourth Wednesday of each month is reserved for the adolescent clinic, whereas Fridays are dedicated to community drug distribution (TASO, 2020). Currently, TASO-Mulago serves 438 mothers living with HIV. Of these, pregnant women who receive HIV care are 108, and the postpartum women are 330. More so, 97 percent of these women get pregnant when enrolled in HIV care, whereas 3 percent are newly HIV diagnosed.

3.3.2 Mildmay Uganda

Mildmay Uganda (MUg), previously known as Mildmay International in Uganda, was established in Kampala in 1998 as a centre of Excellence. Its primary focus was on delivering comprehensive services

related to HIV and AIDS prevention, care, treatment, training, and research. Located in Lweza on Naziba Hill, 12 kilometres off Kampala - Entebbe Road, Mildmay Uganda has evolved into an independent non-profit healthcare facility and hospital. Its mission centers on empowering communities for better health and sustainable livelihoods through the provision of high-quality healthcare, human resource development in healthcare, and research to influence health policy (Mildmay Uganda, 2019a). The organization has expanded its reach to serve nearly 6.5 million people, primarily concentrated in 16 districts of Central Uganda.

In addition, a multi-disciplinary approach to prevention, care and treatment is employed to focus on the physical, social, spiritual and emotional well-being of a client. Over the years, Mildmay Uganda has reported remarkable achievements such as 500,000 people being tested per year; over 84,000 people in care with 80 percent on life saving ARVs. It also provides support for over 16,000 OVCs and their families to access care and other socio-economic services; reaching over 6,000 children with HIV (Mildmay Uganda, 2019b; R. Nakigudde et al., 2014). When it comes to the mothers living with HIV being served by Mildmay Uganda Hospital, the financial year report of 2020/2021 indicates that 1,016 mothers were served, with a quarterly average of 254 unique attendances. More so, prenatal and postpartum mothers living with HIV are attended to everyday aside Wednesdays.

3.3.3 Mulago Specialised Women and Neonatal Hospital

Mulago Specialised Women and Neonatal Hospital is the women's unit within Uganda's largest hospital, Mulago National Referral Hospital, located on Mulago Hill, and serves as the teaching hospital of Makerere University College of Health Sciences (Kwesiga, 2018). The specialized hospital, which has 450 beds, was opened in 2018 to manage women and neonatal health complications, reduce maternal and newborn deaths, and decongest the main Mulago Hospital which performs 33,000 deliveries a year but has limited bed capacity (Ninsiima, 2016; Lubwama, 2018).

The specialised hospital houses amenities including prenatal clinics, delivery wards, surgical theatres, recovery rooms, postnatal wards, and an oncology wing to cater for gynaecologic cancers. Thus, the hospital offers specialised treatment for high-risk antenatal care, delivery and postnatal services and gynaecology services. Other services include surgical, ureteric re-implantation, treatment of gynaecologic cancers (e.g., ovarian cancer, fallopian tube cancers, uterine cancer, cervical cancer etc.), fistula repair, assisted reproductive health technologies like in-vitro fertilization (IVF), and other referred reproductive health-related complications (Kwesiga, 2018; Nabatanzi, 2018; Ninsiima, 2016).

3.4 Justification for the selection of the sites

Numerous reasons justify the selection of the three study sites. Firstly, TASO Mulago and Mildmay, Uganda were selected because for over a decade, the two non-governmental organisations not only provide comprehensive HIV and AIDS prevention, care, and treatment to HIV people alone, but also support their families financially and medically. Secondly, both organisations provide prenatal and postpartum EMTCT intervention to HIV-positive mothers. This provides the study with the best population of interest especially in knowing the depression burden and how these mothers are supported to enhance their mental health. On the other hand, Mulago Specialised Women and Neonatal Hospital, a public health facility, was chosen for this study because it provides well-established prenatal and postnatal care for mothers and their babies throughout the country. Due to the hospital's location, people from many socioeconomic backgrounds and places find it simpler to use its services, making it an appropriate site of study for improved demographic representation.

Additionally, the three study sites provide a good representation of the study districts of Kampala and Wakiso . TASO Mulago and Mulago Specialised Women and Neonatal Hospital are located in Kampala, and Mildmay Uganda is located in Wakiso, both health facilities serving mothers from all walks of life without discrimination. Furthermore, the direct engagement of the health professionals in these study sites

with mothers living with HIV and their families could inform the staff on the challenges their clients face at the individual, family, social and structural levels, that could influence poor mental health outcomes. This provides the study with an opportunity of getting rich information from key informants on their views and experiences about prenatal and postpartum depression in women living with HIV. Finally, having a representation from both the NGOs and a government owned institution provides a platform to compare how the two sectors are performing in terms of the availability and effectiveness of the mental health intervention programmes offered to prenatal and postpartum HIV positive women. It also provides an avenue for identifying mental health service gaps, which would enable improvement as well as screening and initiation of culturally sensitive mental health care services in HIV affected populations.

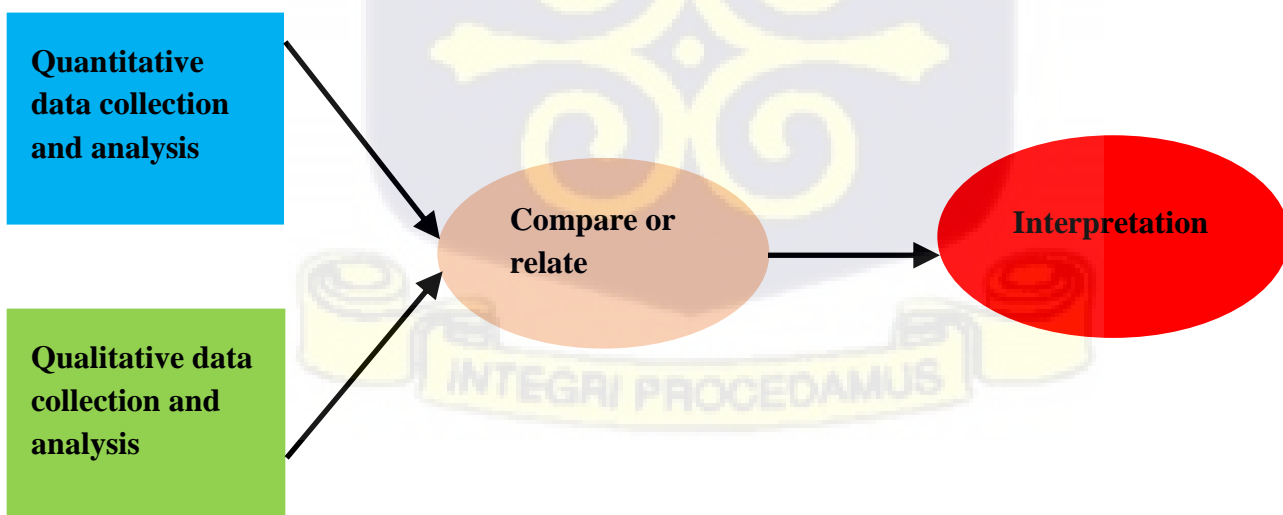
3.5 Philosophical basis for the study

The philosophical foundation for this study is pragmatism, which is founded on the epistemological stance that social phenomena and institutions behave differently. Hence, pragmatism believes that reality is not static, and thus it changes at every turn of events (Kaushik & Walsh, 2019). Pragmatic approaches emphasise shared meanings and collective action over single research methods (Hanson et al., 2005; Morgan, 2007). Also, pragmatists ascribe to the philosophy that the research question should drive the method(s) used, believing that ‘epistemological purity does not aid our understanding of the world (Onwuegbuzie & Leech, 2005). Whitehead and Schneider (2007) advise that mixed-methods research offers a way of making research more meaningful, complete and purposeful than is the case when using either a singular qualitative or quantitative approach and provides the researcher with other valuable tools to add to their research resources. As a result, pragmatism portrays the world as life itself, with objective and subjective components, which makes it easier to capture the observable, measurable and unobservable components of the subject matter under investigation. This allows a thorough understanding and appreciation of social phenomena being studied.

3.6 Research Design

This study used a cross sectional and descriptive study design using mixed method approach of both quantitative and qualitative methods. The mixed method approach employed is one in which a researcher combines quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study. Also, mixed methods approach to research presents both numerical and textual data (Creswell & Garrett, 2008; Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2010; Williams, 2007). In particular, the concurrent triangulation mixed methods design was utilized in this study. In this design, the researcher gathers and analyses both quantitative and qualitative data simultaneously, usually giving both forms of data equal weight. Data analysis is typically done separately in this approach of research design, and integration typically takes place at the data interpretation level. Discussing the degree of convergence, differences, or a combination of these in the data is a typical aspect of interpretation. This design is helpful for making an effort to corroborate, cross-validate, and confirm study results (Creswell, 2009; Hanson et al., 2005). Figure 3.4 provides a graphical summary of the concurrent triangulation mixed methods design.

Figure 3.4: A graphical summary of concurrent triangulation mixed methods design.



Source: (Creswell, 2014)

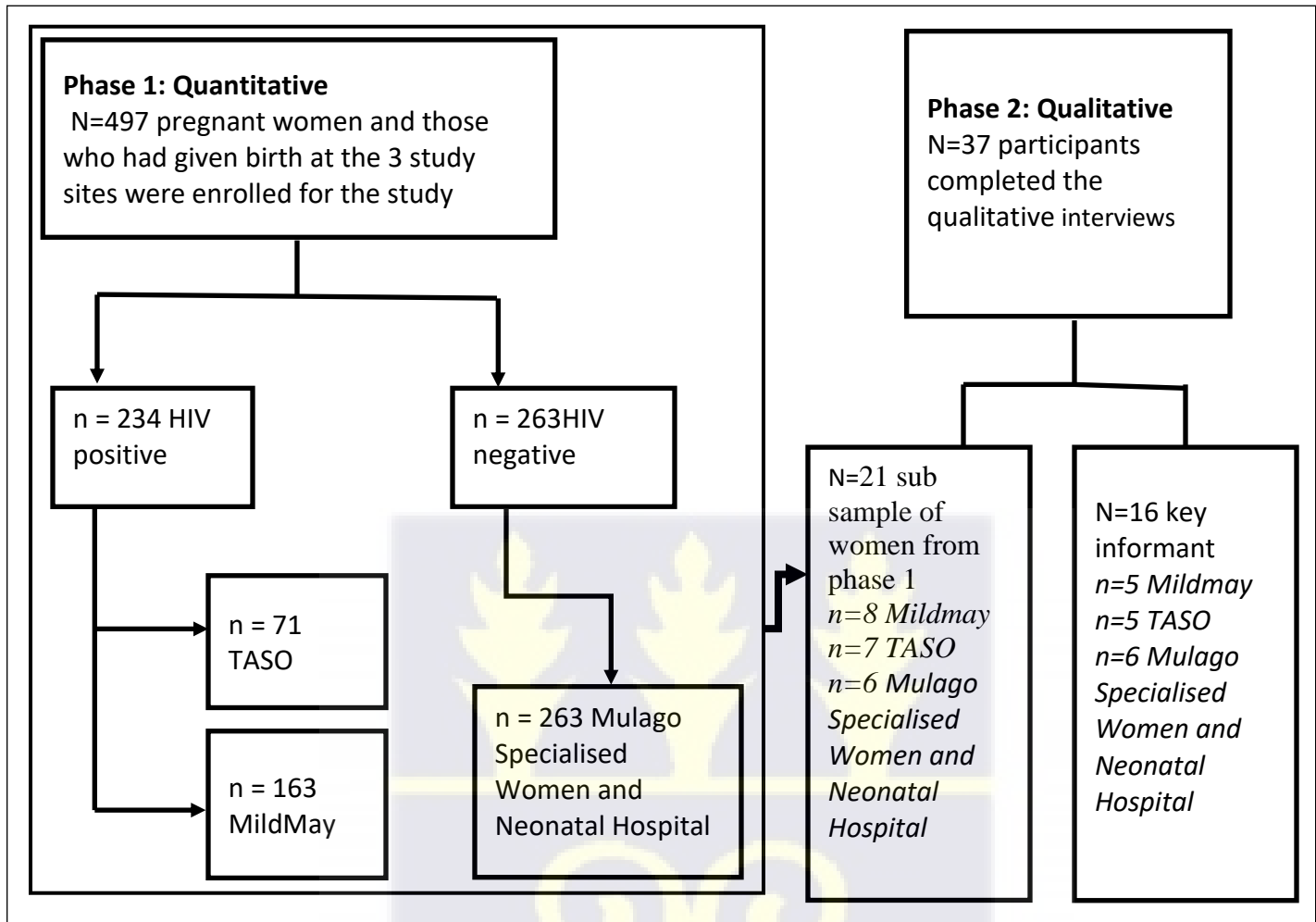
From the illustration above, in the concurrent triangulation mixed method, both quantitative and qualitative data are collected simultaneously, and they are typically combined during the interpretation or discussion phase of the research. This merging process is carried out to facilitate easy comparisons and the integration or comparison of results from both data sources in a side-by-side manner within the discussion section. In this approach, the quantitative statistical findings are presented first, followed by relevant qualitative quotes that either support or contradict these quantitative results. The primary objective of this research design is to compensate for the inherent weaknesses of one method by leveraging the strengths of the other method or conversely, the strength of one adds to the strength of the other (Creswell, 2009). This mutually strengthens the research findings from each source (Connelly, 2009; Creswell & Garrett, 2008). This approach enhances the reliability and validity of the study's findings and allows for a comprehensive, holistic, and context-rich depiction of the studied subject(s) (Creswell, 2007; Denzin & Lincoln, 2011).

In this study, which sought to know the burden of prenatal and postpartum depression in women living with HIV, the qualitative aspect was undertaken after the quantitative approach, and both methods were given equal weights to help understand the degree of the phenomenon under investigation as well as the lived experiences of the population under study to necessitate culturally relevant intervention strategies. The approach of integrating both qualitative and quantitative methods in research planning, sampling, data collection and analysis was best suited due to a wide range of issues explored. First and foremost, there was a need to understand the prevalence of prenatal and postpartum depression in women living with HIV; know the women's knowledge of prenatal and postpartum depression as this could influence their health seeking behaviour; identify the perinatal characteristics and depression levels among Women Living with HIV; and understand the relationship between prenatal and postpartum factors and depression in these women. Secondly, there was the need to explore the prenatal and postpartum experiences of Women

Living with HIV. This contextually helped in assessing the different psycho-social, cultural, medical, lifestyle, among other factors that influence prenatal and postpartum depression in the targeted population. Also, a combination of qualitative and quantitative measures ensured that the different tools and techniques employed in this study addressed the inherent inadequacies in each approach. In this way, important nuances were analysed and the connection between variables of concern explored.

In all, a sample of 497 women who were pregnant and those who had recently given birth participated in this study during the first phase, which was quantitative in nature. This comprised of 234 mothers living with HIV (71 from TASO Mulago and 163 from Mildmay Uganda) and 263 HIV negative mothers from Mulago Specialised Women and Neonatal Hospital who served as the comparison group. Out of this population, 21 mothers (8 from Mildmay Uganda; 7 from TASO; and 6 from Mulago Specialised Women and Neonatal Hospital) were purposefully sampled and called back for the second phase to follow-up with qualitative interviews. Again, 16 key informants including 5 from Mildmay Uganda; five from TASO; and six from Mulago Specialised Women and Neonatal Hospital were recruited to give their experiences in working with these mothers. A comparison group of HIV negative women was added in this study because an HIV positive status can contribute to depression regardless of being pregnant or not. On the other hand, pregnancy and after birth periods also can also contribute to depression despite of being HIV positive or not. Therefore, having these study groups together was meant for comparison purposes on the degree of prenatal and postpartum depression in these categories of persons, thereby coming up with conclusions and recommendations that are evidence based. A diagrammatic summary of the research design is presented in Figure 3.5 to provide an overview of the study and illustrate how the two research methods (quantitative and qualitative) were incorporated.

Figure 3.5: Overview of the research design



3.7 Sources of Data

The main source of information for the study was primary data. Primary data is collected directly by the researcher for their specific study. The common sources of primary data include questionnaires, interviews, focus groups, observations, surveys, case studies, and experiments (Kabir, 2016; Taherdoost, 2021). In this study, data was collected directly from the participants using a survey research instrument for quantitative design and through in-depth and key informant interviews with the participants for the qualitative design. This helped provide an expanded understanding of the research problem as experienced

by the participants in their environment and helped to identify interventions addressing the phenomenon comprehensively and adequately.

3.8 Eligibility Criteria

3.8.1 Inclusion Criteria

In the study, the inclusion criteria for the participants were:

- i. Women living with HIV of reproductive ages of 15-49 years who were pregnant or had given birth not more than a period of one and a half years.
- ii. HIV negative women of reproductive ages of 15-49 years who were pregnant or given birth not more than a period of eight weeks.
- iii. Women living with HIV who were pregnant or given birth and attending PMTCT HIV care services at TASO Mulago or Mildmay Uganda; and
- iv. HIV negative pregnant women and those who had given birth and attending ANC at Mulago Specialised Women and Neonatal Hospital.

Key informants included:

- i. Health care professionals (nurses and doctors) and counsellors or social workers from both health care centres and had worked with women living with HIV at the PMTCT clinics or the ANC clinic for at least a year.
- ii. All participants were fluent in either English or Luganda (the main local language spoken in the study areas).

3.8.2 Exclusion criteria

Women who were excluded from the study included:

- i. Those who were incapable of giving informed consent due to critical illness.
- ii. Those below 15 years or above 49 years.

- iii. Those who were not pregnant or had given birth for more than one and a half years for HIV positive mothers and eight weeks for HIV negative mothers.
- iv. Key informants who had worked with the health care centres for less than one year.

3.9 Quantitative Study Design

3.9.1 Quantitative Sample Size determination

The sample size estimation for TASO Mulago, Mildmay Uganda and Mulago Specialised Women and Neonatal Hospital was based on two different sample size formulae for infinite (unknown) and finite (known) populations given by Israel (1992). This is because the population of HIV negative mothers served at Mulago Specialised Women and Neonatal Hospital was unknown, while the population of HIV positive mothers served at Mildmay and TASO were known. When using this formula, the sample size of the unknown population was calculated first to help generate an estimation and input of the sample size for the known population; also known as new population. Israel's (1992) method for infinite and finite population sample size determination used in this study is given as follows:

$$\text{Infinite (unknown) population: } ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

SS = Sample size

Z = Given Z value

p = Proportion of population

C = Confidence level

Based on the equation above, the unknown number of mothers served at Mulago Specialised Women and Neonatal Hospital was calculated as:

$$Z = 1.96$$

$$C = 96\% (0.06)$$

$$P = 50\% (0.5)$$

$$SS = \frac{1.96^2 * (0.5) * (1-0.5)}{0.06^2} = \frac{0.9604}{0.0036} = 267$$

The formula for finite (known) population/correction for finite population is:

$$\text{new } SS = \frac{SS}{\frac{SS-1}{1 + \text{pop}}}$$

Where:

SS = Sample size

Pop = Population

Number mothers served at TASO Mulago = 438

Number mothers served at Mildmay, Uganda= 1,016

Total number of mothers served in the two institutions= 1,454

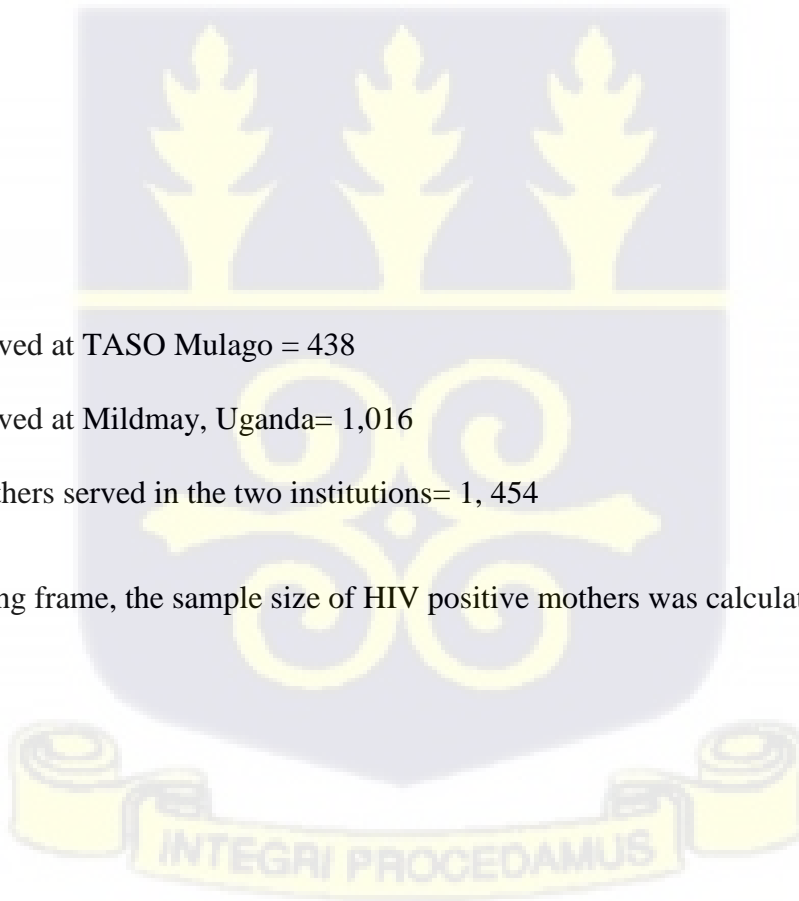
Based on the sampling frame, the sample size of HIV positive mothers was calculated as follows:

$$\text{new } SS = \frac{267}{\frac{267-1}{1 + 1,454}}$$

$$\text{new } SS = \frac{267}{\frac{266}{1 + 0.1829436039}}$$

$$1 + 0.1829436039$$

$$\text{new } SS = 226$$



Therefore, the specific values of the TASO Mulago and Mildmay Uganda were generated as in Table 3.1.

Table 3.1: Sample estimation for TASO Mulago and Mildmay Uganda

Sample Estimation for TASO Mulago	Sample Estimation for Mildmay Uganda
Number of HIV positive mothers served = 438	Number of HIV positive mothers served = 1,016
$\text{new ss} = \frac{438}{1454} \times 100 = 30\%$	$\text{new ss} = \frac{1016}{1454} \times 100 = 70\%$
$n = 0.3 \times 226$	$n = 0.7 \times 226$
n=68 women	n=158 women

Based on the calculations presented above, the estimated sample size for HIV negative mothers from Mulago Specialised Women and Neonatal Hospital was 267. Conversely, the estimated sample sizes for mothers living with HIV was 68 for TASO Mulago and 158 for Mildmay Uganda. This brought the total sample size for the study to 493 respondents to be selected. However, there was oversampling in some study sites and 497 respondents ended up participating in the quantitative phase. This included 72 respondents from TASO Mulago, 163 respondents from Mildmay Uganda, and 261 respondents from Mulago Specialised Women and Neonatal Hospital. The excess 9 participants interviewed at TASO and Mildmay (4 and 5 respectively) were to cater for the refusal and incompleteness of the interview. Again, the data of the excess sampled interviews was assessed and found valid. Since the two HIV and AIDS care facilities had been carefully selected due to their similar characteristics, the sample of prenatal and postpartum mothers living with HIV was evenly spread. Even at Mulago Specialised Women and Neonatal Hospital, the sample of prenatal and postpartum HIV negative mothers was evenly spread since the total number of mothers served was not known during the period of data collection.

3.9.2 Sampling Technique for Quantitative Study

Quantitative study participants were selected through both probability sampling, which involves random sampling technique and non-probability sampling. The probability sampling technique was applied to provide everyone in the population an equal chance of being selected which controls selection bias (Creswell, 2014). Specifically, simple random sampling and census method of data collection were used in this study. Simple random sampling method is the most straightforward of all the probability sampling methods, since it only involves a single random selection and requires little advance knowledge about the population (Bryman, 2012). On the other hand, census method of data collection is an attempt to gather information about every individual in a population. The use of the census frame is appropriate when conducting a case intensive study or when the geographical area under examination is limited in terms of accessibility, or when the population being studied is unique or special and hence can easily be identifiable. One of the greatest advantages of this method of data collection is that all participants have the same opportunity to participate in the study, and it is capable of yielding representative results. Although, some participants may choose not to participate, but at least the opportunity to do so is presented to them (Henry, 2009; Parker, 2011).

The three health facilities (TASO Mulago, Mildmay Uganda, and Mulago Specialised Women and Neonatal Hospital) where participants were recruited were purposely selected. This is because they are renowned specialized health institutions dealing with a particular health conditions, which were of study interest to the researcher. To attain the sample size for mothers living with HIV in this study, probability sampling technique was used, and this was essential in order to obtain a representative and unbiased sample. Hence, every effort was made to ensure that each member of the population had an equal chance of being selected. Specifically, simple random sampling was used, which involved the researcher working closely with clinic staff to obtain a list of women living with HIV who were pregnant and/or have given

birth who had come to the PMTCT clinic on that day; to determine the eligibility of the clients to participate in the study. On every clinic visit, these clients are served in the order of who came first and are identified either by their names or client identification numbers, which are also given in the order of who came first. With this, therefore, the researcher assigned numbers to the names or client identification numbers on the lists and after randomly generating the respondents for the study. The clients would be seated in the waiting area waiting for their turn to receive their PMTCT services, and then six randomly selected names or client identification numbers would be called out at a go. These would be asked to meet the research assistants, who again briefed the client about the study personally and addressed the questions that came up. Each mother who accepted to participate in the study had an informed consent obtained from her before commencing with the interview.

Conversely, in getting the sample for mothers who are HIV negative at Mulago Specialised Women and Neonatal Hospital, the census method of data collection was used. The researcher was acquainted with the sensitive nature of this study for the respondents, with particular reference to the potential reluctance of some respondents to participate in a study related to prenatal and postpartum depression. This aspect, combined with the socio-demographic characteristics of the respondents (such as working with notable public and private organisations, some of whom might be decision-makers within their various organisations and thus careful in disclosing their personal information; women of certain economic and education backgrounds; referral cases from other health facilities due to the national specialisation status of the health facility, etc.), could have potentially influenced low response rate. Therefore, census method of data collection was opted for in this site in order to mitigate the potential effects arising from the aforementioned characteristics of the sampled population, in addition to making the study findings more generalizable. Finally, the method of application helped to reduce the risk of bias in the findings of the study since the entire population of study was represented. To get the participants, the research team

worked closely with the nurses on duty attending to mothers to ensure that the right population of women were selected. This is because the hospital deals with all women regardless of their HIV status. To know the women's current HIV status, the participants were asked about their HIV status and when they last tested. Also, the files of the participants were requested from the records to verify if the participants were HIV negative. This is because in every woman's file, a specific code is indicated to show whether they are HIV positive or negative. The sample of prenatal and postpartum mothers was evenly spread in all the various levels and wings the hospital deals with (e.g., level 6, level 4, level 3, and the neonatal wing). Having a sample of mothers from all levels helped in getting a representative sample of the entire population of mothers served at the hospital, thereby making it possible to draw fair conclusions about the population concerning the phenomenon under study. At the end, the data collection attained a sample of 261 out of 267 mothers.

3.9.3 Quantitative Data collection and handling

The quantitative data were collected using the structured questionnaire via the Computer Assisted Personal Interview (CAPI), which was designed using koBoCollect/Toolbox. The CAPI-based questionnaire was elaborate with 135 structured questions on socio-demographic characteristics; measurements of prenatal and postpartum depression (The Self-Reporting Questionnaire (SRQ), and Edinburgh postnatal depression scale (EPDS); social support; HIV status; pregnancy history, lifestyle history, health history, and family history); and the research assistants helped the participants to respond to the questionnaire. All the essential questions were in compulsory format to avoid missing data. The main equipment that were used in data collection were the tablets; and the data captured in CAPI were first stored locally on the device. To manage the quantitative data, the all locally-stored data were examined at the end of each day for completeness. Thereafter, the data were synchronized and transmitted electronically to the main server

using the internet within 24 hours of collection to minimise the risk of losing any information or data. Using the CAPI helped in validating the data as it was being captured, which improved the data quality.

Data checks and controls were also carried out to ensure completeness, accuracy, prevention of wrong entries, identify and remove erroneous data, and other errors to ensure data quality, as well as to highlight useful information. Finally, the survey data initially captured in KoboCollect/Toolbox were exported to IBM SPSS Statistics Software, Version 23.0; first, to describe the structure of the data by performing basic checks and manipulations which included counts, summaries, listings, replacements, dropping duplicate observations, sorting, merging, and generation of variables and their properties. Secondly, this necessitated carrying out the final analysis. During data analysis, a statistical significance level of at least 10 percent was used because the research was interested in ensuring 90 percent confidence in the research findings.

Before the data collection process, fieldwork preparations were made. This involved training a team of six (6) research assistants which had been recruited from the study sites and other individuals who had experience in psychosocial and mental health counselling, with additional qualifications in research and human subject protection to provide counselling services in case of any emotional breakdown during the interview. The training enabled the research assistants to be more conversant with the research instrument and the use of the CAPI. After this, they now pre-tested the instrument on six women from the same target population pool at TASO Mulago. This was aimed at evaluating the suitability of the interview questions, and to ascertain any flaws, limitations, or other problems in order to enable for any necessary revisions prior to the study's execution. The data from the pre-test were not used in the analysis for this study, but to evaluate the effectiveness of the instruments. TASO Mulago which was one of the study locations for the main study was used for pretesting because according to Hashim et al. (2022), it is important that the sample used in the pretest as well as the conditions used closely resemble those who will be sampled

during the actual data collection. This helps in minimizing errors, reducing selection bias, and generating valid research outcomes (Hallberg et al., 2018; Hashim et al., 2022).

3.10 Measurement of Variables

3.10.1 Dependent variable

Depression

3.10.1.1 The Self-Reporting Questionnaire

Depression symptoms were assessed using the self-reporting questionnaire (SRQ-20). The SRQ-20 is recommended by the World Health Organization for screening common mental disorders such as depression and anxiety in developing countries (Nakimuli-Mpungu et al., 2014). As a result, the questionnaire has been translated in many developing countries into a minimum of 20 languages, with acceptable measures of reliability and validity (Beusenbergh et al., 1994). In Uganda, Nakimuli-Mpungu et al. (2012) translated and culturally adapted the SRQ-20 questionnaire to investigate its psychometric properties in HIV-positive individuals. The questionnaire was specifically translated from English to Luganda (the common spoken language in Uganda) to increase comprehension and relevance to the local population. The SRQ-20 questionnaire was found as a reliable and valid screening measure for depression among HIV-positive individuals. Depression was either positive or negative based on the optimal cut-off point of 6 or more (≥ 6) scores, which had 84 percent sensitivity and 93 percent specificity for current depression, and 75 percent sensitivity and 90 percent specificity for any depression (current and in the past). Hence, the use of this screening instrument could potentially improve detecting and managing depression in this setting.

In the present study, depression in Women living with HIV was assessed with a 20-items questionnaire to assess individual feelings over the past 30 days. The questions had a “Yes” or “No” answer; and a score of “1” indicated the symptom presence, while a score of 0 indicated the symptom absence; with a maximum score of 20. Like Nakimuli-Mpungu et al.’s (2012) cut-off point for depression in people living

with HIV in Uganda, this study used a cutoff point of 6 or more (≥ 6) scores. A woman living with HIV and either pregnant or has given birth who scored 6 and above was categorized as depressed while those who scored below 6 were considered as not depressed.

3.10.1.2 Edinburgh postnatal depression scale (EPDS)

The EPDS, which was developed over 30 years ago is the most widely used self-report instrument to screen women for prenatal and postpartum depression. It involves a set of 10 screening questions, that have been translated into over 60 languages, and validated in most regions of the world (Cox, 2017; Smith-Nielsen et al., 2018). The questions are related to maternal feelings during the past 7 days and refer to depressed mood, anhedonia, guilt, anxiety, and suicidal ideation (Wisner et al., 2002). Each item is scored on a 4-point scale (from 0 - 3), with a total score ranging from 0 to 30, which is found by adding together the scores for each of the 10 items. Higher scores indicate more depression symptoms (Perinatal Services BC, 2015). Perinatal Services BC (2015) provides an interpretation of the various EPDS scores such as less than 8 (depression not likely); 9-11 (depression possible); 12-13 (fairly high possibility of depression); and 14 and higher (positive screen for probable depression).

EPDS has been used in the context of both developed and developing countries, e.g. Denmark, Austria, Singapore, Korea, Taiwan, Guyana, South Africa, Zimbabwe, Kenya etc. (Marshall & Bethell, 2006; Zubaran et al., 2010), to screen and measure prenatal and postpartum depression. Though the sensitivity and specificity of the validated EPDS screening instrument vary by region (Stringer et al., 2014), the cut-off score across African countries where the EPDS is adopted varies between ≥ 10 and 11/12 (Chibanda et al., 2009, 2010; January & Chimbari, 2018; Ngocho et al., 2019). Hence, using the Edinburgh postnatal depression scale in this study to measure and screen depression in Uganda helped in identifying the various cross-cultural variables that might influence prenatal and postpartum depression, as well as the perception of mental health in the country.

Like other similar studies conducted in women living with HIV (e.g., in Tanzania and Zimbabwe), this study used EPDS cut-off point of ≥ 10 to identify HIV positive pregnant women and those who have given birth with depressive symptom (Chibanda et al., 2009; Ngocho et al., 2019). Those HIV positive pregnant women and those who have given birth who scored 10 and above were categorized as depressed women while those who scored below 10 were considered as non-depressed.

3.10.2 Independent variables

3.10.2.1 Socio-demographic characteristics

The socio-demographic variables were assessed using a standardized demographic questionnaire. This included information on basic socio-demographics (such as age, religion, educational level, marital status, employment status, level of income, ethnicity, and number of dependents).

Age in years: This was treated as a categorical variable in all analyses. Hence, the participant's age was categorised into reproductive years of (i) 15-24 (ii) 25-34 (iii) 35+.

Religion: Since religious affiliation is a categorical variable, it was put into 5 sub-groups of (i) No religion (ii) Christianity (iii) Islam (iv) Traditional/spiritualist and (v) Other.

Education level: The highest level of education was categorised as (i) Primary or less (ii) Secondary (iii) Higher.

Marital status: This was treated as a categorical variable. And this included categories of (i) married (ii) cohabiting (iii) Widowed (iv) divorced (v) separated and (vi) single/never married.

Employment status: This was categorized into (i) Not currently working and (vii) Currently working.

Level of income: The range was in Ugandan shillings (UGX). This was categorised to include (i) less than 10,000 (ii) 100,001-300,000 (iii) 300,001-500,000 (iv) More than 500,000 (v) Undisclosed amount, (vi) No income. An equivalent of 1 UGX equals to 0.0002692 USD.

Ethnicity: The ethnic group variable was categorized to include (i) Baganda (ii) Banyakole (iii) Basoga (iv) Bakiga (v) Banyoro (vi) Bagisu (vii) Iteso (viii) Batooro (ix) Langi (x) Acholi (xi) Lugbara (xii) Karamojong (xiii) Other (xiv) Non-Ugandan.

Number of dependents: This was a continuous variable where respondents were asked how many dependants they had, and how many of them were female or male.

3.10.2.2 Lifestyle factors

Alcohol use: Alcohol use is defined as “having drunk any alcohol in the past 12 months, for instance, beer, wine, waragi or other spirits, or home-made beer” (Wagman et al., 2020). Men are advised to limit their daily alcohol intake to 3-4 units on a regular basis, while women should keep their daily consumption to 2-3 units. This distinction is made because women's bodies are less efficient at metabolizing alcohol compared to men, which increases their vulnerability to potential health risks (Department of Health, 2008).

Alcohol use in this study was measured with a series of questions. First, the participants were asked if they have consumed any kind of alcoholic beverage or not during pregnancy or after giving birth. The responses were “Yes” or “No”. According to WHO (2000), a response of ‘Yes’ defines the respondent as a drinker, and a response of ‘No’ defines the respondent as an abstainer for the period in question. Secondly, among those participants who reported any alcohol use, they were asked to provide details of alcohol consumption over the past 30 days. This includes the brand of alcohol consumed (e.g., beer, wine, spirits, i.e. whisky or gin, or any drink containing alcohol), how often they consumed alcohol, and the

amount of alcohol consumed per sitting (numbers of standard drinks). Using the previous work in Uganda (Kabwama et al., 2016), one standard alcoholic drink per sitting will be an equivalent of (a) a 285-ml bottle or can of beer, (b) a 120-ml glass of wine (factory distilled or locally brewed), and (c) a 30-ml glass/tot of a spirit or gin (factory distilled or locally brewed). This helps to evaluate the current trend of alcohol use by women, where one week approach is used by summing up the number of standard drinks per sitting. Participants in this study with an alcohol consumption rate of over 6 drinks per day were categorised as highly at risk of prenatal and postpartum depression; those with alcohol consumption rate of over 2-3 drinks per day were categorised as increasing risk of prenatal and postpartum depression, while those with no more than 2-3 drinks per day were categorised with lower risk of prenatal and postpartum depression.

Smoking: This looked at tobacco products such as pipes, cigars, cigarettes, chewing tobacco or snuff, and questions on tobacco use in SAGE data were used. The respondent was asked if she currently uses any tobacco product. The responses were “Yes” or “No”. Those who indicated “Yes” were grouped as currently smoking and those who indicated “No” as currently not smoking.

Violence and abuse: The forms of abuse that were examined included sexual abuse, emotional abuse, physical abuse, and controlling behaviours. The question that was asked to the respondent was whether they had ever been abused. The responses were “Yes” or “No”.

3.10.2.3 Family history

Family history of depression: The components that were examined in this study were parents, siblings, and other relatives. The question that was asked was if the respondent had a relative suffering from depression. The responses were “Yes” or “No”.

History of abuse and violence: This variable looked at the respondents' childhood sexual, emotional, and physical abuses from close family members, relatives, and other persons like friends, neighbours, schoolmates, and strangers.

History of substance use such as alcohol use and smoking: The components that were examined in this study were parents, siblings, and other relatives. The question that was asked was if the respondent had a relative who uses alcohol or smokes. The responses were “Yes” or “No”.

3.10.2.4 Pregnancy history

Unplanned/unwanted pregnancy: This examined the decision to have the current pregnancy. The question that was asked was whether they planned to become pregnant with a “Yes” or “No” response.

Pregnancy complications: The conditions that were examined in this study were high blood pressure, fits/convulsions, bleeding while pregnant, anaemia/blood transfusion, dehydration, foetal problems (e.g., unborn baby with poor growth), and failure to respond to ARVs. The question that was asked concerning these was whether the respondents had any of these conditions, the response being “Yes” or “No”.

Gravidity Status: This looked at the number of times the woman had been pregnant and categorised them into primigravida (pregnant for the first time), multigravida (been pregnant 2 to 4 times), and grand multigravida (been pregnant 5 times or more) (Acheanpong et al., 2022).

Trimester: Trimester is a period of roughly three months, and a pregnancy is typically divided into three trimesters corresponding to distinct stages of development. In this study, the trimester included the first trimester (1-3 months of pregnancy), second trimester (4-6 months of pregnancy), and third trimester (7-9 months of pregnancy) in line with Libre Texts (2023), Office on Women's Health (2021), and Rodrigo et al. (2017).

3.10.2.5 Health history

HIV status: This examined whether a woman was infected with the Human Immunodeficiency Virus (HIV) or not. The question that was asked on this variable was whether the participant was “Positive” or “Negative”. An “HIV-positive” status meant the person had been diagnosed with HIV virus, while “HIV-negative”, indicated the person had been tested and showed no evidence of HIV in a blood (UNAIDS, 2015). In addition, the knowledge of the mother’s HIV status was assessed, and this looked at the period when the mother living with HIV came to first know about her HIV status. This was categorized into (i) before getting pregnant (ii) during pregnancy (iii) after giving birth and (iv) Other.

History of chronic diseases: The question asked about this variable was whether the respondents had ever been diagnosed with chronic conditions of hypertension (high blood pressure), diabetes (high blood sugar), asthma, and cardiac disease. The responses were “Yes”, “No”, or “don’t know”.

Past depression Status: This variable sought to understand the history of experiencing depression among the women. Participants were asked whether they had a history of depression with a “Yes” or “No” response.

3.10.3 Intermediate Variables

Complications after delivery: This examined complications such as excessive vaginal bleeding, anaemia/blood transfusion, fever, pus discharge from the vagina, pain and/or swelling around the nipples, and failure to respond to ARVs. The question asked about these was whether the respondents had any of these conditions, and they were to respond with a “Yes” and “No” answer.

The child’s HIV status: The question asked was if the mother knew the child’s HIV status, with the responses being “Yes”, “No”, or “Not yet confirmed”. Also, if the mother knew the child’s HIV status, another question was asked about the HIV status of the child. The responses to this question were either

“Positive” or “Negative”. Finally, if the child’s HIV status was positive, a follow-up question was asked on how the mother felt about the child’s HIV positive status. The responses were (i) very often worried (ii) often worried (iii) sometimes worried or (iv) Never worried.

3.10.4 External factors

Food security: Household Food Insecurity Access Scale (HFIAS) Generic questions were asked to the participants with a recall period of four weeks (30 days). Firstly, the respondent was asked an occurrence question to examine whether the condition in the question happened at all in the past four weeks, and the responses were “Yes” or “No”. Secondly, a respondent with a “Yes” reply was asked the frequency of the occurrence to determine whether the condition happened rarely (once or twice), sometimes (3 to 10 times) or often (more than 10 times) in the past four weeks.

Living conditions: This was categorised as (i) a shared house within family homestead (ii) personal separate house but at family homestead (iii) a shared house within non-family homestead and (iv) personal separate and family independent house.

Access to accessing health care services: This looked at the accessibility and services provided by the health care facilities including the distance between home and the health facilities, which could contribute to high chances of prenatal and postpartum depression in Women living with HIV. The responses to the distance between home and the health facility were in metres, kilometres, and miles to allow respondents to select the unit they were well versed with. However, all the distance units were later converted into one measurement scale and that is kilometres.

Social Support: The Multidimensional Scale of Perceived Social Support (MSPSS) questionnaire was used to assess the social support in the study. This included 12 items which directly assessed three main sources of support including the family, friends and significant other. Each of these groups consisted of

four items, with a 7-point rating scale of: 1- very strongly disagree, 2- strongly disagree, 3- mildly disagree, 4- neutral, 5- mildly agree, 6- strongly agree and 7- very strongly agree (Zimet et al., 1988). In this approach any mean scale score ranging from 1 to 2.9 could be considered low support; a score of 3 to 5 could be considered moderate support; a score from 5.1 to 7 could be considered high support. The MSPSS scale, has been adopted and validated for use in Uganda (Nakigudde et al., 2009). Hence, the locally adopted MSPSS questionnaire helped in documenting the sources of social support that are culturally relevant to the study participants.

Like other similar studies conducted abroad and in Uganda, perceived social support was categorized into three sub-scale structures. These included the family sub-scale which comprised of questions 3, 4, 8, & 11; the friends sub-scale which included questions 6, 7, 9, & 12, and the significant other sub-scale which consisted of questions 1, 2, 5, & 10 (J. Nakigudde et al., 2009; Nakimuli- Mpungu et al., 2014; Seffren et al., 2018). To calculate the mean scores of social support women living with HIV get during their prenatal and postpartum periods, two steps were followed. Firstly, the mean of each sub-scale was generated by finding the sum across items (e.g., significant other = 1, 2, 5, & 10, then divide by 4; family = 3, 4, 8, & 11, then divide by 4; and friends = 6, 7, 9, & 12, then divide by 4). Next, the total support scale was calculated by having a sum of all the 12 items across the sub-scales, and divided by 12. The higher the scores, the better the social support.



Table 3.2: Variable description, measurement, form and categorisation

Variable type and name	Description and measurement	Variable form and categories
Dependent variable		
Depression	Respondent asked 20 questions on their feelings over the past 30 days using the SRQ-20 questionnaire	Categorical variable Depressed Not depressed
	Respondent asked questions are related to maternal feelings during the past 7 days on depressed mood, anhedonia, guilt, anxiety, and suicidal ideation	Categorical variable Depressed Not depressed
Independent variables		
Socio-demographic characteristics		
Age	Age of respondents' in reproductive years	Categorical variable i) 15-24 ii) 25-34 iii) 35+
Religion	Respondent's religious affiliation. It was put into 5 sub-groups	Categorical variable (i) No religion (ii) Christianity (iii) Islam (iv) Traditional/spiritualist (v) Other
Education level	The highest level of education attained by the respondent.	Categorical variable (i) Primary or less (ii) Secondary (iii) Higher
Marital status	Respondent's marital status.	Categorical variable (i) married (ii) cohabiting (iii) Widowed (iv) divorced (v) separated (vi) single/never married
Employment status	If the respondent is employed or not	Categorical variable Not currently working Currently working
Level of income	Respondent's income received monthly. The range was in Ugandan shillings (UGX). An equivalent of 1 UGX equals to 0.0002692 USD	Categorical variable (i) less than 10,000 (ii) 100,001-300,000 (iii) 300,001-500,000 (iv) More than 500,000 (v) Undisclosed amount (vi) No income
Number of dependents	If the respondent's number of dependants	Continuous variable

Table 3.2 (Continued): Variable description, measurement, form and categorisation

Variable type and name	Description and measurement	Variable form and categories
Ethnicity	Respondent's ethnic group.	Categorical variable i) Baganda ii) Banyakole iii) Basoga iv) Bakiga v) Banyoro vi) Bagisu vii) Iteso viii) Batooro ix) Langi x) Acholi xi) Lugbara xii) Karamojong xiii) Other xiv) Non-Ugandan
Lifestyle factors		
Alcohol use	Having consumed any kind of alcoholic beverage or not during pregnancy or after giving birth. The index created using if they have taken alcohol (no and yes). Brand of alcohol consumed. How often they consumed alcohol. The amount of alcohol consumed per sitting.	Categorical variable
Smoking	Having consumed any kind tobacco products (e.g. pipes, cigars, cigarettes, chewing tobacco or snuff). Questions on tobacco use generated from SAGE data	Categorical variable Currently smoking Currently not smoking
Violence and abuse	If the respondent has ever been abused. Forms of abuse included sexual abuse, emotional abuse, physical abuse, and controlling behaviours	Categorical variable No Yes
Family history		
Family history of depression	If a respondent has a relative suffering from depression	Categorical variable No Yes
History of abuse and violence	Respondents' experience of sexual, emotional, and physical abuses from close family members, relatives, and other persons	Categorical variable No Yes
History of substance use such as alcohol use and smoking	If the respondent has a relative who uses alcohol or smokes (e.g. parents, siblings, and other relatives)	Categorical variable No Yes
Pregnancy history		
Unplanned/unwanted pregnancy	If the respondent planned for the current pregnancy	Categorical variable No Yes
Gravidity Status	The number of times the respondent has been pregnant	Categorical variable 1. primigravida (<i>pregnant for the first time</i>) 2. multigravida (<i>been pregnant 2 to 4 times</i>) 3. grand multigravida (<i>been pregnant 5 times or more</i>)

Table 3.2 (Continued): Variable description, measurement, form and categorisation

Variable type and name	Description and measurement	Variable form and categories
Trimester	The stage of the respondent's pregnancy	Categorical variable 1. first trimester (<i>1-3 months of pregnancy</i>) 2. second trimester (<i>4-6 months of pregnancy</i>) 3. third trimester (<i>7-9 months of pregnancy</i>)
Pregnancy complications	If the respondent experienced any of the following complications while pregnant 1. high blood pressure 2. fits/convulsions 3. bleeding while pregnant 4. anaemia/blood transfusion 5. dehydration, foetal problems (<i>e.g., unborn baby with poor growth</i>) failure to respond to ARVs.	Categorical variable No Yes
Health history		
HIV status	Whether a woman was infected with the HIV or not	Categorical variable HIV-positive HIV-negative
History of chronic diseases	If the respondent had ever been diagnosed with any of the following chronic conditions: hypertension (high blood pressure), diabetes (high blood sugar), asthma, and cardiac disease	Categorical variable No Yes
Past depression Status	If the respondent has a past history of depression	Categorical variable No Yes
Intermediate Variables		
Complications after delivery	If the respondent experienced any of the following complications after delivery 1. excessive vaginal bleeding fits/convulsions 2. anaemia/blood transfusion 3. fever 4. pus discharge from the vagina 5. pain and/or swelling around the nipples failure to respond to ARVs.	Categorical variable No Yes
The child's HIV status	if the respondent knew their child's HIV status	Categorical variable No Not yet confirmed Yes

Table 3.2 (Continued): Variable description, measurement, form and categorisation

Variable type and name	Description and measurement	Variable form and categories
External factors		
Food security	Household food insecurity access scale (HFIAS) measured by nine severity questions	Continuous variable
Living conditions	Respondent's living conditions	Categorical variable (i) a shared house within family homestead (ii) personal separate house but at family homestead (iii) a shared house within non-family homestead (iv) personal separate and family independent house.
Access to accessing health care services	distance between home and the health facilities measured in kilometres	Continuous variable
Social Support	The Multidimensional Scale of Perceived Social Support (MSPSS) measured by 12 items directly assessing three main sources of support(the family, friends and significant other)	Categorical variable (i) Low support (ii) Moderate support (iii) High support

3.11 Methods of quantitative data analysis

The quantitative data were analysed using statistical analysis software package IBM SPSS Statistics version 23.0, for both the descriptive and inferential analyses. Cross-sectional analyses were carried out at the univariate, bivariate and multivariate levels based on the objectives of the study. The cross-sectional data are helpful in examining the variations between individuals (the cross-section of respondents) in terms of their prenatal and postpartum experiences and depression.

3.11.1 Univariate Analysis

The analysis comprises using descriptive statistics such as frequency tables, diagrams, charts (e.g., bar graphs and pie-charts) and means to describe the socio-demographic characteristics of the respondents (age, type of respondent, religion, education level, marital status, employment status, level of income, ethnicity, and number of dependents).

3.11.2 Bivariate Analysis

After the univariate analysis, bivariate level analysis was conducted using cross-tabulations and Chi-Square tests in order to determine the relationship between the dependent variable (depression) and other variables. The Chi-Square test was conducted for the socio-demographic characteristics, and perinatal characteristics (pregnancy history, health history, lifestyle factors, family history, complications after delivery; the child's HIV status; food security; social support; dwelling conditions; and access to health care facility). This allowed in determining the associations among those variables and depression outcomes. To determine the association between the variables, Pearson Chi-square test was used at an alpha value of 0.05 as a significance level.

3.11.3 Multivariate Analysis

The multivariate analysis was done using binary logistic regression model was employed to assess the factors influencing depression at each of the prenatal and postpartum domains. The purpose for using this model was because the outcome variable was categorised into two as prenatal depression and postpartum depression. Binary logistic regression model was used to identify variables independently associated with depression, as well as determine the strength of this relationship while controlling for other variables. The first model analyzed the likelihood of prenatal depression while controlling for postpartum factors. On the other hand, the second model examined the likelihood of postpartum depression while controlling for prenatal factors. Finally, the final model analyzed the overall likelihood of depression experienced by women living with HIV during their prenatal and postpartum periods. The general binary logistic regression model that was used for the multivariate analyses is:

$$\text{Log} \frac{(p)}{1-p} = \beta_0 + \beta_1 x_1 + \dots + \beta_n x_n$$

Where;

P =Probability of experiencing depression (1 if experienced, else 0)

χ_1 - χ_n = Main predictor variables [Key independent variables] and selected prenatal and postpartum characteristics.

$\beta_0, \beta_1, \dots, \beta_n$ = Regression coefficients

3.12 Qualitative Study Design

3.12.1 Sampling Technique for Qualitative Study

Purposive sampling technique was adopted in selecting in-depth and key informant interview participants. A sample of prenatal and postpartum HIV-positive and HIV-negative women was drawn from the original sample used in the first phase of the quantitative study, from all the three study sites. Data from these women were collected through in-depth interviews to further explore prenatal and postpartum depression experiences among them. To select these mothers, a list of respondents who had replied to a number of questions on the self-reporting questionnaire (SRQ 20) and the Edinburgh postnatal depression scale (EPDS), which instruments had been used to measure depression in the quantitative study, was made by each research assistant as this was an indication of the presence of some form of depression. Therefore, for such identified women, at the end of the survey questionnaire, each client was requested to indicate their willingness to come back for in-depth interviews if contacted. If the mother accepted, their names and contact were written down to enhance communication. In addition to writing down their names, a quick descriptive analysis was done to identify and confirm individuals presenting with more depression symptoms to inform the rightful selection of qualitative participants. It is after this that the identified participants were called to seek their permission to participate in the second phase of the study and also to share more details on the processes involved in the qualitative study. This gave room for them to voluntarily accept to participate in the second phase of the study. Those who accepted were booked for

appointment on a day and time convenient for them; and had their interviews conducted at the health facilities.

Key informants who had experience in working with these mothers at least for one year were selected through the heads of the departments in the clinics for TASO and Mildmay and in-charges of the various health units for Mulago Specialised Women and Neonatal Hospital. This helped in identifying health care professionals (nurses and doctors) and counsellors, social workers, and mentor mothers who had knowledge and experience in working with women during their prenatal and postpartum periods. All the identified key informants were contacted to confirm their participation, as well set dates and venues according to convenience. Their consent to participate in the study was sought and validated by signing on the key informant consent form.

3.12.2 Qualitative Sample Size

The sample for the qualitative phase of this study was determined by the principle of data saturation, a point when emerging concepts have been fully explored and no new data or themes are being generated (Bryman, 2012). As a result, a sample of 37 qualitative study participants was used as by this number data saturation had been attained. The 37 participants included 21 pregnant women and those who have given birth and 16 key informants. The 21 pregnant women and those who have given birth were recruited as follows per study site: 8 from Mildmay Uganda; 7 from TASO; and 6 from Mulago Specialised Women and Neonatal Hospital. On the other hand, the 16 key informants recruited from each study site included 5 from Mildmay Uganda; 5 from TASO and 6 from Mulago Specialised Women and Neonatal Hospital. Having a small sample size from each study site provided room to use multiple methods of interviews and observations to understand the phenomena investigated (Speziale & Carpenter, 2003).

3.12.3 Qualitative Data Collection Methods

A qualitative phenomenology approach was used to explore the prenatal and postpartum experiences of women living with HIV in Kampala and Wakiso, Uganda. The phenomenology approach is where a wider meaning is given to the lived experiences for several individuals under study (Qutoshi, 2018). The purpose of this approach is to reduce the experiences of the participants with a phenomenon to a description of a universal essence. When using this approach, the data collection and analysis take place side by side to identify the phenomenon that is perceived by the actors in a particular situation. This gives a composite description of the essence of the experience that consists of “what” they experience and “how” they experienced it (Creswell & Poth, 2016). Also, when using a phenomenological method of inquiry, the researcher can adopt interviews, observations and discussions as data collection strategies (Qutoshi, 2018). This approach was adopted as a method of qualitative inquiry because it describes what the participants have in common as they experience a phenomenon. That is, women living with HIV would tell their story on their lived experiences when pregnant or after giving birth. From their own view, this gives a better understanding of how these experiences would contribute to depression among them.

The main tools used for qualitative data collection were interview guides and an audio recorder; and two methods were used to solicit primary data including in-depth interviews (IDIs), and key informant interviews (KII). The IDIs and KIIs interview guides were designed and conducted both in English and Luganda, the languages that were quite understood by participants. Open-ended questions were used to solicit data from the participants. Probing questions were asked to collect further information on important issues regarding the subject matter being studied. The in-depth oral interviews with participants were recorded using an audio recorder with the permission of respondents. This was complemented by observation of the non-verbal reactions on some issues and notes taking. Each interview lasted within one and a half hours. All the women participants were interviewed at the facility site, at a private place or

room to ensure confidentiality. On the other hand, the key informants interviews were conducted at their places of work.

3.12.4 Qualitative data handling and analysis

In managing the qualitative data, all audio data collected from the field were stored and kept as private and confidential on a password-protected computer, with copies being stored on multiple storage devices to prevent data loss. All audio recorded data from the in-depth interviews were transcribed from audio to a text format using Microsoft word processor in preparation for analysis. The English audio recordings were transcribed directly, while those in the local language (Luganda) were first transcribed verbatim into Luganda which were later translated into the English language. Qualitative data analysis was conducted from thematic analysis of broad concepts from transcribed audios from the IDIs and KIIs. This was supported by assessment of summaries from the field notes. Data were analysed with the aid of ATLAS.ti, a software used to analyse qualitative data.

3.12.4.1 Coding process

Audio recordings were transcribed verbatim based on participants' accounts of their experiences. Uploaded transcripts into the ATLAS.ti were coded inductively and deductively. To generate the codes, one transcript at each time was selected and a portion of the participants' narratives highlighted to assign short phrases (codes) to them. All codes were then grouped based on thematic analysis to see the patterns emerging from them. Codes were further grouped into organising themes, by bringing codes with similar meaning or description together into one organising theme/family. Network views/thematic networks were constructed to present a visual summary of how organising themes spread out and connected to reveal results under each question. Results from the coding were presented in a coding frequency table to identify relevant patterns and the number of times a code will appear in the transcript. Sample quotes are then directly exported from ATLAS.ti.

3.12.5 Trustworthiness and reflexivity in the qualitative study

To ensure the credibility of the qualitative study, trustworthiness and reflexivity was employed to improve the quality of the data. Bryman (2012) identifies four key criteria of trustworthiness: credibility (the believability of the findings), transferability (the applicability of the findings to other contexts), dependability (the consistency of the findings over time), and confirmability (the degree to which the researcher's values may have influenced the findings). In this study, the measures taken to ensure trustworthiness and reflectivity align with the suggestions made by Creswell (2014). Firstly, the researcher employed triangulation during data collection by utilizing two qualitative methods: in-depth interviews and key informant interviews. This approach aimed to verify consistency, minimize bias, and enhance the authentication of findings. All the interviews were conducted at the targeted three healthcare facilities. The women were recruited for interviews when they had come to receive their antenatal or postnatal health care services. This was a proof that they were pregnant or postpartum mothers who were either HIV positive or HIV negative. Therefore, the respondents' accounts accurately reflected their experiences as they shared their narratives.

Additionally, the researcher checked for consistency by involving a private person for independent coding. The person was provided with the research objectives and some raw texts from which categories had been developed. This coder was then tasked with creating new categories from the provided text. Upon comparison, many similarities between the coder's categories and those of the researcher were identified. The researcher adhered closely to the principle of reflexivity throughout the research process. Reflexivity involves recognizing how a researcher's biases, values, and personal background such as gender, culture, and socioeconomic status influence the research process (Creswell, 2014). As a woman studying other women, the researcher understood the unique vulnerabilities faced by pregnant and postpartum mothers in developing countries, including partner abandonment, lack of support, poverty, among others that might

increase depression risks. However, she consciously avoided letting her personal experiences, perceptions, and emotions influence the study or the participants' responses. For example to maintain neutrality during data collection, the researcher began interviews with open-ended or general questions, gradually narrowing to specific questions. This approach-fostered rapport as well as a comfortable environment for participants to share their experiences while minimizing researcher subjectivity.

During data analysis and interpretation, the researcher continually listened to audio recordings and referenced transcripts to ensure the views expressed belonged to the participants. Additionally, an expert fluent in both Luganda (the main local language spoken in the study area) and English was engaged to verify that the transcriptions accurately reflected the audio-recordings. This combination of strategies helped ensure the integrity and authenticity of the research findings. Finally, peer debriefing technique was employed to enhance the research process. Presentations to reviewers with experience in qualitative research, including colleagues were given a chance to ask questions on the findings. Furthermore, the researcher's supervisors and other specialists in qualitative research were given the chance to carefully examine the research procedure and results, providing valuable feedback and insights.

3.13 Community Entry Processes

Initial contacts were made with the study sites (TASO Mulago, Mildmay Uganda, and Mulago specialized women and neonatal hospital) with introductory letters from the Regional Institute for Population Studies University of Ghana. After administrative clearance letters were obtained from the various study sites granting permission for the study and data collection, steps were taken to ensure that the environment at the sites were adequately prepared for the study. This included meeting with the site administrators/management team, research directors/supervisors, facility/unit heads, and psychosocial departmental heads. This aimed at introducing the study to them. It also aimed at reaching agreement on how the research process could be facilitated within the routine antenatal care services with minimal

disruption. It is after this that the research team was introduced to the nurses, expert clients/mentor mothers and other relevant facility workers who were gate keepers within the various health facilities during the recruitment process of the study participants according to the inclusion criteria. Private places such as rooms, tents, or corners were allocated within the health facilities for the conduct of the interviews, which were in close proximity to the antenatal or postnatal clinic services. Data were collected over a three-month period (2nd November 2022 to 13th January 2023). The gate keepers introduced the research team to the women during the routine health talks given to the women before receiving their health services, and it is during this period that an informational session was always held to share details about the study.

3.14 Ethical Considerations and Administrative Clearance

Ethical approval to carry out the study was sought and granted from the Ethics Committee for Humanities (ECH) at the University of Ghana (ECH 012/22-23) and Mildmay Uganda Research Ethics Committee (MUREC) (# REC REF 0608-2022). Again, administrative clearances from all the three study sites of The AIDS Support Organisation (TASO) Mulago, Mildmay Uganda, and Mulago Specialized Women and Neonatal Hospital were granted for the study. Finally, the study was registered with the Uganda National Council for Science and Technology (UNCST) (SS1488ES), the final regulatory body in Uganda as per Uganda's regulatory requirements to conduct research in the country.

Participation in the study was voluntary. Therefore, the purpose of the study was explained to prospective study participants in a language they were well conversant with, to ensure that they were given full information about the study and that their participation was without coercion. Participants' consent was sought from all those who accepted to participate in the study before commencing with the interviews by signing or thumb printing the consent form. For participants who were re-approached to participate in the qualitative interviews, they were given room to suggest the medium of communication they preferred to be used when contacting them to book and remind them of appointment, whether by phone calls, direct

phone message, or WhatsApp. If the woman had consented to participate in the second assessment, but did not arrive for their scheduled appointment, they could be contacted for a maximum of three times before they were to be withdrawn and replaced to avoid being misconstrued as unnecessary harassment of an unwilling participant. Additionally, the principle of confidentiality was adhered to by holding interviews at a place comfortable for the participants to ensure privacy, such as a private place or room at the health facility for pregnant and postpartum mothers and offices for key informants. Since women living with HIV are highly vulnerable to stigma, respondents were given codes that corresponded with the health facility's identity credentials to ensure that participants' identities were not revealed. In line with ethics requirements when dealing with vulnerable groups, the principle of no harm was followed by providing participants extra protection from mental discomfort, harm, and danger through providing counselling services through a professional counsellor or referral to appropriate places in case of mental breakdown.

3.15 Limitations of the study

The study was conducted within health facilities, limiting its generalizability to the broader population of prenatal and postpartum women living with HIV in the study area. Despite the limitation of generalizability, the fact that the sample was recruited from two diverse urban communities of Kampala and Wakiso with notable HIV prevalence offers a diverse range of socio-economic and demographic contexts with varied ethnic groups, and a range of social challenges which could influence depression. Therefore, the characteristics of the sample indicate that it is representative of women living in high HIV prevalence areas. The women's socio demographic characteristics of age range, educational background, socioeconomic status, marital status, religion, and type of respondents closely reflect the nationwide demographic situation in the 2016 Uganda demographic health survey. Again, utilization of the

qualitative findings complement the quantitative ones, thus helping in gaining insights into the experiences of women in various settings.

Moreover, the study's cross-sectional design allowed for a one-time assessment of the women's prenatal and postpartum depression symptoms, potentially hindering the establishment of cause-and-effect relationships among the observed factors. Nonetheless, the utilization of mixed methods research approach provides valuable data where by exploring the experiences of participants in greater depth using qualitative method helps in contextualizing quantitative findings. More so, the comparison group used of HIV negative women helps in assessing differences in depression prevalence, and related factors, which aids in causal inference. Future research however could benefit from longitudinal studies that track depression over multiple time points. Furthermore, some questions required the participants to recall when they first knew their HIV status, how long they had lived with HIV, their date of birth, among others. This could have influenced a recall bias among the respondents as well as unwillingness to provide sensitive information. In order to enhance the data quality, this limitation was mitigated by probing as well as rephrasing how questions were asked. This allowed the participants to think about the information from a fresh angle and potentially remember/ provide relevant additional details.

Despite the limitations, this study could be the first, assessing prenatal and postpartum depression among women living with HIV within an urban context and comparing them to a group of HIV-negative women. Moreover, the study's utilization of mixed methods approach provided rich information to support the experiences that were studied. The findings contribute valuable insights for culturally relevant prevention and intervention strategies targeting women at risk of depression. Additionally, the study's comparison of the EPDS and SRQ-20 depression screening tools offers valuable guidance in selecting effective diagnostic tools that accurately capture the unique challenges faced by pregnant and postpartum women living with HIV in urban areas.

CHAPTER FOUR

PREVALENCE OF PRENATAL AND POSTPARTUM DEPRESSION IN WOMEN LIVING WITH HIV

4.1 Introduction

This chapter addresses the research question on the prevalence of prenatal and postpartum depression in women living with HIV in Kampala and Wakiso, Uganda. The results in this chapter are presented at two levels, the univariate analysis is presented first, followed by the bivariate analysis. Results at the univariate level highlight descriptive statistics to describe the socio-demographic characteristics of the respondents including age, type of respondent, religion, education level, marital status, employment status, level of income, ethnicity, and number of dependents. After this, the variation in depression among women by the socio-demographic characteristics are presented at the bivariate level using cross-tabulations and Chi-Square tests. The results of the HIV negative women who were the comparison group are also presented at all levels of analysis for this objective for comparative purposes. Additionally, an equal sample of women living with HIV and HIV negative women is used for better comparisons in the depression levels between the groups.

4.2 Socio-demographic characteristics of the respondents

A total number of 497 respondents were included in the analysis, and these were HIV positive or negative women who were either pregnant or had recently given birth. The background characteristics of these women are presented in Table. 4.1. The respondents' age distribution indicated that most of the respondents (66.8%) were within age of 25-34 years, while a smaller proportion (15.3%) were of age 15-24 years. Furthermore, more than half (53.5%) of the respondents had recently given birth while 46.5 percent were currently pregnant. Most of the respondents (44.7%) had obtained secondary education. Conversely, only about 20.0 percent had primary education or less. Majority of respondents (90.9%) were currently married or cohabitating, and less than 10 percent were divorced, separated, widowed or never

married. Eighty-three percent of the respondents were Christians, and 18 percent were either Muslims or belonged to other faith. Sixty-one percent of the respondents were from the Baganda/Basoga ethnic group, followed by Banyakore/Bakiga (14.7%); and the least were the Iteso/Acholi/Langi (4.8%), and the non-Ugandans (4.8 %).

Sixty-five percent of respondents were currently working while only 35 percent were not currently working. Moreover, the highest proportion (59.8 percent) indicated having a monthly income of 300,000 shillings (i.e., US\$80) or less whereas only 33 percent of the respondents had a monthly income of 300,001 shillings or more. On the other hand, eight percent of the respondents were not comfortable disclosing their income. Concerning the number of dependents, 73 percent of the respondents had one or more dependents while only 27 percent indicated having no dependent.

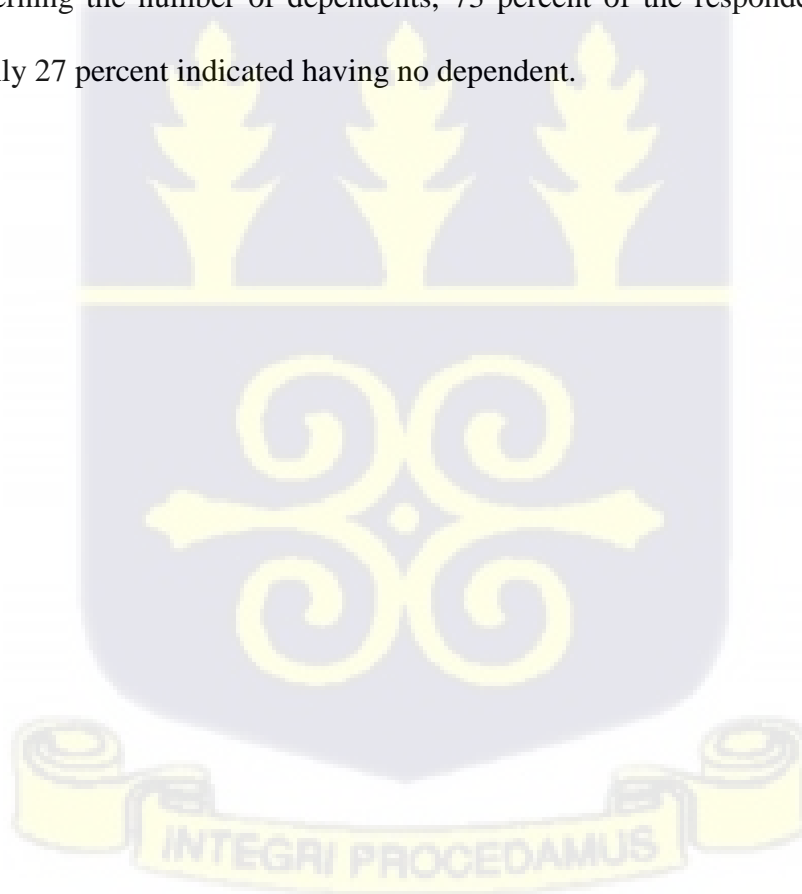


Table 4.1 Percentage Distribution of Respondents by Socio-Demographic and Economic Characteristics

Respondents' Characteristics	Number (n=497)	Percentage
Age Groups		
15-24	76	15.3
25-34	332	66.8
35+	89	17.9
Type of respondent		
Currently pregnant	231	46.5
Recently given birth	266	53.5
Level of education		
Primary or less	98	19.7
Secondary	222	44.7
Higher	177	35.6
Marital Status		
Otherwise	45	9.1
Married/Living together	452	90.9
Religion		
Christians	411	82.7
Others	86	17.7
Ethnicity		
Baganda / Basoga	301	60.6
Banyakore / Bakiga	73	14.7
Banyoro / Batooro	28	5.6
Iteso / Acholi / Langi	24	4.8
Others ethnicity	47	9.5
Non-Ugandan	24	4.8
Employment status		
Not currently working	174	35.01
Currently working	323	64.99
Monthly average income (UGX)		
<= 300,000	297	59.8
>=300,001	162	32.6
Undisclosed amount	38	7.6
Number of dependents		
No dependent	133	26.8
1 or more dependents	364	73.2

Source: Fieldwork, 2022

4.3 Screening for depression

Table 4.2 shows the participants' scores on both the self-reporting Questionnaire (SRQ-20) and the Edinburgh postnatal depression scale (EPDS) screening tools for depression. The results of the SRQ-20 shows that in this sample, 40 percent of the women met the criteria for depression, while on the EPDS screening tool, 64.4 percent of the women met the criteria for depression. The SQR-20 demonstrated lower depressive symptoms in this urban, low-income African setting as compared to the EPDS. The SRQ-20 seemed to be more relaxed in measuring depression by showing lower depression levels in pregnant women and those who have given birth. One of the reasons for the lower performance of the SRQ-20 could be due to the fact that the instrument is used for screening general psychological distress. This accounts for EPDS being the most common instrument used to identify prenatal and postpartum depression as compared to other screening tools including the SRQ-20 (Hong & Buntup, 2023).

Based on the presented results, the EPDS scale was used to measure depression among the HIV positive and HIV negative pregnant women and those who have given birth, in urban areas of Kampala and Wakiso, Uganda. This choice is substantiated by the research of Chorwe-Sungani and Chipps (2017) and Tsai et al. (2013), which affirm the scale's reliability and validity for measuring perinatal depression symptom severity and screening for probable depression in African countries and resource-limited settings. Again, the reported higher level of accuracy, sensitivity and specificity ranging from moderate to high in various settings (Chorwe-Sungani & Chipps, 2017; Nguyen et al., 2021) makes it ideal to use the scale in measuring prenatal and postpartum depression in the studied population. Atuhaire et al. (2020) note that the magnitude of PPD in Africa using EPDS is usually higher, with their research reporting a range from 6.9 percent to 50.3 percent, compared to other tools which reported depression levels between 6.1 percent to 47.7 percent.

Table 4.2 Performance of SRQ-20 and EPDS in measuring the depression prevalence

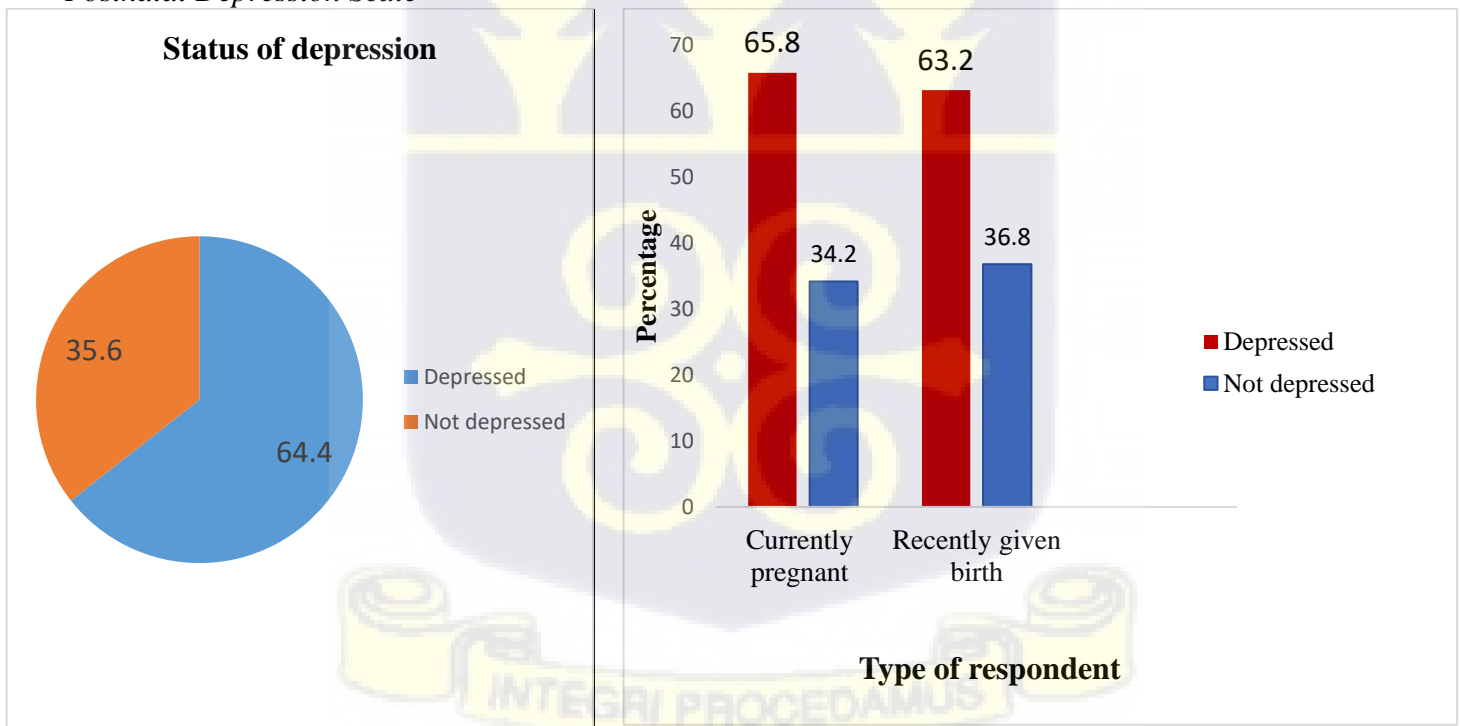
Scale	Cutoff point	Depression Status (%)	
		Depressed	Not depressed
EPDS	≥10	320(64.4%)	177(35.6%)
SRQ-20	≥6	197(39.6%)	300(60.3%)

Source: Fieldwork, 2022

4.4 Prevalence of Prenatal and Postpartum Depression

Figure 4.1 shows that generally, majority of the women surveyed showed depressive symptoms (64.4%). On the other hand, the least of the respondents (35.6%) did not show depressive symptoms. However, higher depressive symptoms (65.8%) were found among women who were currently pregnant as compared to those who had recently given birth (63.2%). Nonetheless, the chi square test showed that being pregnant or having given birth was not significantly associated with depression.

Fig. 4.1 *Percentage Distribution of Respondents by Depression among Women on the Edinburgh Postnatal Depression Scale*



A: General depression status

B: Prenatal and postpartum depression status

Source: Fieldwork, 2022

4.4.1 HIV Status and Depression Prevalence

Table 4.4 shows depression prevalence, by HIV status, and category of respondent. The table indicates that depression was higher (81.9%) in HIV positive pregnant women as compared to HIV negative pregnant women (56.9%) who were the comparison group. Additionally, a higher proportion (69.9%) of depression was observed in HIV positive women who had recently given birth as compared to the HIV negative group (53.5%).

Table 4.4 Association between HIV status and depression prevalence on the Edinburgh Postnatal Depression Scale

Variable	Depression Percentage (%)		Number (n=472)
	Depressed	Not depressed	
HIV positive pregnant women	81.9	18.1	83
HIV negative pregnant women	56.9	43.1	137
	$\chi^2 = 14.4640$ p-value = 0.000		
HIV positive women who have recently given birth	69.9	30.1	153
HIV negative women who have recently given birth	53.5	46.4	99
	$\chi^2 = 6.9738$ p-value = 0.008		

Source: Fieldwork, 2022

4.4.2 Depression and socio-demographic characteristics

This section examines the variation in depression among women by the socio-demographic characteristics using cross-tabulations and the chi-square tests. In measuring the relationship between respondents' background characteristics and the depression outcome, Pearson Chi-square test statistics were calculated for each pair of association between the independent and the dependent variables using a 95% confidence interval and an alpha value of less than 0.05 as the significance level. Table 4.5 shows the association between depression levels and socio-demographic characteristics of respondents. Generally, the results show that

among women living with HIV, marital status and number of dependents were statistically significant with depression. On the other hand, age group, level of education, and number of dependents were found to be significantly related to depression among the HIV negative women.

Specifically, within women living with HIV, the 15-24 age group showed higher depressive symptoms (80%) than 25-34 and 35+ age groups (75.7% and 66.0% respectively). Similarly, among the women who were HIV negative, the 15-24 age group also showed higher depression (71.1%). When both women are compared, depression prevalence was again higher among the 15-24 age group, though women living with HIV showed heightened depressive symptom. Furthermore, findings on the education levels within the women living with HIV indicate that those who had secondary education or less showed higher depression symptoms (74.7% for primary or less and 74.6% for secondary). However, when it comes to HIV negative women, those who had primary education or less exhibited higher depression (85.7%) than those who had secondary education (65.1%) as well as higher education (46.8%). However when the two groups of women are compared, it is found that women who had secondary education or less had more depressive symptoms, with the HIV negative women being greatly depressed.

With regards to marital status, it is found that among women living with HIV, depression prevalence was higher (88.4%) among those who were single/ divorced/separated/widowed than those who were married or cohabiting (70.9%). But when it comes to HIV negative women, it was rather found that those who were married or cohabiting showed higher depression (55.6%) than those who were single/ divorced/separated/widowed (50.0%). When comparing both groups of women, unlike those living with HIV who showed higher depression symptoms among the single/ divorced/separated/widowed, the HIV negative women had the married or cohabiting participants being highly depressed. Concerning religion, the results showed that within the women living with HIV, those who were Christians showed higher depression symptoms (74.2 percent) than women of other faiths such as Muslims, traditionalists, among

others (74.0 percent). Conversely, when it comes to women who were HIV negative, those who were in the other faith (Muslims, traditionalists, etc.) exhibited higher depression (57.6%) than those who were Christians (55.2%). When the two groups of women are compared, opposite variations in depression prevalence by religion were observed among women living with HIV and the HIV negative women.

In terms of variation in the prevalence of depression by employment status, the results showed that among the women living with HIV, those who were currently working had significantly higher depression prevalence (77.3%) than those who were not currently working (70.4%). Similarly, among the women who were HIV negative, the currently working also showed higher depression (56.3%) than those who were not currently working (53.2%). From the findings therefore, high depression prevalence was among women who were currently working regardless of their HIV status, although women living with HIV had a considerably higher depression rate. The results further indicate that within the cohort of women living with HIV, those with undisclosed amount had the highest (90.0 percent) proportion of depression compared to those with a monthly income of 300,000 shillings (i.e., US\$80) or less (73.7%) and 300,001 shillings or more (71.4%). A similar trend of depression prevalence was observed among the HIV negative women, with higher depressive prevalence being among those with undisclosed amount (71.4%), followed by 300,000 shillings (i.e., US\$80) or less income category (54.3%), and then 300,001 shillings or more category (52.8%). When the two different groups of women are compared, the results showed again that those with undisclosed amount had the highest prevalence of depression. Nonetheless, a more pronounced depression rate was observed among women living with HIV as compared to their HIV negative counterparts.

Concerning the number of dependents and depression prevalence, it was found that women living with HIV who had who had no dependent showed higher depression symptoms (96.8%) than those who had one or more dependent (70.7%). Equally, among the HIV negative women, those with no dependent were

highly depressed (85.4%) than those with one or more dependent (37.4%). In comparing the women living with HIV with their HIV negative women counterparts, those with no dependent were highly depressed again showed the highest depression prevalence. Nevertheless, women living with HIV exhibited more signs of depressive symptoms overall.

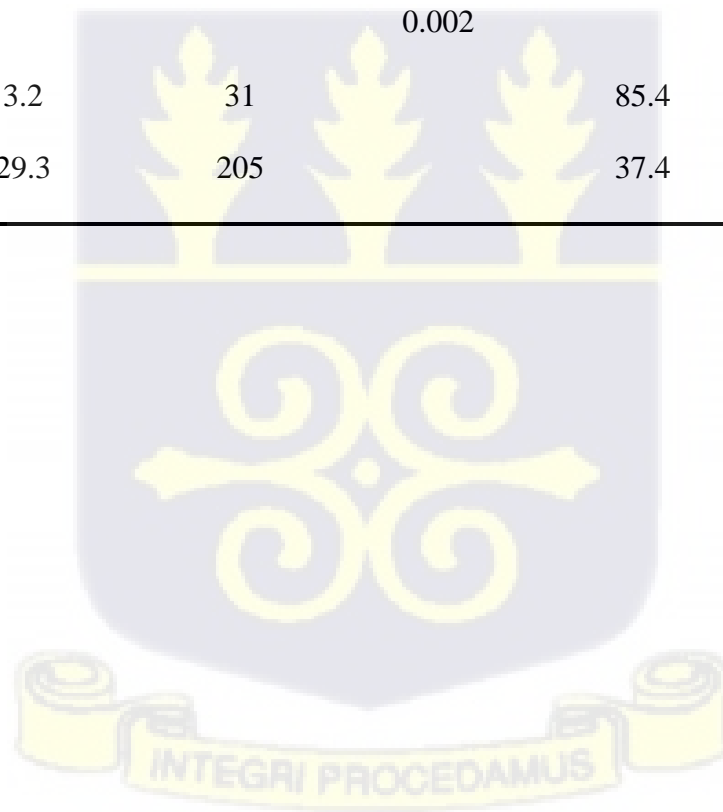


Table 4.5 Association between socio-demographic characteristics and depression on the Edinburgh Postnatal Depression Scale

Variables	Women living with HIV			HIV negative women				
	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Age Group				0.269				0.044
15-24	80.0	20.0	35		71.1	28.9	38	
25-34	75.7	24.3	148		50.3	49.7	163	
35+	66.0	33.9	53		62.9	37.1	35	
Level of education				0.892				0.002
Primary or less	74.7	25.3	83		85.7	14.3	14	
Secondary	74.6	25.4	126		65.1	34.9	83	
Higher	70.4	29.6	27		46.8	53.2	139	
Marital Status				0.019				0.875
Otherwise	88.4	11.6	43		50.0	50.0	2	
Married/Living together	70.9	29.0	193		55.6	44.4	234	
Religion				0.978				0.797
Christians	74.2	25.8	186		55.2	44.8	203	
Others	74.0	26.0	50		57.6	42.4	33	
Employment status				0.223				0.674

Not currently working	70.4	29.6	108	53.2	46.8	62
Currently working	77.3	22.7	128	56.3	43.7	174
Monthly average income (UGX)				0.492		0.191
<= 300,000	73.7	26.3	205	54.3	45.7	81
>=300,001	71.4	28.6	21	52.8	47.2	127
Undisclosed amount	90.0	10.0	10	71.4	28.6	28
Number of dependents				0.002		0.000
No dependent	96.8	3.2	31	85.4	14.6	89
1 or more dependent	70.7	29.3	205	37.4	62.6	147

Source: Fieldwork, 2022



4.5 Discussion

This chapter examined the prevalence of prenatal and postpartum depression in women living with HIV in Kampala and Wakiso, Uganda. The findings showed that a significant proportion (64.4%) of the prenatal and postpartum women exhibited symptoms of depression. This estimate is higher than the prevalence reported in the reviewed studies on depression in East Africa and Uganda. For example, Ferrari et al. (2013) found that a depression rate 5.43 percent in the general population for East Africa, and 6.35 percent for Uganda. Again in 2022, Uganda observed an increased rate of depression to 30.2 percent in general population and 26.9 percent in postpartum or pregnant mothers (Kaggwa et al., 2022). This increasing rate of depression among the populace is worrying especially in Uganda, where adolescent girls and young women are three times (29.68%) more likely than boys to experience depressive symptoms (Nabunya et al., 2020). Thus, making it an issue of great concern in reproductive age groups. Some factors that could account to the increasing depression include hopelessness, teenage motherhood, HIV status, among others (Kaggwa et al., 2022; Proscovia Nabunya et al., 2020). Again, the loss of educational opportunities from early marriage and teenage motherhood can lead to poor health and increased childbearing. Furthermore, limited skills can result in missed job opportunities, forcing individuals into low-paying job and contributing to poor socioeconomic status (Gideon, 2013; UNFPA Uganda & National Planning Authority (NPA), 2022).

The finding of significant proportion of depression among prenatal and postpartum women in the present study could relate to the biopsychosocial model that mental illness results from the biological, psychological, and social factors interacting together. In this case, biologically, both pregnancy and after giving birth come with hormonal changes that influence mood that can contribute to depression. Therefore being a prenatal or postpartum mother while experiencing psychological issues such as abuse, fear of the

unknown, while at the same time being socially vulnerable by lacking support from a partner, family, and friends increases the risks of being depressed.

Furthermore, the higher depression prevalence noted among the pregnant women as compared to those who had recently given birth confirms previous studies conducted in Africa, India, Brazil, Italy, among others (Baron et al., 2016; Brittain et al., 2019; Elrassas et al., 2022; Giardinelli et al., 2012; Melo Jr et al., 2012). Again, a longitudinal cohort study in 2022 across the 12 clinical care centres in Kenya, Tanzania, Uganda, and Nigeria also showed a higher prevalence of depression at pregnancy was 6.3 percent compared to postpartum depression experiences at 3.4 percent. The two main factors in the study that were associated with higher depression prevalence were failure of mothers to achieve viral suppression as well as past history of depression (M. U. Jones et al., 2021). Nonetheless, this prevalence were far lower than the one found in this study. Having many pregnant women with depressive symptoms in Kampala and Wakiso Uganda calls for screening of mental health disorders during prenatal care and training of healthcare providers on mental health (Mahenge et al., 2015).

This study further showed that women living with HIV exhibited significantly higher prenatal and postpartum depressive symptoms (81.9% and 69.9% respectively) compared with HIV-negative group (56.9% prenatal depression and 53.5% postpartum depression). These findings are in line with previous studies like Zhu et al. (2019), and Endomba et al. (2021). For example Zhu et al. (2019) found 36 percent of antenatal depressive symptoms in the HIV positive group and 26 percent in the HIV negative group; and postnatal depressive symptoms were 21 percent in the HIV positive group and 16 percent in the comparison group. The present findings on higher prevalence rates of depression in women living with HIV further could be linked to the biopsychosocial model, because biologically, HIV disease condition can induce immune activation in the brain, which can exacerbate depression symptoms (Waldron et al., 2021). Again, ART medication can have side effects that influence mood and mental health potentially

increasing depression risks. Psychologically, experiences of fear of infecting the baby, fear of disclosure, feelings of guilt and self-blaming, among others can heighten anxiety and contribute to depression among prenatal and postpartum women living with HIV. Finally, social factors like stigma and discrimination can potentially reduce social networks and support as well as increase feelings shame thus being depressed.

These findings are not surprising as sub-Saharan African women living with HIV are faced with unique stressors when pregnant such as intimate partner violence, single marital status, unplanned pregnancy, HIV-related stigma, among others; which may cause higher depression levels than after giving birth (Jones et al., 2021; Kapetanovic et al., 2014; Mokhele et al., 2019; Sawyer et al., 2010). Also, loneliness and inadequate social support are associated with increased odds of depression in pregnancy with HIV, which should be a focus in future support interventions (Moseholm et al., 2022). Therefore, HIV-infected women having a higher prevalence of depression highlights the need for more attention and preventive interventions geared towards this population for the betterment of both mother and child.

The disparity between prevalence of depression in prenatal versus postpartum women, and HIV positive versus HIV negative women in Kampala and Wakiso districts and the rest of the African countries mentioned above could be explained by various factors. These include methodological differences and using different measurement tools (e.g. Center for Epidemiological Studies-Depression scale, 21-item Beck's Depression Inventory, etc.) (Jones et al., 2021; Kaggwa et al., 2022; Nabunya et al., 2020). Again, some studies used more than one tool in measuring depression while other studies that assessed depression on the EPDS used different cut offs (Elrassas et al., 2022; Giardinelli et al., 2012), which could account for varying depression rates. For example, Melo Jr et al. (2012) using a cut-off point of ≥ 12 showed depression of 24.3 percent during pregnancy and 10.8 percent during postpartum. In this study, depression was defined by a score of 10 and above on EPDS, as used by (Chibanda et al., 2010; Ngocho et al., 2019)

in Zimbabwe and Tanzania which contextual setting is similar like the present study. Therefore, score could also possibly explain the relatively higher prevalence of depression. Furthermore, the high depression prevalence rates in this study could be because it was conducted in an urban setting vis a vis rural populations or mixed rural and urban populations used in previous studies. Urban living, compared with rural living, is linked with a higher risk of mental illness due to limited social networks, lack of access to adequate mental health, etc. (Buttazzoni et al., 2022; Litman, 2021) .

In this study, the women's socio demographic characteristics somewhat reflect the nationwide demographic situation e.g. (National Population Council, 2018; UBOS & ICF, 2012; Uganda Bureau of Statistics (UBOS), 2018). The results showed that majority (66.8%) of the women were aged 25-34 years, were Christians, and had recently given birth. These relate to the findings noted in the 2016 Uganda demographic health survey. Over nine out of ten women were married or living together with a partner, and majority of them had attained secondary school education. The improvement in educational level among women of reproductive age groups narrows the gap between Ugandan women and men. Again, respondents in urban areas are more likely to be literate and educated (UBOS & ICF, 2012, 2018). This could be due to easy accessibility to education services in the urban settings. Furthermore, a higher proportion of the women were currently working, with a monthly average income of 300,000 shillings (i.e., US\$80) or less. Yet, these women had one or more dependents under their care. These findings support those by the National Population Council (2018) where by 76 percent of the women are working, similar to the current study. Additionally the current study is in agreement with the findings in previous studies that a good number of Ugandan women were self-employed (Uganda Bureau of Statistics (UBOS), 2018). However, this study having majority of the women with a monthly income of US\$80 or less, could affect their ability to support their dependents due to low economic wellbeing.

At the bi-variate level, even though both women living with HIV as well as their HIV negative women counterparts had higher depression levels amongst women aged 15-24 with secondary education or less, heightened depressive symptoms were observed among women living with HIV. The findings on age suggest that depression tends to decrease, as the women get older. Similar to these findings, Hartley et al. (2011) and Mokwena and Mbatha (2021) reported an association between being young in age and depression. Again, the 2016 Uganda Demographic Health Survey (UDHS) indicates high teenage motherhood, with majority of the pregnancies and childbirth being unplanned or unwanted (Budget Monitoring and Accountability Unit, 2020; National Population Council, 2022; Plan International, 2022). Again, because of the undeveloped bodies of these teenage girls, most experience pregnancy and birth complications including intrauterine growth, fistulas, having a C-section among others (Plan International, 2022; UNICEF, 2019), which could result into depression. Depression in mothers aged 15-24 living with HIV could further result from confounding vulnerable situations like less experience into motherhood responsibilities while keeping up with HIV care management, stigma or rejection from family and friends, and loss of support (Atuyambe et al., 2005; Plan International, 2022; WHO, 2020).

Furthermore, the findings established on the influence of education on depression suggest that while the higher these women are educated, the lesser they get depressed, supporting studies by Aktas and Calik (2015) and Mokwena and Mbatha (2021) in Turkey and South Africa respectively. One of the contributing factors to low education levels among Ugandan women is dropping out of school in late primary and early secondary school due to teenage pregnancy. This limits their skills and academic qualifications to take up formal employment opportunities, and thus end up being self-employed with low income levels (Budget Monitoring and Accountability Unit, 2020; UNFPA Uganda & National Planning Authority, 2022).

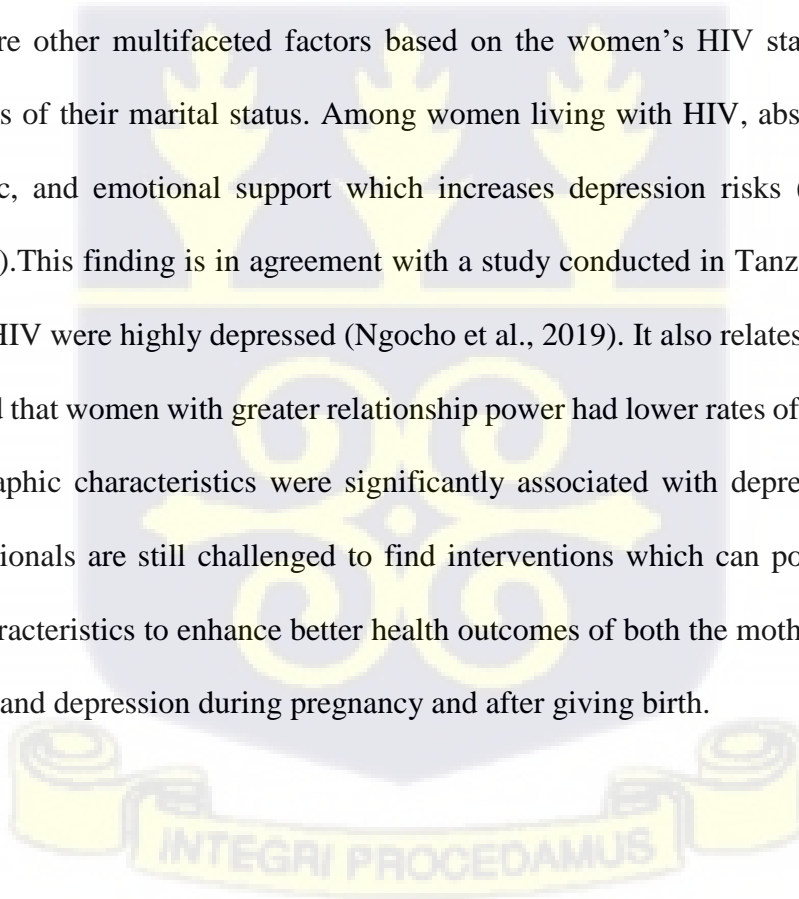
Further evidence from this study suggests that regardless of the HIV status, both HIV positive and HIV negative women exhibited higher depression levels amongst women who did not have any dependant and

were currently working, yet unable to disclose their monthly income. None the less, greater depression levels in these socio-demographic characteristics were among the women living with HIV. In present study, the currently working women included those either working in the formal or informal sectors. For women working in informal employments they lack formal arrangements like maternity leave, among others which forces them to continue working even at later pregnancy stages as well as immediately after delivery due to economic hardships. Such working situations combined with pregnancy or childbirth while living with HIV could come with a mental breakdown. These findings deviate from the already known from studies such as (Aochi et al., 2021; Lewis et al., 2017; Miyake et al., 2011; Tesfaye & Agenagnew, 2021) where depression symptoms were higher among unemployed and prenatal and postpartum women. More studies are therefore needed in the African setting in relation to depression among prenatal and postpartum women living with HIV. Again, findings where undisclosed amount showed the highest depressive symptoms deviates from previous studies such as Abebe et al. (2022) and Mbatha et al. (2020) where mothers living with HIV with low income were highly depressed. Even though failure to disclose ones amount can be for privacy purposes, it cannot be undermined that since some of the studied women had poor economic status and worked in informal employments, this could have been a sign of being financially unstable with unreliable income. This however calls for more research especially in the African setting.

More so, women living with HIV who did not have any dependant showing the highest depressive symptoms cannot be undermined. Dependents may include children, the elderly, and extended family members. In the African setting where social support is vital, not having any dependent could lead to feelings of loneliness or lack of support which could potentially contribute to poor mental health outcomes during the prenatal and postpartum periods. Literature specifically exploring the relationship between the number of dependents and depression in prenatal and postpartum women is almost lacking and hence

further research is needed to better understand the unique experiences and mental health outcomes of mothers and the number of dependents during these periods. Nonetheless, based on the existing literature on female caregivers, having a larger household and having multiple adolescent dependants is associated with depression, due to household food insecurity and added financial burden (Hadley & Patil, 2006; Nagata et al., 2020). This contradicts findings from the present study where those without any dependent are rather depressed.

This study identified variations in depression status by marital status with HIV negative women who were married or cohabiting having higher depressive symptoms, while women living with HIV who were single/ divorced/separated/widowed showed higher depression symptoms. The observed variations could suggest that there are other multifaceted factors based on the women's HIV status that contribute to depression regardless of their marital status. Among women living with HIV, absence of partner limits the social, economic, and emotional support which increases depression risks (Ashaba et al., 2017; Thiruvalluvan, 2017). This finding is in agreement with a study conducted in Tanzania where unmarried women living with HIV were highly depressed (Ngocho et al., 2019). It also relates to that by Hatcher et al. (2012) who found that women with greater relationship power had lower rates of depression. Although few social- demographic characteristics were significantly associated with depression at the bivariate level, health professionals are still challenged to find interventions which can positively influence the impacts of these characteristics to enhance better health outcomes of both the mother and the baby while managing both HIV and depression during pregnancy and after giving birth.



CHAPTER FIVE

KNOWLEDGE OF PRENATAL AND POSTPARTUM DEPRESSION OF WOMEN LIVING WITH HIV IN KAMPALA AND WAKISO, UGANDA.

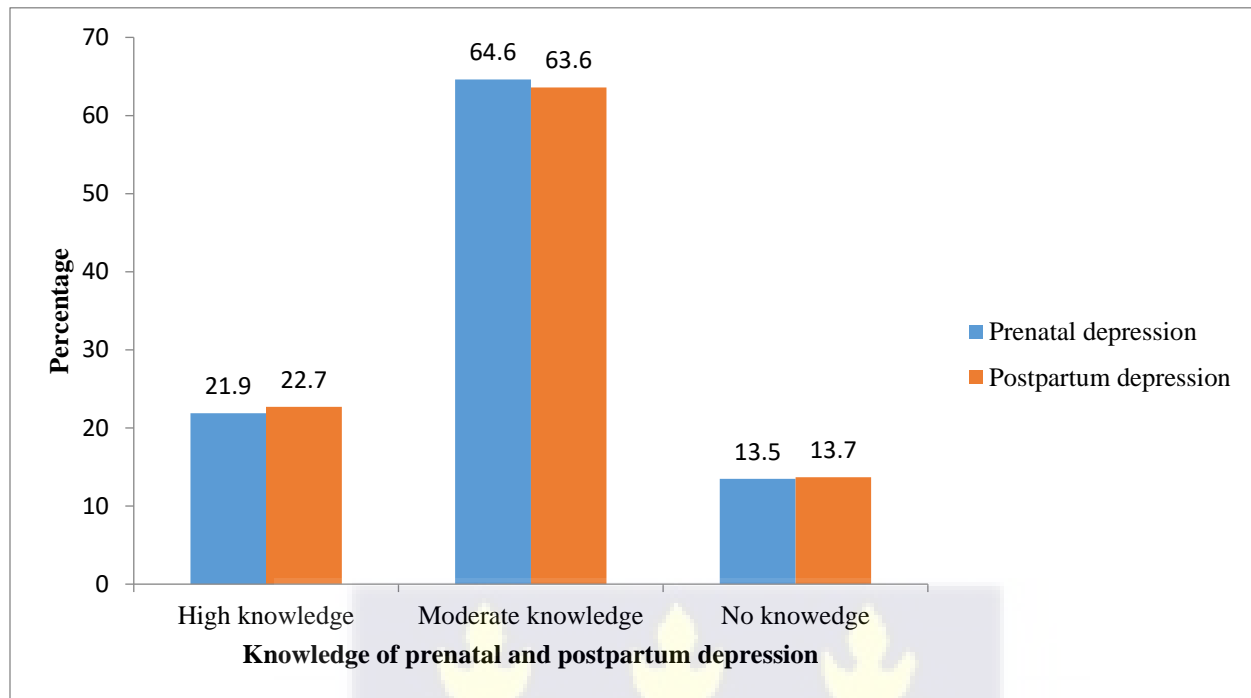
5.1 Introduction

This chapter is made up of three main sections. The first section details how much knowledge the women have about prenatal and postpartum depression; such as correctly identifying symptoms of prenatal and postpartum depression, factors that cause prenatal and postpartum depression; and their knowledge of the effects of prenatal and postpartum depression. The second section presents the respondents' knowledge of available help for prenatal and postpartum depression, which also highlights their willingness to report depressive symptoms, what would prevent them from reporting the depressive symptoms, as well as the non-professional help that could be sought when they experience depressive symptoms. The final section presents the cross tabulations and chi-square analysis with a special focus on HIV status, depression and other socio-demographic characteristics. Knowledge of prenatal and postpartum depression is necessary as it influences the health-seeking behaviours of individuals. This could help in the early diagnosis of depression symptoms and timely intervention.

5.2 Level of knowledge about prenatal and postpartum depression

Figure 5.1 shows the women's level of knowledge about prenatal and postpartum depression. The findings indicate that the knowledge of the women regarding prenatal depression and postpartum depression does not vary significantly as close to two-thirds of them have moderate knowledge in either of them, about 14 percent have no knowledge of both and 22 percent and 23 percent respectively have high knowledge of prenatal and postnatal depression.

Figure 5.1 *Distribution of respondents' knowledge of prenatal and postpartum depression*

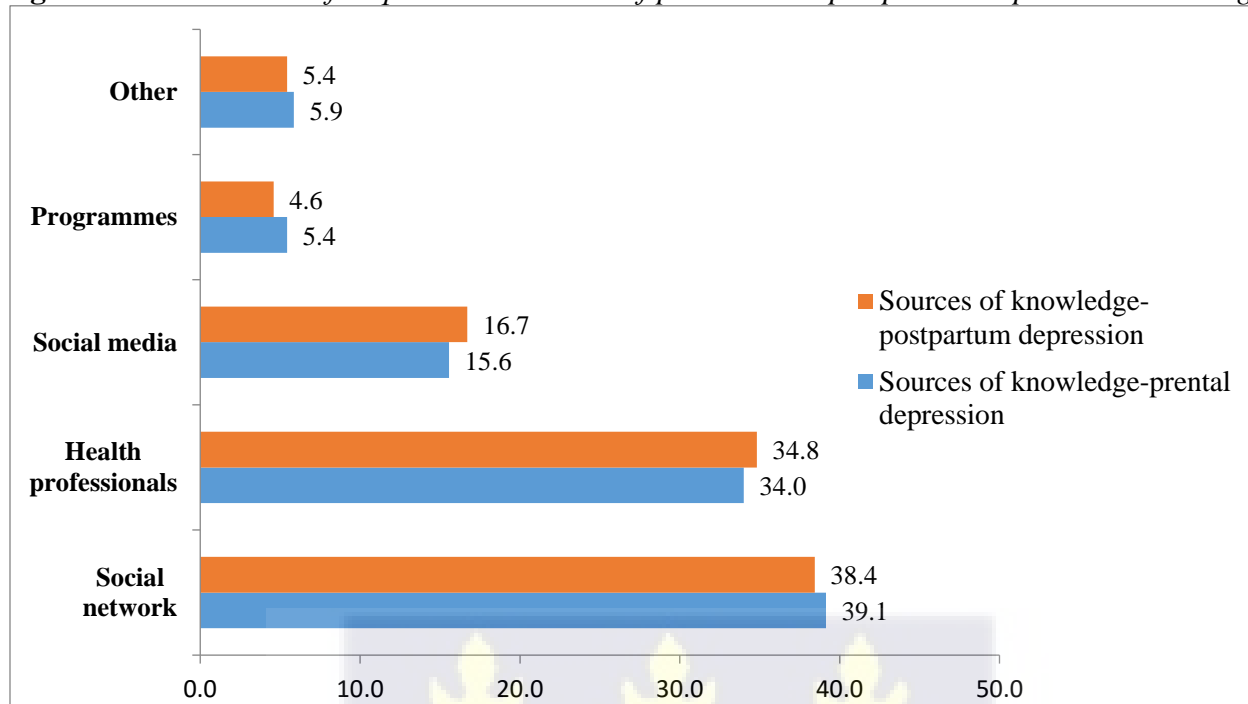


Source: Fieldwork, 2022

5.3 Sources of knowledge of prenatal and postpartum depression

Participants' various sources of knowledge for prenatal and postpartum depression were investigated. Figure 5.2 shows that social networks and health professionals were the most dominant sources of knowledge of prenatal and postpartum depression for women in this study. The social networks included parents, husband/partner, other relatives, friends, and neighbours. The health professionals included health workers, social workers, and counsellors. On the other hand, social media (e.g., televisions, radios, and internet) and programmes (outreach, school, and trainings) were the least sources of knowledge for prenatal and postpartum depression mentioned by the women. Interestingly, most of the participants who mentioned "others" were those who had previous experiences of prenatal and postpartum depression.

Figure 5.2 *Distribution of respondents' sources of prenatal and postpartum depression knowledge*



Source: Fieldwork, 2022

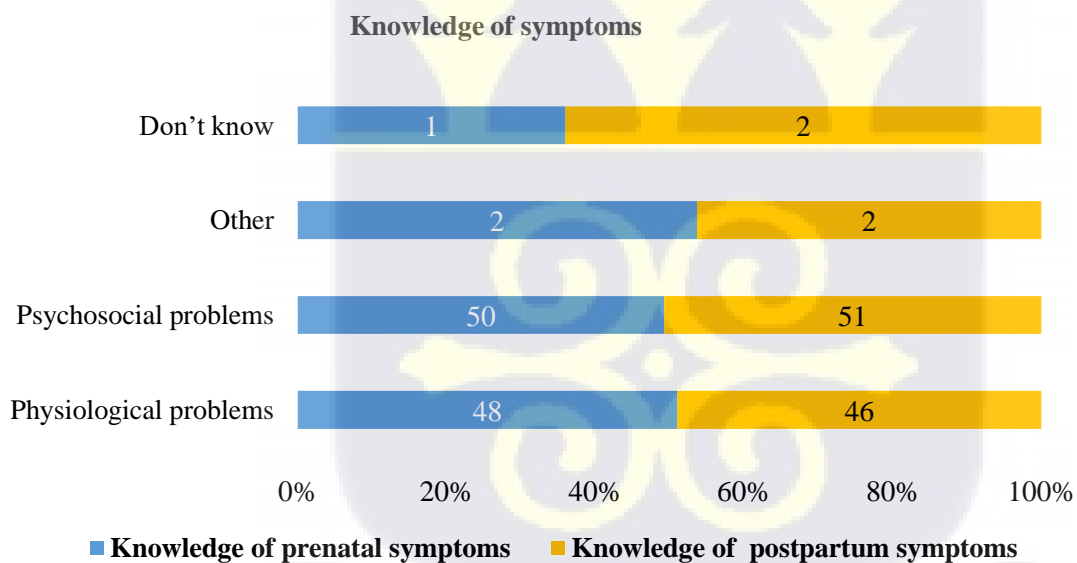
5.4 Knowledge of symptoms of prenatal and postpartum depression

The knowledge of prenatal and postpartum depression symptoms are highlighted in this section. From the findings, the participants generally had knowledge of the physiological and psychosocial symptoms of prenatal and postpartum depression. None the less, psychosocial problems were the most known symptoms of prenatal and postpartum depression by the participants. Psychosocial problems included trouble concentrating, remembering things, and making decisions, a strong sense of failure and no use in life, feeling responsible or regretful for current situation, loss of interest or pleasure in things one loved doing, and persistently feeling down/unhappy and discouraged because of a situation. Other psychosocial problems included withdrawal from family and friends, loss of interest in caring for self, constant changes in mood to highs and lows, feeling restless or having trouble sitting still, frequent feelings of anger over

seemingly small matters, and recurrent thoughts of dying, killing, or harming self. Sleep problems included sleeping too much or difficulty sleeping.

Physiological problems included losing or gaining weight without the desire to do so, and bodily aches or pains without a clear physical cause, appetite problems, and sleep problems. From the study findings, 48 percent of women indicated knowing the physiological symptoms of prenatal depression, and about 50 percent knew the psychosocial symptoms of prenatal. On the other hand, the proportion of women who indicated knowing the physiological symptoms of postpartum depression were 46 percent while 51 percent were knowledgeable of the psychosocial symptoms of postpartum depression. This is illustrated in figure 5.3.

Figure 5.3 *Distribution of respondents by Knowledge of symptoms of prenatal and postpartum depression*



Source: Fieldwork, 2022

5.5 Knowledge of the causes of prenatal and postpartum depression

Table 5.1 shows the participants' knowledge of the factors that cause prenatal and postpartum depression. Knowledge of the causes of depression can have significant implications for prenatal and postpartum depression among mothers. For example, when a woman understands the factors that contribute to

depression during pregnancy and the postpartum period, it gives her the opportunity to undertake preventative measures, address modifiable risk factors, and also seek support and intervention strategies as early as possible. Again, it can allow both the family members and healthcare providers to provide appropriate support to the women during their prenatal and postpartum periods.

Table 5.1 Distribution of Respondents by Knowledge of factors that cause prenatal and postpartum depression

Causes of prenatal depression	Frequency	Percentage (%)
Pregnancy related issues	329	76.5
Support challenges	324	75.3
Health related complications	110	25.5
Substance abuse	19	4.4
Intimate partner violence	38	8.8
Other	15	3.4
Don't know'	11	2.5
Total	846	196.7
Causes of postpartum depression		
After birth related issues	210	48.9
Support challenges	358	83.4
Health related complications	133	31.0
Substance abuse	14	3.2
Intimate partner violence	42	9.7
Other	13	3.0
Don't know'	6	1.4
Total	776	180.8

Source: Fieldwork, 2022

Generally, pregnancy related issues (76.5%), support challenges (75.4%), and health related complications (25.5%) were found to be the most known causes of prenatal depression among women in Kampala and Wakiso districts. Other factors, like substance abuse and intimate partner violence were the least known causes of prenatal depression. Pregnancy related issues included getting pregnant at a young age, unplanned pregnancy, negative feelings about the pregnancy, and experiences of complications during pregnancy like high blood pressure, etc. Support challenges involved when one does not have the required resources to take care of themselves and the expected baby, lack of support from family and friends.

Finally, health related complications included having a family member with a history of depression or another mental illness, having an HIV positive status and fear of infecting the baby, having an HIV positive status and fear of the future, having a previous experience of mental illness.

On the other hand, the three most known causes of postpartum depression among women in Kampala and Wakiso districts were support challenges (83.4%), after birth related issues (48.9%), and health related complications (31.0%). Additionally, though in smaller numbers and in fewer women, substance abuse and intimate partner violence were mentioned.

5.6 Knowledge of the effects of prenatal and postpartum depression

Knowledge of the effects of prenatal and postpartum depression are shown in Table 5.2. When women have knowledge on the potential consequences of untreated depression during and after pregnancy, it can encourage proper health seeking behaviour, which is vital in ensuring early treatment seeking, timely intervention and support, and positive coping attitudes. This is key in improving maternal mental health as well as mitigating the impact of depression on the mother and the baby.

From the results of the analysis, the two top known effects of prenatal depression by the women were pregnancy complications (76.5%) and child's poor growth (55.3%). Pregnancy complications involved effects such as preterm birth, miscarriage, abortions, preterm labour, among others. On the other hand, the effects of depression on the child's growth included low birth weight, developmental delays in physical, social, and mental skills among others. The least known stated effects of prenatal depression were undermined physical health such as developing health complications like high blood pressure, undermined adherence to ARVs, HIV infection of the baby, loss of weight, among others (17.6%) and challenged mental health such as suicidal ideation, loosing up one's mind, and hatred for the pregnancy, among others (16.9%).

Concerning the effects of postpartum depression, the two most cited effects were effect on mother to child interaction (52.9%) and undermined child's health (22.6%). Effect on mother to child interaction included lack of parental love, child neglect, child abuse, refusal to breastfeed the baby, etc., and undermined child's health included effect on child's mental health, malnourishment of the baby, etc. Again, almost an equal proportion of respondents noted undermined mother's mental health (19.3%) and undermined mother's physical health (19.1%) as effects of postpartum depression. Undermined mother's mental health included homicidal and suicidal ideations, etc., while undermined mother's physical health involved non-ARVs adherence, weight loss, complications like high blood pressure, etc.

Table 5.2 Distribution of Respondents by Knowledge of effects of prenatal and postpartum depression

Effects of prenatal depression	Frequency	Percentage (%)
Pregnancy complications	329	76.5
Child's poor growth'	238	55.3
Undermined physical health	76	17.6
Undermined mental health	73	16.9
Other	31	7.2
Don't know'	18	4.1
Total	765	177.9
Effects of postpartum depression		
Effect on mother to child interaction	227	52.9
Undermined child's health	97	22.6
Undermined mother's mental health	83	19.3
Undermined mother's physical health	82	19.1
Effects on child's social life'	52	12.1
Other	62	14.4
Don't know'	36	8.3
Total	639	148.9

Source: Fieldwork, 2022

5.7 Knowledge of where to obtain professional help and/or treatment for prenatal and postpartum depression

Table 5.4 shows the women's knowledge of where to obtain professional help or treatment for prenatal depression and postpartum depression. The results indicate that there is no significant variation in the women's knowledge of where to obtain professional help or treatment in case they present with symptoms

of prenatal or postpartum depression. For example, majority (87%) of the respondents indicated their preference for seeking biomedical treatment (e.g., from public hospital, private hospital, mental health hospital, clinics, PMTCT clinics, counsellors, etc.) for prenatal depression. Similarly, a higher proportion (88%) indicated their preference of seeking biomedical treatment for postpartum depression. Furthermore, respondents who indicated seeking non-biomedical treatment (e.g., seeking help from pastors, family, and friends, etc.) were 4.2 percent for prenatal depression and 5 percent for postpartum depression. Conversely, an equal proportion of the respondents indicated, “don’t know” where to seek professional help/treatment for prenatal depression and postpartum depression with close to 11 percent in either of them.

Table 5.4 Distribution of respondents’ perceptions of where to obtain prenatal and postpartum depression

Perceptions on where to obtain professional help/treatment for prenatal depression	Frequency	Percentage (%)
Orthodox treatment	431	86.7
Non-orthodox treatment	21	4.2
Self-medication	2	0.4
Other	5	1.0
Don't know'	54	10.8
Total	513	103.2
Perceptions on where to obtain professional help/treatment for postpartum depression		
Orthodox treatment	435	87.5
Non-orthodox treatment	24	4.8
Other	2	0.4
Don't know'	54	10.8
Total	515	103.6

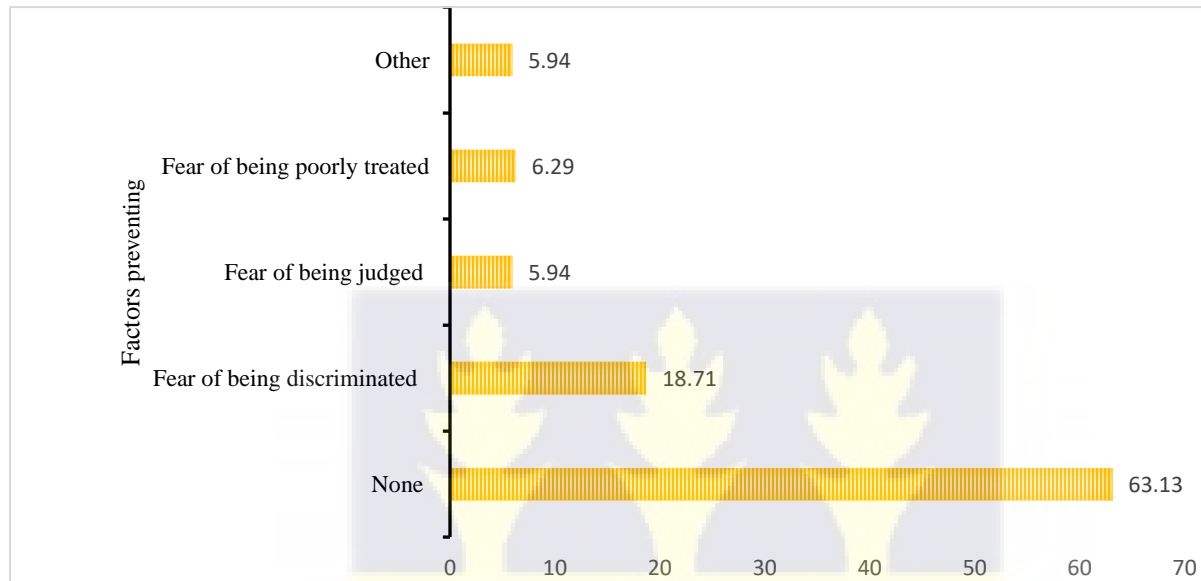
Source: Fieldwork, 2022

5.8 Barriers to reporting depression symptoms

Figure 5.4 shows the factors that respondents indicated could potentially prevent women from reporting depressive symptoms during their prenatal and postpartum periods. From the results, majority (63.1%) of the respondents indicated that nothing would prevent them from reporting any depressive symptoms

experienced. On the other hand, some participants noted some factors that would prevent them from reporting depressive symptoms to include fear of experiencing discrimination (18.7%), fear of being poorly treated (6.29%), and fear of being judged (5.9%).

Figure 5.4 *Distribution of respondents by factors which would prevent them from reporting depression symptoms*



Source: Fieldwork, 2022

5.9 Perceptions of Seeking Treatment from Health Professionals, Traditional Healers, and Faith healers

In this study, participants’ perception of seeking treatment from the three main sources were examined. This included health professionals, traditional healers, and faith healers. From table 5.5, the results indicate that majority (93.5%) of the participants believed in seeking treatment from health professionals whilst 4.4 percent did not believe in seeking treatment from health professionals. For those who believed in seeking treatment from health professionals, the reasons that were cited as influencing their choices included their trust in the health professionals’ training (88.1%), the health professionals’ experience

(78.0%), the health professionals' trustworthiness (58.4%), and because the health professionals have the right facilities (45.8%).

When it comes to seeking treatment from traditional healers, less than five percent of the women indicated that they believed treatment from traditional healers was important were almost 96 percent did not believe in seeking treatment from traditional healers. Those women who believed in seeking treatment from traditional healers mentioned their reasons for this choice to include the fact that traditional healers have more experience (57.1%), and can be trusted (28.5%). Concerning the women's belief in seeking treatment from faith healers (e.g. pastors/ prophets), about one out of four women (25.9%) believed in seeking treatment from pastors/ prophets, while 74.0 percent did not believe in seeking treatment from pastors/ prophets. The reasons given by the women included the need to pray/ seek God's healing (65.8%), too long hospital procedures (16.2%), and the high cost involved in going to the health facility (10.0%).

Table 5.5 Distribution of Respondents' Perceptions of Seeking Treatment from Health Professionals, Traditional Healers, and Faith Healers

Variable	Frequency	Percentage (%)
Do you believe in seeking treatment from health professionals?		
Yes	465	93.5
No	32	6.4
Why seek treatment from health professionals?		
They have been trained	410	88.1
They can be trusted	272	58.4
They have experience	363	78.0
They have the right facilities	213	45.8
Other	25	5.3
Total	1283	275.9
Do you believe in seeking treatment from Traditional healers?		
Yes	22	4.4
No	475	95.5
Why seek treatment from Traditional? healer		
They can be trusted	6	28.5
They have experience	12	57.1
Other	5	23.8
Total	23	109.5
Do you believe in seeking treatment from pastors/ prophets?		
Yes	129	25.9

No	368	74.0
Why seek treatment from Prophet/ pastor?		
To pray/ seek God's healing	85	65.8
Too long hospital procedures	21	16.2
Too expensive to go to health facility	13	10.0
Other	37	28.6
Total	156	120.9

Source: Fieldwork, 2022

5.10 Perceptions of Seeking Treatment from Health Professionals, Traditional Healers, and Faith healers by HIV status

Table 5.6 indicates a majority of the HIV positive (94.1%) and the HIV negative (93.2%) women believed in seeking treatment from health professionals. Thus, only 6 percent of the HIV positive and 7 percent of the HIV negative did not believe in seeking treatment from health professionals. Again, most of the women who were HIV positive (97%) and HIV negative (94.5%) did not believe in seeking treatment from traditional healers. This means that only 3 percent of the HIV positive and 6 percent of the HIV negative believed in seeking treatment from traditional healers. When it comes to seeking treatment from faith healers, however, the proportion of women who did not believe seeking their treatment was 65.3 percent among the HIV positive and 83 percent among the HIV negative. Nonetheless, 35 percent of the HIV positive women and 17.4 percent of the HIV negative women believed in seeking treatment from faith healers.

Table 5.6 Distribution of Perceptions of Seeking Treatment from Health Professionals, Traditional Healers, and Faith healers by HIV status

HIV Status	Seeking treatment from health professionals		Seeking treatment from traditional healers		Seeking treatment from faith healers	
	Yes	No	Yes	No	Yes	No
Positive	222(94.1)	14(5.9)	7(2.9)	229(97.0)	82(34.7)	154(65.3)
Negative	220(93.2)	16(6.8)	13(5.5)	223(94.5)	41(17.4)	195 (82.6)
Total	442(93.6)	30(6.4)	20(4.2)	452(95.8)	123(26.1)	349(73.9)
Chi2 (Pr)	0.1424 (0.706)		1.8796 (0.170)		18.4833 (0.000)	

Source: Fieldwork, 2022

5.11 Depression status and knowledge of prenatal and postpartum depression

In order to understand how knowledge about prenatal and postpartum depression is associated with the respondents' depression status, a chi-square test was run as indicated in Table 5.6. The results pertaining to prenatal depression indicate that women who scored high on the EPDS scale had moderate knowledge (65%) or high knowledge (25.2%) of prenatal depression compared to women who did not show depression symptoms. The relationship between depression status and knowledge of prenatal depression was statistically significant ($p=0.003$), meaning that there was a strong association between the women's knowledge of prenatal depression and their depression status.

Again, women who scored high on the EPDS scale had a higher proportion of high knowledge (26.8%) of postpartum depression compared to women who did not show depression symptoms. The results show that the relationship between depression status and knowledge of postpartum depression was statistically significant ($p= 0.000$). This suggests that depression status is associated with knowledge of postpartum depression. Women who have high knowledge about postpartum depression have high chances of experiencing depression.

Table 5.6 Association between depression status and knowledge of prenatal and postpartum depression

Depression Status	Knowledge of prenatal depression percentage				Knowledge of postpartum depression percentage			
	No	Moderate	High	Number	No	Moderate	High	Number
Not depressed	19.9	63.9	16.3	166	21.1	63.9	15.1	166
Depressed	10.1	64.7	25.2	306	9.5	63.7	26.8	306
Total	13.6	64.4	22.0	472	13.6	63.8	22.7	472
Chi2 (Pr)	11.4226 (0.003)				17.2333 (0.000)			

Source: Fieldwork, 2022

5.12 HIV status and knowledge of prenatal and postpartum depression

Table 5.7 provides insights into the knowledge levels of the women about prenatal and postpartum depression by their HIV status. The results about knowledge of prenatal depression suggested that HIV positive women had high knowledge of both prenatal depression (26.7%) and postpartum depression (27.1%) compared to HIV negative women. Nonetheless, HIV negative women scored higher on moderate knowledge for both prenatal depression (72.5%) and postpartum depression (70.8%). Again, the statistical analyses reveal that there is a significant relationship between HIV status and knowledge of prenatal depression ($p=0.001$) as well as postpartum depression ($p= 0.007$), suggesting that HIV status influences the women’s knowledge on prenatal and postpartum depression. Overall, the table suggests regardless of the women’s HIV status, their knowledge about prenatal and postpartum depression was still relatively low, as they scored less than 50 percent in “high knowledge”. This is necessary for targeted mental health care especially for women living with HIV as knowledge of prenatal and postpartum depression has an implication for one’s health seeking behaviour and as such has an impact on maternal and infant health outcomes.

Table 5.7 Association between HIV status and knowledge of prenatal and postpartum depression

HIV Status	Knowledge of prenatal depression percentage				Knowledge of postpartum depression percentage			
	No	Moderate	High	Number	No	Moderate	High	Number
Positive	16.9	56.4	26.7	236	16.1	56.8	27.1	236
Negative	10.2	72.5	17.4	236	11.0	70.8	18.2	236
Total	13.6	64.4	22.0	472	13.6	63.8	22.7	472
Chi2 (Pr)	13.4038 (0.001)				9.9894 (0.007)			

Source: Fieldwork, 2022

5.13 Socio-demographic characteristics and knowledge of prenatal and postpartum depression.

The analysis of knowledge of prenatal and postpartum depression by selected socio-demographic characteristics is shown in Table 5.8. Overall, HIV-positive and HIV-negative women had moderate

knowledge of prenatal and postpartum depression. However, among women living HIV aged 15-24 years, an equal proportion of them (29% each) had no knowledge of prenatal and postpartum depression as compared to HIV negative women (16% for prenatal and 18.4% for postpartum). Again, high knowledge about prenatal and postpartum depression in women living with HIV increased with age (e.g. ages 15-24- had 6% of prenatal knowledge and 3% of postpartum knowledge, ages 25-34- had 30% of prenatal and 31% of postpartum). However, among the HIV negative women, knowledge of prenatal depression (26%) as well as postpartum depression (26%) was highest among ages 35 years and older. Among women living with HIV, a significant association was observed between age groups and knowledge levels of prenatal ($p= 0.023$) and postpartum ($p= 0.007$) depression. This indicates that age is a significant influence of the knowledge levels of women living with HIV.

When it comes to education and the level of knowledge about prenatal and postpartum depression, women living with HIV who had secondary education had a higher proportion of “no knowledge” of both prenatal (19.1%) and postpartum depression (17%) as compared to HIV negative women (6.0% for prenatal and 7.2% for postpartum depression). Again, a similar proportion of high knowledge of prenatal depression and postpartum depression (37% for each) was found in women living with HIV with high education. On the other hand, HIV negative women who had higher education were highly knowledgeable in postpartum depression (22%) compared to prenatal depression (21%).

About the marital status, the results indicate that in comparison to HIV negative women, HIV positive women who were single/separated/divorced had the highest percentage of “no knowledge” of both prenatal and postpartum depression (23.3% for each). Again, women living with HIV who were married or cohabiting had high knowledge about prenatal and postpartum depression (29% for each) compared to the HIV negative women (17.1% for prenatal knowledge and 18% for postpartum knowledge).

Nonetheless, the observed relationship between marital status and knowledge of prenatal and postpartum depression was not statistically significant.

Findings on employment status reveal that respondents who were not currently working scored higher in no knowledge for both women living with HIV and the HIV negative women. Among HIV-positive women not currently working, 22.2 percent had no knowledge of both prenatal and postpartum depression. Conversely, among HIV-negative women not working, the proportion of no knowledge for prenatal and postpartum depression was both 18 percent. In contrast, those living with HIV who were employed had a high knowledge rate of 32 percent for both prenatal and postpartum depression, whereas HIV-negative women with employment had 20 percent of high knowledge of prenatal depression and 21 percent high knowledge of postpartum depression. The study also found a significant association between employment status and knowledge of prenatal ($p=0.043$) and postpartum ($p=0.028$) depression in women living with HIV, while among HIV-negative women, only knowledge of prenatal depression was statistically significant ($p=0.038$).

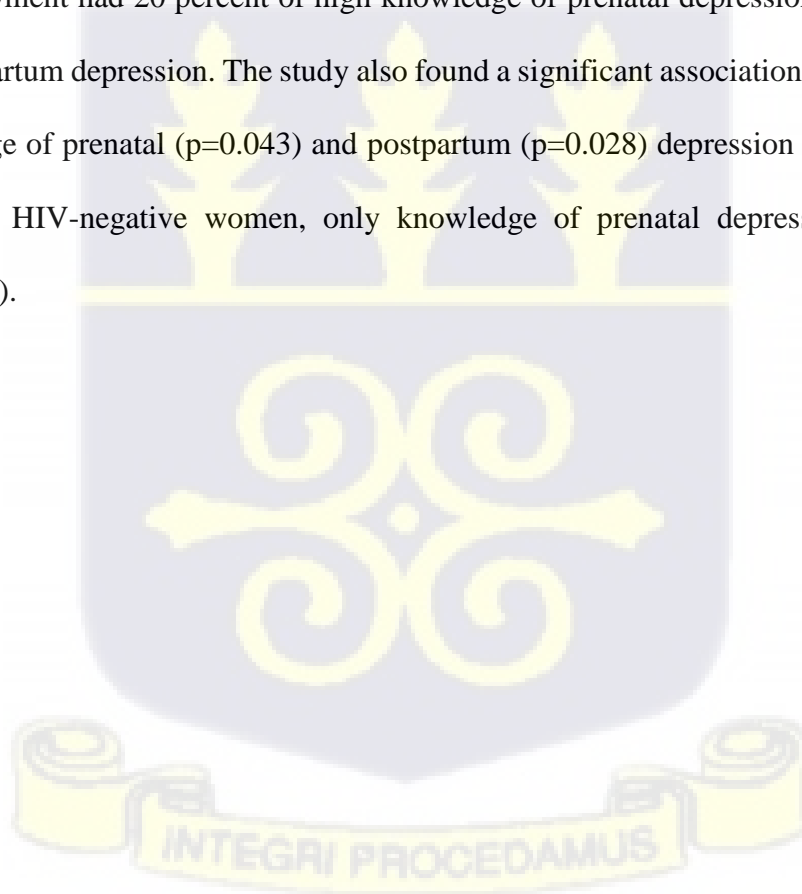


Table 5.8 Association between Selected Socio-Demographic Characteristics and Knowledge of Prenatal and Postpartum depression.

Variables	Women living with HIV						HIV negative women					
	Knowledge of prenatal depression (%)			Knowledge of postpartum depression (%)			Knowledge of prenatal depression (%)			Knowledge of postpartum depression (%)		
	No	Moderate	High	No	Moderate	High	No	Moderate	High	No	Moderate	High
Age	p-value = 0.023			p-value = 0.007			p-value = 0.404			p-value = 0.365		
15-24	28.6	65.7	5.7	28.6	68.6	2.9	15.8	68.4	15.8	18.4	65.8	15.8
25-34	16.2	54.1	29.7	14.9	54.1	31.1	8.6	75.5	15.9	9.2	73.6	17.2
35+	11.3	56.6	32.1	11.3	56.6	32.1	11.4	62.9	25.7	11.4	62.9	25.7
Education	p-value = 0.659			p-value = 0.699			p-value = 0.123			p-value = 0.263		
Primary or less	14.5	59.0	26.5	15.7	55.4	28.9	21.4	71.4	7.1	14.3	71.4	14.3
Secondary	19.1	56.4	24.6	16.7	59.5	23.8	6.0	80.7	13.3	7.2	79.5	13.3
Higher	14.8	48.2	37.0	14.8	48.2	37.0	11.5	67.6	20.9	12.9	65.5	21.6
Marital status	p-value = 0.279			p-value = 0.298			p-value = 0.454			p-value = 0.481		
Otherwise	23.3	58.1	18.6	23.3	55.8	20.9	0.0	50.0	50.0	0.0	50.0	50.0
Married/living together	15.5	55.9	28.5	14.5	56.9	28.5	10.3	72.7	17.1	11.1	70.9	17.9

Employment	p-value = 0.043			p-value = 0.028			p-value = 0.038			p-value = 0.059		
Not currently working	22.2	57.4	20.4	22.2	56.5	21.3	17.7	70.9	11.3	17.7	70.9	11.3
Currently working	12.5	55.5	32.0	10.9	57.0	32.0	7.5	72.9	19.5	8.6	70.7	20.7

Source: Fieldwork, 2022



5.14 Discussion

This chapter examined the levels of knowledge about prenatal and postpartum depression among the participants. Similar to studies by Alsabi et al. (2022) in Malaysia and Grech et al. (2022) in Malta, this study found out that the women generally had moderate knowledge on prenatal and postpartum depression, which knowledge was attained mainly through informal social networks (e.g. family, friends, etc.) and health professionals. Corrigan et al. (2015) also found that mothers contacted health-care professionals, obstetrics and gynecologists, nurses, etc. for professional support in terms of knowledge during the postpartum period. However, literature does not report comprehensively on social networks as sources of knowledge for prenatal and postpartum depression, but rather social networks are seen as sources of support for people who experience prenatal or postpartum depression e.g. (Aktas & Calik, 2015; Antoniou et al., 2022; Ayele et al., 2016; Tesfaye & Agenagnew, 2021). This indicates that maintaining healthy social connections is vital in the study setting as they serve as social support, for women when challenged during prenatal and postpartum periods. This provides an avenue to share information and learn from each other.

Respondents identified psychosocial problems as the main symptoms of prenatal and postpartum depression, which symptoms were mentioned by participants in previous studies (Grech et al., 2022; Nakku et al., 2016; Sam, 2018). According to Alsabi et al. (2022), responding correctly to postpartum depression symptoms, indicates awareness of the warning signs of postpartum depression. Furthermore, as previously identified by Daehn et al.'s (2022) systematic review, Nakku et al. (2016) study in Uganda, and Sam (2018) study in Ghana, respondents in this study also had knowledge on the causes prenatal and postpartum depression, as well as their effects. The women's ability to accurately cite the causes of prenatal and postpartum depression (e.g., pregnancy complications, lack of family/ friend support, etc.) as well as the effects (e.g., miscarriage, child's low birth weight, etc.) confirms both the professional

knowledge attained from health professionals and personal experience as they interact with others in the family and community.

The above results show the role of protective factors like social support as indicated by the vulnerability stress model in influencing depression. In this case, availability of support systems both informal (e.g. family, friends, etc.) and formal (health professionals) with strong communication skills encourages interaction and sharing of information on depression (e.g. its causes, symptoms, effects, etc.). Thus, increased knowledge on prenatal and postpartum depression which can help the women in identifying the symptoms early as well as improve help-seeking behaviours and treatment.

Regarding the women's perceptions of where to obtain professional help or treatment for prenatal and postpartum depression, most women preferred seeking biomedical treatment. In their investigations, Huang et al. (2023) in China, Goodman (2009) in Boston, and Corrigan et al. (2015) in Midwestern US observed comparable tendencies of most women willing to seek professional aid. However, some women preferred non-biomedical help especially from informal sources. Even though the mentioned informal sources especially family and friends could suggest the presence of tightly, connected social units that would offer instant support (Grech et al., 2022), which can affect maternal and child health for women irrespective of HIV status if used without caution. The preferences for non-biomedical help is also noted by other researchers (Daehn et al., 2022; Evagorou et al., 2016; Grech et al., 2022). Again, people prefer traditional healers for mental health therapy due to beliefs that witchcraft causes it (Nakku et al., 2016; Sokhela, 2016; Subu et al., 2022).

Some prenatal and postpartum women in the study reported not willing to report their depressive symptoms for fear of being discriminated, being judged, among others, which would in turn hinder the diagnosing and treating depression in this category of women. Other studies have reported similar barriers

of stigma, shame associated with depression, among others (Daehn et al., 2022; Manso-Córdoba et al., 2020; Smith-Nielsen et al., 2018). Again in Uganda, Nakku et al. (2016) discovered that the participants were not sharing even the most severe mental illness symptoms for fear of being stigmatised or treated unfairly and losing their baby.

Women who were depressed had “moderate knowledge” and “high knowledge” of prenatal and postpartum depression than those who were not depressed. This finding could suggest that knowledge regarding pregnancy and postpartum depression and its repercussions might affect women differently based on their coping styles, social support, and culture. The knowledge can empower some by allowing them to seek help proactively and reduce stigma, but it can also make others feel vulnerable, stressed, and anxious about mental health, which can affect their emotional well-being and lead to depression. When faced with emotional obstacles, such women may blame themselves, which increases self-criticism and guilt and contributes to depression. Moreover, women with a history of prenatal and postpartum depression when faced with emotional obstacles it may increase their increase guilt and risks of being depressed (HRSA Maternal and Child Health Bureau, 2019; Turkcapar et al., 2015). However, Hadfield & Wittkowski (2017) note that mothers without postpartum depression expertise couldn't recognize depression symptoms. More research in similar contexts is therefore needed to confirm the link between depression status and prenatal and postpartum depression knowledge.

The study findings that HIV-positive women had “high knowledge” of prenatal and postpartum depression could be accounted by many reasons. HIV-positive mothers may attend PMTCT clinics to prevent HIV transmission to their newborns, and make inquiries about pregnant and postpartum depression at these clinics. Again, the psychosocial support from counsellors during clinic visits improves information-sharing, including depression conversations, among these women. With these therefore, HIV-positive women who regularly use PMTCT services are more likely to know about prenatal and postpartum

depression, which helps diagnose and treat it early. The link between prenatal and postpartum depression knowledge and women's HIV status shows that “high knowledge” is still relatively low, below 50 percent (e.g. 27% of prenatal and 27.1% of postpartum knowledge among HIV positive; and 17.4% of prenatal and 18.2 % of postpartum knowledge among the HIV negative). This calls for targeted mental health awareness and care to fill knowledge gaps in order to improve maternal health and further reduce perinatal HIV transmission among the HIV positive women.

The findings further suggest that age may play a role in influencing knowledge levels of prenatal and postpartum depression especially among women living with HIV. Generally, this study shows that younger respondents living with HIV (15-24) tend to have no knowledge, while older respondents (35+) have high knowledge. High knowledge among older women living with HIV could be accumulated from life experience as one grows and interacts with others. These findings contradict Branquinho et al. (2019) who found higher levels of knowledge about postpartum depression among the younger age group. Additionally, the study is in contrast with Alsabi et al. (2022) who found no significant association between age group with attitude and knowledge.

Furthermore, it was established that women who had high education had higher knowledge of prenatal and postpartum depression regardless of the HIV status. Some factors accounting for this finding include that higher educated people frequently have high chances of accessing and comprehending the available information on prenatal and postpartum depression from various platforms like research materials and internet. These findings agree with Alsabi et al. (2022) and Branquinho et al. (2019) who found educated people having higher levels of knowledge about prenatal and postpartum depression.

Findings in this study established that HIV positive women who were single/separated/divorced had the highest percentage of “no knowledge” of both prenatal and postpartum depression, contradicting a study

by Grech et al. (2022) in Malta where the divorced/widowed/separated rather had the knowledge This because women transitioning out of marriage have higher chances of experiencing depression, which increases their knowledge on prenatal and postpartum depression (Wójcik et al., 2021).

Again, the currently working respondents regardless of their HIV status had high knowledge prenatal and postpartum depression. High knowledge of prenatal and postpartum depression among employed women could be attributed to the better access to information and healthcare resources in the workplace, such as health education, wellness programmes, and health insurance coverage, enhancing their understanding of maternal mental health issues. Additionally, the workplace environment provides opportunities for social interactions and discussions about health topics, including mental health, further contributing to increased knowledge among employed women.



CHAPTER SIX

PRENATAL AND POSTPARTUM EXPERIENCES OF WOMEN LIVING WITH HIV IN KAMPALA AND WAKISO, UGANDA.

6.1 Introduction

The focus of this chapter is on the qualitative analysis of the experiences of both HIV positive and HIV negative women who were pregnant and those who had recently given birth at the time of the survey using individual and key informant interviews. The purpose of the analysis is to complement the quantitative findings. This chapter is divided into two sections. First, the characteristics of the participants are discussed. Subsequently, the emerging themes are presented with relevant supporting quotations from the transcripts. This study identified five major themes including 1) experiences of depressive symptoms in pregnancy and/or after giving birth 2) experiences of current pregnancy or after giving birth 3) expectations of pregnancy 4) experiences with HIV testing and/ or living with HIV and: 5) barriers to diagnosis and treatment of prenatal and postpartum depression. These five themes each had a number of sub-themes themes as outlined in Table 6.1.

Table 6.1 Thematic description of women’s experiences

Major/ Global Theme	Organizing Theme
Depressive symptoms in pregnancy and/or after giving birth	Emotional symptoms Somatic symptoms
Experiences of current pregnancy or After Giving Birth	Positive experiences Negative experiences
Expectations of pregnancy	Pregnancy plans and desires Reactions, feelings, and thoughts after discovering the pregnancy
Experiences with HIV Testing and/ or Living with HIV	Psychosocial experiences Medical experiences
Barriers to depression diagnosing and treatment	

6.2 Participants' socio-demographic and economic characteristics

Table 6.2 presents the socio-demographic and economic characteristics of 21 pregnant women and those who have given birth, and 16 key informants respectively who were interviewed for this study. Out of the 21 women who were interviewed, 15 were HIV positive, whilst six were HIV negative. Additionally, almost an equal number of the women were either currently pregnant (11) or had recently given birth (10). Across all the health facilities, majority of the participants were of age 25-34 years (10) and 35 years and older (9). The women in this study had attained some formal education, with nine of them having secondary education, followed by seven with higher education.

Of the 21 pregnant women and those who have given birth, 13 of them were employed whereas only eight were not currently working. Moreover, 15 of them were married or living with a partner, while six were either single/never married, divorced, or separated. Again, 17 of women participants were Christians whilst four were Muslims. Eighteen (18) of the mothers indicated having one or more children, and only three women did not have any child prior to the current pregnancy. On the number of household members lived with, 16 of the participants lived with 1-5 people, four were living with more than five people and only one person was living alone. It is also to be noted that nine of the mothers were the primary providers for their households, while seven had a shared responsibility to fend for the family. Some of the persons these mothers mentioned they shared the responsibilities with included partners, children, siblings, and other household family members. In addition, four of them identified their partners as being their household breadwinners, and only one indicated a parent as the breadwinner. A significant number of these participants (14) travelled more than eight kilometres to access the health facility for services. Of these, 14 mothers, those who attended Mildmay Uganda and TASO Mulago constituted the highest number of seven and five respectively, while two of them were from Mulago Specialised Women and Neonatal Hospital.

Table 6.2 Sociodemographic and Economic Characteristics of Women

Characteristics	Study Sites			Total Participants (N =21)
	TASO- Mulago (N =7)	MildMay- Uganda (N =8)	Mulago Specialised Women and Neonatal Hospital (N =6)	
HIV status of respondent				
HIV positive	7	8	0	15
HIV negative	0	0	6	6
Type of respondent				
Currently pregnant	4	3	4	11
Recently given birth	3	5	2	10
Age Groups				
15-24	0	0	2	2
25-34	2	5	3	10
35+	5	3	1	9
Level of education				
Primary or less	1	2	2	5
Secondary	3	3	3	9
Higher	3	3	1	7
Employment status				
Not currently working	1	3	4	8
Currently working	6	5	2	13
Marital Status				
Otherwise	1	3	2	6
Married/ living together	6	5	4	15
Religion				
Christians	5	7	5	17
Islam	2	1	1	4
Number of children				
No child	1	0	2	3
1 or more children	6	8	4	18
Number of household members				
None	0	0	1	1
1-5	4	7	5	16
More than 5	3	1	0	4
Household breadwinner				
Mother herself	3	4	2	9
Partner	0	2	2	4
Parent	1	0	0	1
Shared responsibility	3	2	2	7
Distance between home and health facility				
0-3 Kilometres	0	0	2	2
3-5 kilometres	0	1	2	3
5-8 kilometres	2	0	0	2
More than 8 kilometres	5	7	2	14

Source: Fieldwork, 2022

From Table 6.3, a majority (14) of the key informants were female, five of whom were aged 31-40 years and three were 30 years or younger. An equal number of key informant participants had attained a certificate, diploma or a master's degree (4 participants each). On the other hand, three of them had a bachelor's degree and one had secondary level education. The participants' occupations were assistant/nursing officers (4 participants), followed by counsellor/social worker (2 participants) and enrolled midwife (2 participants). Other job titles included a psychiatrist, medical officer, among others. Out of the 16 key informants, seven had working experience of 1-5 years, five had 6-10 years of working experience, and four had worked with the mothers at the health facility for more than 10 years.

Table 6.3 Sociodemographic Characteristics of Key informants

Characteristics	Study Sites			Total Participants (N =16)
	TASO- Mulago (N =5)	MildMay- Uganda (N =5)	Mulago Specialised Women and Neonatal Hospital (N =6)	
Sex				
Female	4	4	6	14
Male	1	1	0	2
Age Groups				
≤30	1	2	0	3
31-40	1	3	1	5
41-50	3	0	1	4
>50	0	0	4	4
Highest qualification attainment				
Secondary education	1	0	0	1
Certificate	0	2	2	4
Diploma	1	1	2	4
Bachelor's degree	2	1	0	3
Masters	1	1	2	4
Job title				
Peer/ mentor mothers	1	1	0	2
Counsellor/ social worker	1	1	1	3
Clinician	1	0	0	1
Medical coordinator	1	0	0	1
Assistant/ Nursing officer	0	1	3	4
Enrolled midwife	0	1	1	2
Psychiatrist	0	1	0	1

Medical Officer Special Grade	0	0	1	1
Technical adviser for prevention and population services	1	0	0	1
Working experience				
1-5 years	3	4	0	7
6-10 years	1	1	3	5
>10	1	0	3	4

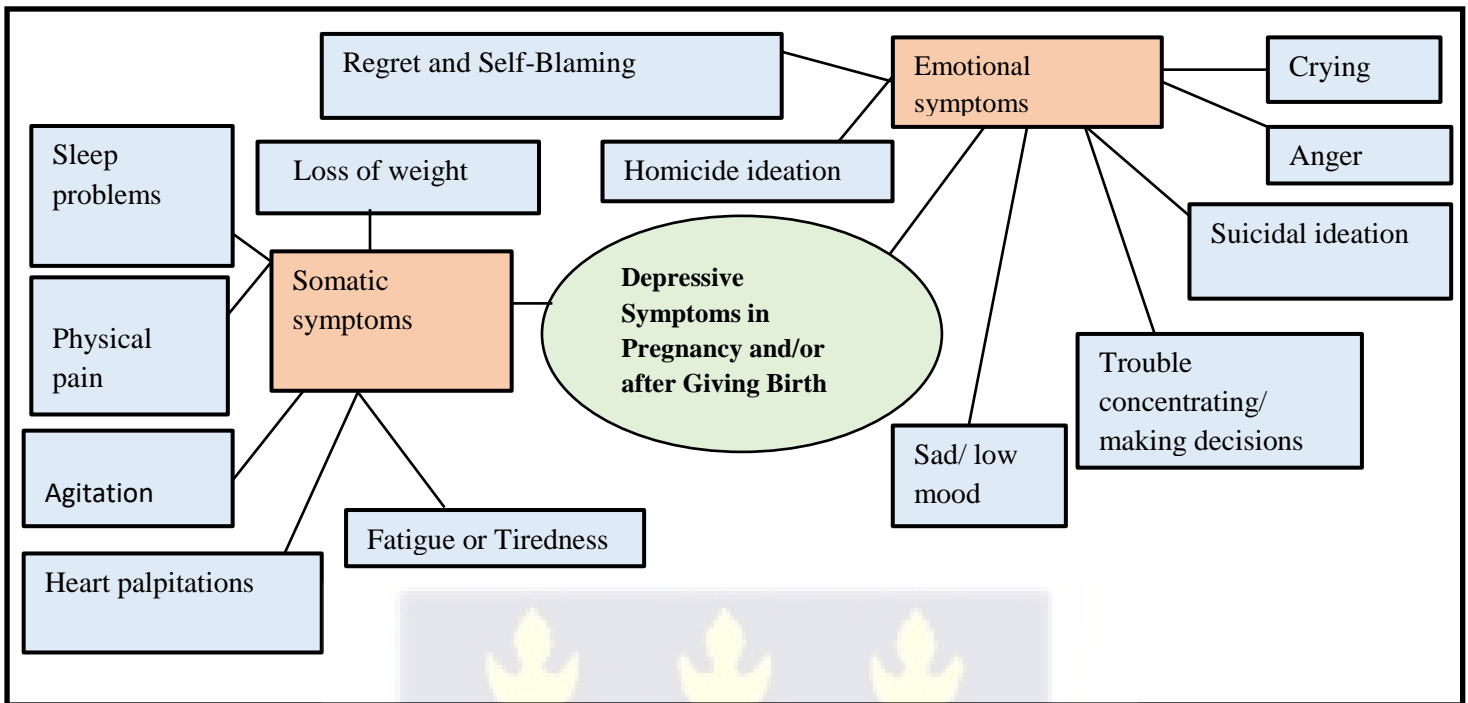
Source: Fieldwork, 2022

6.3 Experiences of Depressive Symptoms in Pregnancy and/or after Giving Birth

In this study, the symptoms recorded as depression symptoms are similar to those listed in the depression measuring scales like the SRQ-20 and the EPDS which were used to measure depression in the quantitative part of this study. These symptoms have been categorised into emotional and somatic symptoms. Emotional symptoms of depression are negative emotional expression that include reductions in emotional expression in the face, eye contact, intonation of speech, and movements of the hand, head and face that normally give an emotional emphasis to speech (APA, 2013). Conversely, somatic symptoms are conditions where one has persistent bodily complaints without explanatory organic causes, or other specified pathology after a physician's sufficient physical examination (Kleinstäuber et al., 2017; Fink et al., 2002). Like in other psychiatric disorder, somatic symptoms are highly prevalent in depressed patients and may be a mechanism through which these patients react to their emotional distress (Kurlansik & Maffei, 2016; Liu et al., 2019). Both emotional and somatic symptoms can decrease one's ability to function. Figure 6.1, shows the thematic network of the emotional and somatic depressive symptoms that were identified.



Figure 6.1 Thematic Network of Depressive Symptoms in Pregnancy and/or after Giving Birth



Source: Fieldwork, 2022

6.3.1 Emotional symptoms of depression

This included symptoms like crying, anger, regret and self-blaming, homicide ideation, suicidal ideation, feeling sad or low, and trouble concentrating or making decisions. In this study for example, the women who reported either being regretful or blaming self, resulted from their decision to keep the unplanned pregnancy, HIV status, and their delayed antenatal care attendance which resulted into health complications. One of the mothers lamented for getting HIV infected by her partner:

I keep saying that if I had been having multiple relationships and got HIV infected then I would have not blamed myself. But here I was being faithful while keeping myself safe and then getting infected by a man. It pains me so much.” (28- year- old HIV positive woman who has recently given birth).

The suicidal and homicidal ideation noted by the women in this study calls for urgent intervention strategies. Suicidal ideations and self- harm was narrated by expressions like thoughts of harming themselves, thoughts of disappearing, and thoughts of being better off dead. In describing how the

mothers might harm themselves, most women reported thinking about drinking poison, drowning themselves in the lake, moving to an unknown place and getting lost, and swallowing medicine. On the other hand, homicide ideation included thoughts of killing or harming another person especially the children and the partner whom the woman suspected to have infected her with the virus. From their narratives, some of the women indicated having made plans how they might go about harming others especially through poisoning. Some of the factors that contributed to such suicidal and homicidal thoughts included feeling worthless, testing HIV positive, continuous experiences of gender-based violence, stress, rejection, inability to care for children, among others as summarised from two women:

“Sometimes, I am like God why did you allow it for me, to be infected with HIV? My husband died, and this current partner of mine has denied the pregnancy; why is it every man that comes to me runs away? Is it because of my HIV status? I feel I am tired of this world and life for real. I even think of committing suicide or I just move to unknown place and I get lost, or I throw myself in the lake and I die from there in silence. I saw everything when it is on top of me; I have to look for school fees for the twins since I am their father and mother as their father died. Now I have another child I am expecting...I sometimes get tired of life I will not hide you”. (26- year- old HIV positive pregnant woman).

“...I developed a suicidal thought and was looking for what I can do to see that myself and children we all die. My son told me don't try it because I will even fear the food you prepare...” (37- year- old HIV positive woman who has recently given birth).

The key informant added:

“I think we had one, she actually tried to take poison, but good enough she was taken to hospital and she was saved...” (Key informant 006, Mulago Specialised Women and Neonatal Hospital)

6.3.2 Somatic symptoms of depression

The somatic depressive symptoms underlined in this study included sleep problems, physical pain, agitation, heart palpitations, fatigue or tiredness, and loss of weight. For instance, when it comes to sleep problem, the common types of sleep problems noted by women in this study included trouble falling asleep, sleeping lightly and waking up in the night. Furthermore, the women who reported having sleep problems expressed that having worrying thoughts and fears resulted in disturbances in their sleep:

“I fail to sleep most of the time because I look at my children, I have nothing to feed them, you look at the child and you can see it that he or she is really hungry but again you have nothing in the house to give them to eat.” (35- year- old HIV negative woman who has recently given birth)

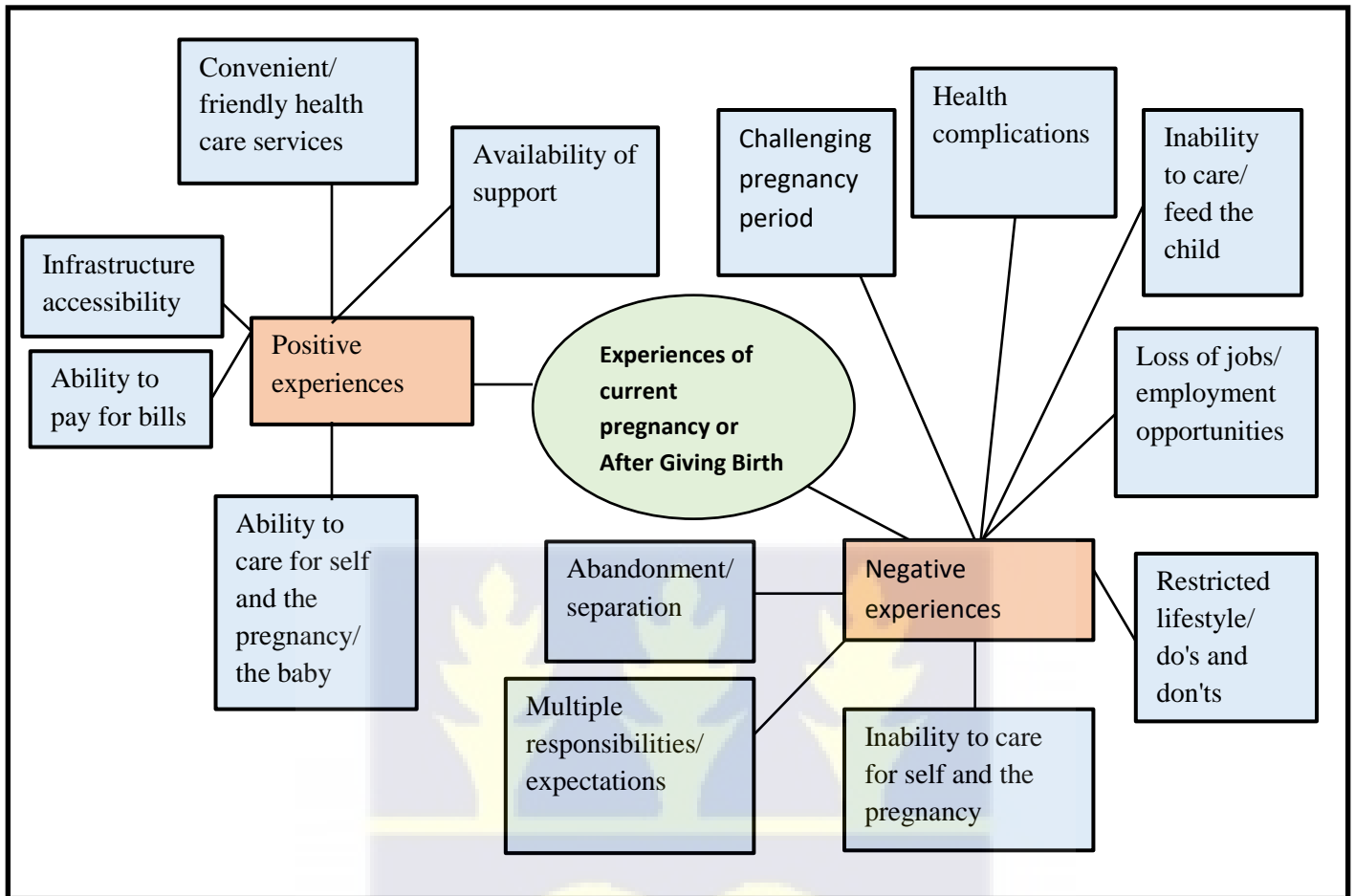
The heart palpitation somatic symptom reported in this study was particularly among women living with HIV. Some of the responses used by these women to describe their experience included words like the heart pumping too much and rapid heartbeat. Stress and fear were some of the factors that resulted in such sensations in the heart. Also, another woman indicated that this experience happened when it was time to take her ARVs medication while the spouse was at home since she has never disclosed her HIV status to him. She stated:

“When he is available it becomes a challenge, you may feel the heart pumping too much. Remember I take the drugs in hiding so that he doesn’t see me. When time approaches I get scared how to take them. Also feeling panic especially when time is almost approaching for my medicine. I am a bit free when he has gone to work because he comes back at 10:00pm when I have taken the drugs at 9:00pm. There are days when I look unsettled with my heart beating fast and at time, he observes that. Sometimes he asks me what the problem is, and I just tell him I am not feeling well so he should first leave me alone.” (38- year- old HIV positive pregnant woman)

6.4 Experiences of current pregnancy or after giving birth

The lived experiences as well as the circumstances surrounding the pregnancy or the postpartum period of women may influence their depression status. Therefore, the study sought to understand the participants’ general experiences of the current pregnancy or recent childbirth. From the participants’ narratives, both positive and negative experiences were shared. The positive experiences promoted better mental health whereas the negative experiences were likely to have an impact on the women’s mental and physical health. The experiences are shown in Figure 6.2 as well as discussed below:

Figure 6.2 Thematic Network of Experiences of current pregnancy or After Giving Birth



Source: Fieldwork, 2022

6.4.1 Positive Experiences

6.4.1.1 Availability of support

In the present study, both HIV positive and HIV negative pregnant women and those who had recently given birth recounted having some amount of support in their prenatal or postpartum period. The support received was predominantly from close family members such as a child, siblings, mothers, and partners. Moreover, the support received varied including financial, food items, providing care, and helping with household chores. This support was noted to be helpful to the women. A mother explained for example:

“My husband is always supportive in everything. He even helps me with household chores like washing clothes.” (24- year- old HIV negative pregnant woman).

For some HIV positive mothers, medication support from family members like encouragement and reminding the mothers to take their ARVs was noted. This was in addition to the recognized all-round family support received like food, financial, and care support. A pregnant woman narrated:

“... My brother supports me in all areas of life. He supports with my medication through encouragement as well as reminding me to take my medication before 9pm...” (26- year- old HIV positive pregnant woman).

From the above narratives, it is clear that family support received by the women regardless of their HIV status was key as they transitioned through their prenatal and postpartum periods. For mothers living with HIV, however, the added support of being reminded to take their drugs as well as encouraging words received was a sign of love and acceptance. These experiences could improve the psychological well-being of the mothers.

6.4.1.2 Ability to care for self and the pregnancy/ the baby

Good nutrition and self-care are important elements that pregnant and postpartum mothers are always advised about during their antenatal and postnatal visits, as they promote good health for both the mother and the baby. In this study, some mothers shared that they were able to access a balanced diet and the kinds of food they desired to eat. Again, other women indicated being intentional about self-care by drinking enough water to keep hydrated, and proper feeding for enough breast milk. This was for the betterment of their health and that of their unborn and born children, as noted in their narratives:

“Food is available, I get what I want to eat as a new mother in order to get strength and care for my baby”(28- year- old HIV positive woman who has recently given birth).

“This being the first pregnancy, I make sure I don’t have a weak body by drinking and carrying water on me. I try as much as possible to take care of myself for the goodness of this pregnancy.” (21- year- old HIV negative pregnant woman).

The above quotations from both the HIV positive and HIV negative prenatal and postpartum mothers show how their desire for good health as mothers and that of their babies encouraged them to take good

care of themselves by eating and drinking right. Ability to care for self and the baby could promote good physical and mental health of these mothers.

6.4.1.3 Infrastructure accessibility

Two of the women living with HIV cited access to proper housing, access to health facility and availability of transport as some of their positive experiences during their postpartum period. Transportation and health care accessibility is an important element towards promoting proper health-seeking behaviour especially to those requiring HIV care as well as nursing babies. When it comes to housing, a safe, decent and affordable housing encourages good health and also promotes connectivity to other resources such as jobs, transportation, health care, recreation, among others. Thus, these women's expression in the satisfaction of their housing, transportation services, and health care accessibility suggests feeling reassurance of available help, which also could reduce mental distress as narrated:

“yah the housing is okay and safe to live in. And even it is easy to come from my home to the health facility for postnatal services.” (32- year- old HIV positive woman who has recently given birth).

“The major challenge would have been transport, to the health facility but I thank God that transport is secured.” (37- year- old HIV positive woman who has recently given birth).

6.4.1.4 Convenient/ friendly health care services

Good health care services can influence health-seeking behaviours of individuals. From the results of this study, it was identified that some participants opted for paid prenatal and antenatal care services even though free services are provided at public health facilities. This is because some mothers believed that paid for services are of higher quality compared to the free services. For some HIV positive mothers, their desire to have good health care especially during delivery was to reduce the risks of transmitting the virus to their babies. However, this decision could be based on the mother's financial position and ability to pay for those sought for services. Furthermore, it was explained that convenient health care services were experienced like getting information and reminders on what to get in preparation for delivery, making payments in installments, among others. This identified as a motivating factor for mothers to keep going

back. One of the mothers recounted:

“Where I get my antenatal ahh it is so far so good. You know as a human being you forget. So, most of the time they will remind you prepare this, do this. If financially you are not well properly set, you can be dropping in money little by little. With this little by little you feel encouraged to actually work to get money; the little you are getting you keep depositing it. So, at the time you are giving birth, there is something already there. You don’t need to get a whole thousand dollars or how much dollars or Ugandan shillings to have on you for you to go that day. But for as long as you have been going for the antenatal, it is a very good thing that they can take little by little but then they keep you encouraged to keep going back.” (38- year- old HIV positive pregnant woman).

The convenient nature of the health services mentioned above relates especially to the flexible payment structures as well as information sharing beforehand which gives chance for the mothers to prepare adequately both financially and psychologically.

6.4.2 Negative Experiences

6.4.2.1 Difficult pregnancy period

Two of the eleven pregnant mothers, of whom one was a first time mother, expressed experiencing difficult pregnancy period where they feel heavy and sometimes even fail to sleep due to discomforts caused by the pregnancy as it grows. In this regard, the participants made the following remarks:

“The pregnancy too is also heavy, its tiring and I don’t sleep well, I don’t eat well.” (27- year- old HIV negative pregnant woman).

“... it is hectic because I am not used [to it]. Sometimes you feel some one taking over your life, it is not a fine feeling. Sometimes you feel the stomach is not mine someone controls it. I feel like life is not mine. It is just hectic I think.” (24- year- old HIV negative pregnant woman)

A key informant added to the fact that mothers go through hectic pregnancy periods by noting that:

“of course, the worry could be the pregnancy itself when the foetus inside is ever changing positions ,the mother is feeling very uncomfortable ,she cannot sleep properly and it gives her sleepless nights because as the pregnancy grows, they get discomfort even in sleeping. Some will sleep with pillows supported as if they are seated and because of that discomfort, they may fail to sleep and are affected psychologically.so that one needs a bit of counselling...” (Key informant 004, Mulago Specialised Women and Neonatal Hospital).

From the above narratives, feeling uncomfortable as the pregnancy grew is a common experience or feeling for women despite their HIV status. Such feelings affect one’s ability to sleep and have enough rest, which could undermine the woman’s mental well being

6.4.2.2 Health complications

Participants in all the three study sites responded to have experienced some health complications during their current pregnancy or the postpartum period, which increased fear and anxiety among the mothers. For some postpartum mothers, the complications began during the previous pregnancies. From the participants' narratives, some complications were because of a generally weak immune system, which exposed the mothers to illnesses like cough, flu, malaria, among others. On the other hand, some mothers suffered from high blood pressure also referred to as "pre-eclampsia". This pressure was pregnancy induced and came with warning signs like swelling of the legs and the face. Both the mother and the key informant noted the following:

"[Aaah] I have been having malaria, I could not eat. I have lost weight and feel bad. I ended up leaving job ehhe. And now I have cough and flu. The doctor tells me that when one is pregnant the immune system is low." (25- year- old HIV negative pregnant woman).

"When the mother is having blood pressure, she may keep asking; how is the pressure, is it still okay, they want to know how was the previous reading to compare and know it is still fine, those ones are what they normally ask us. So, they want to know much about that one and then most mothers are worried..." (Key informant 004, Mulago Specialised Women and Neonatal Hospital).

For mothers living with HIV, vaginal bleeding, and sexually transmitted diseases (STIs), among others were mentioned. Some also experienced opportunistic infections which also put the baby at the risk of being HIV infected. All these among other health complications could have adverse effects on the mental and emotional wellbeing of women even after giving birth if the right redress is not attained:

"At the beginning I had pain and discharge and wounds in my private parts. They took time checking on me and I was given a tube. It is the UTI and the infections that is affecting my life."(45- year- old HIV positive pregnant woman).

"Well, remember at the end of the day if these people are not adhering well, the viral load will be high. Now when the viral load is high, it is calling for many opportunistic infections; the TB and other many infections are coming in." (Key informant 003, Mildmay- Uganda).

In addition to the above, other complications experienced by the women after delivery included developing sepsis and challenges with the caesarean wound which result into serious pains. Some of the

factors attributed to sepsis included lack of rest by the mother, poor personal hygiene and self-care, defaulting in treatment, among others as stated by a mother and a key informant:

“My condition wouldn't be bad but I got some complications with this caesarean. The Caesarian is funny, you see outside it is drying up, but inside it is a wound. So like a week, I got so much pain that made me to come back to the hospital. But lucky enough they gave me the medication and it healed.” (32- year- old HIV positive woman who has recently given birth).

“Because remember most of these are operated mothers who go to slums like Katanga to buy cheaper food. But imagine sometimes the sanitation that side, so we have always been having some re-admissions with sepsis. Because one she is not resting enough, she is alone in the hospital, she has to take care of the baby, she has to go out there and look for food, and I think she even has no time to have that personal hygiene, so we have always re-admitted those with sepsis.” (Key informant 001, Mulago Specialised Women and Neonatal Hospital).

Some mothers who had recently given birth complained of experiencing complications during delivery such as delayed labour pains, challenges with normal delivery, among others. For women living with HIV undergoing complications especially during delivery increases depression risks due to fear and anxiety among them as it exposes the baby to HIV infection. Such women recounted:

“Even during delivery, I had some complications. I had labour pains for a full week, on trying to check how the heart beat of the child, nothing was heard. And was like oh God why am I going through all this? I even thought may be the child was dead before delivery. After doctors trying their level best to successfully deliver me with tools I don't understand, the child's color was not normal; it was green which scared me and I was like there is no doubt that this child is infected. I have never in life given birth to a child with a green color. But then he started stabilizing slowly under the doctor's monitoring” (40- year- old HIV positive woman who has recently given birth).

The health complications experienced above resulted in deterioration of health such as losing consciousness and becoming bedridden. In some cases, it resulted in preterm delivery or loss of the babies in a bid to save the mother's life, which comes with extra health facility costs as noted:

“My pressure raised badly and I became unconscious without knowing anything. I got to know in the second week at the hospital. I was bedridden for two weeks, for the first week I was unconscious. I felt very bad up to now ... (cries)” (31- year- old HIV negative woman who has recently given birth)

“When the pressure keeps on rising, anesthesiologists come in, hmm. They may remove the baby so that the mother keeps well. Most especially in pressures, they mind much on the mother's life. Because it is the baby which has caused the pressure to come. Even if it is old, they may induce it through caesarean and then the mother remains alive...” (Key informant 003, Mulago Specialised

Women and Neonatal Hospital).

6.4.2.3 Abandonment / separation

Abandonment and separation by their partners were common negative experiences that were reported by both HIV negative and HIV positive mothers. This resulted in lack of care, physical, and emotional support at a crucial stage of their lives. One of the reasons that was noted to have resulted in abandonment was the partner not being ready to start a family. Additionally, for HIV positive mothers, it was perceived that the partners could have left for fear of being infected. It was further noted that abandonment resulted in reduced support towards the pregnant mothers. The participants narrated:

“Yes, this issue of my boyfriend I have, like him not giving this and that and not helping me in anything, and not living with me because he thinks you are going to infect him. Yes, he abandoned me after disclosure. I was tired you know because now my son is six years meaning I have kept quiet over my HIV status for almost six years [participant cries loudly]. But now of recent like when I got pregnant I felt like no I can’t do it anymore, I can’t keep quiet, and I had to disclose. Yes, it was not easy, but I had to. You know when I was going to disclose, I was expecting all this to happen. Although I feel sad sometimes of what I am going through with my pregnancy and my son, eh, but I knew this could happen after disclosing.” (30- year- old HIV positive pregnant woman).

“Obviously, when a man gets to know that you are positive when he is not positive, some of the services he has been giving, those ones are reduced. Some of them can think that their women have other men yet it is not true. So, it is really bad.” (Key informant 002, TASO- Mulago).

Additionally, some mothers were abandoned by their partners during the pregnancy period, at the hospital bed when admitted, or during the time for paying the bills. This could have resulted in a heavy burden of care on the mother due to the need to supply all the baby’s needs. Two women participants who were separated with their partners during pregnancy explained:

“... We separated like in September /October/November. (laughter) just within one month the same time I got to know that I am pregnant and HIV positive”. (28- year- old HIV positive woman who has recently given birth).

“...we separated when I was pregnant with this baby, I think I was three months pregnant...” (35- year- old HIV negative woman who has recently given birth)

Concerning the abandonment of women during admission time, and due to fear of paying the bills a key informant commented:

“At the time of delivery, the man accepted to help the mother to pay the bill. But as she was going to theatre, the man packed all his belongings in the house and disappeared and switched off the phone. So, you can imagine that torture. You are in hospital, you have no home.” (Key informant 002, Mulago Specialised Women and Neonatal Hospital).

Abandoning the mothers at any stage of their prenatal and postpartum periods was a risk factor for experiencing depression regardless of the HIV status, due to lack of psychosocial support.

6.4.2.4 Absence of support

Although some women shared that they had felt supported by family and close friends during their pregnancy and postpartum period, others reported a distinct absence of support in their trying times. Absence of support in terms of care, finance, and social support from partners and family made it difficult for mothers who had given birth to care and feed their children. The situation was worse for mothers without support and yet had to give birth through caesarean. All these factors increase the vulnerability of mothers to experience mental breakdown in the postpartum period. An HIV negative woman who had recently given birth lamented:

“... I can't provide the expected care as a parent as there is no one supporting me.” (35- year- old HIV negative woman who has recently given birth)

To add on what the woman had said, some of the key informants noted:

“When some of them come to us they're like nurse I am going to throw this baby somewhere and run. You will never find me, you will never ask me how the baby is or what, I don't want to know. So, such things at times happen. Some of them would try to show that they really need help. When may be they have something that is bothering them especially financially.” (Key informant 002, Mulago Specialised Women and Neonatal Hospital)

“After giving birth is of course the new born baby, how to take care of them. Some of them it's the financial support, can be some of them are not working and some of them their husbands are not supportive...” (Key informant 006, Mulago Specialised Women and Neonatal Hospital)

Again, some of the women regardless of their HIV status indicated that indeed they experienced some difficulties feeding their children at some point. Some of these women had to buy milk frequently for their children as a supplementary food which they were unable to sustain due to financial challenges. Other mothers complained of low breast milk or lack of breast milk which stressed them up as they could hardly

feed their babies. In her own voice a mother said:

“one of the challenges we face as a family is feeding. Because that child needs more of milk. Sometimes there is when the child does not have milk, and for that day you managed to get only fifteen thousand shilling from work; while still there wondering what to do, your husband calls that the goats are sick and they need treatment and even can't produce milk. Now you find yourself giving the child water instead of tea instead of milk and sometimes the child refuses to take it; which pains me as a mother because I also want my child to grow happily.” (40- year- old HIV positive woman who has recently given birth).

Even though some of the women had noted being able to care for self and their pregnancy, the absence of support reported by participants resulted into the inability of some women to care self and the pregnancy. Moreover, some mothers indicated that they had been given a list of requirements to buy in preparation for delivery but due to lack of money they had not been able to purchase these items even though they were in their last trimester. These experiences were shared by both mothers living with HIV and HIV negative as they lamented:

“You need to prepare for your childbirth by buying what the kid will need like dippers. The child will need clothes, will need this and that and I do not have them as we speak. That life is not good. You need to live a good life, you need your kid to live a better life.” (30- year- old HIV positive pregnant woman).

“yes we are given here a list of items we have to bring during delivery time. For now I don't have them...” (27- year- old HIV negative pregnant woman).

An informant further elaborated:

“the biggest part is the poor economic status. It can be there but aggravated like a mother who is a housewife and is not working and she has to survive with her pregnancy.” (Key informant 002, Mulago Specialised Women and Neonatal Hospital)

Absence of support not only affected the women but also affected the children indirectly by not being taken care of well as desired. This results into negative feelings of being guilty and a failed mother which can easily result into depression.

6.4.2.5 Loss of jobs/ employment opportunities

The study found that some of the pregnant women had lost their jobs after getting pregnant. This was

attributed to the perspectives of the employers that the mothers would not be active and productive at work as required. To some of such mothers, this was noted as not being appreciative of the services they had rendered to their respective places of work:

“Yes, it was pregnancy that caused me to lose my job.” (27- year- old HIV negative pregnant woman).

“I lost my job when I got pregnancy. They thought I was unproductive and so they laid me off.” (24- year- old HIV negative pregnant woman).

One of the key informants added to the loss of jobs by the pregnant women:

“And also when you get pregnant all the sources of you getting your money they close and you stay there without anything. Because most of the employers don’t want to employ people who are pregnant because they want people who are very active at work”. (Key informant 003, Mulago Specialised Women and Neonatal Hospital).

Additionally, it was found that some women’s partners lost their jobs during their prenatal or postpartum period, making life hard for the family, and even brought about misunderstandings in the relationships.

On this experience, both the mothers and a key informant noted:

“I was a C-section person, I was operated, and after one month my husband lost a job and became unemployed...” (37- year- old HIV positive woman who has recently given birth).

“Some of them their spouses lose jobs. So when they lose their job, in most cases, the husbands become tough at home.”(Key informant 004, TASO- Mulago).

From the study, the loss of jobs as well as employment opportunities among mothers living with HIV was associated with stigmatization. This could therefore potentially affect the mental wellbeing and increase depression risks of these women as they feel limited in certain job offers. Both a mother and a key informant noted:

“...many mothers want to go abroad for greener pastures, but HIV positive people are left out, when it comes to going abroad like Saudi Arabia. This causes depression that mothers miss out such opportunities. Mothers can’t go abroad for purposes of working and taking it like you are in a prison of your own life.” (37- year- old HIV positive woman who has recently given birth).

“Some are educated, so they would like to work in their line of profession. One may try to talk about her HIV status and end up losing the job. That heavy work may be removed from them, it always creates issues on them because of the HIV condition and may end up losing the job. And

when you find one who decides to keep quiet about their HIV status may end up engaged in hard work.” (Key informant 001, TASO- Mulago)

6.4.2.7 Restricted lifestyles/ dos and don'ts

The participants regardless of their HV status also shared that they found the restrictions that came with the pregnancy difficult. This included the restrictions on diet and activities. This was attributed to their pregnancy condition as some of them expressed themselves:

“I am going to tell you this, life in itself is a challenge. You see even if I was yearning for the pregnancy, it is a very big challenge because I have to eat right, I have to do things right, I have to move right. You know like I have to be focused on specifics and to me that is really challenging. Because I am a free woman, I love being free, you know doing my things without any dos and don'ts. But again I have to do it because of my baby.”(38- year- old HIV positive pregnant woman).

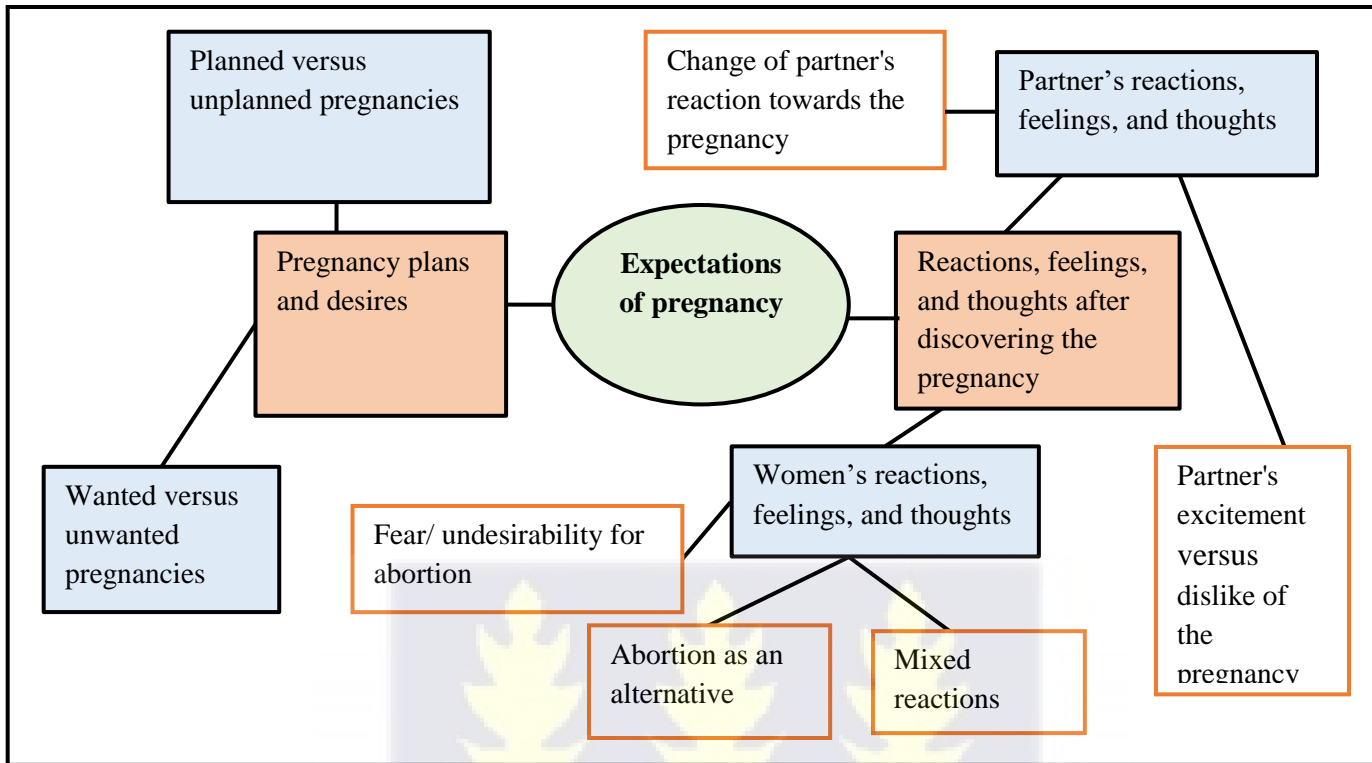
“Just sitting in the sitting room to relax and my husband will always tell me go to bed the mosquitos will bite you and get malaria. This puts me off like I can no longer be myself.” (25- year- old HIV negative pregnant woman).

Although the women had to adhere to the dos and don'ts as advised by the health professionals for the betterment of both the mother and child's health, the process was noted to be burdensome. This is because the women felt like they could not enjoy their freedom of especially what to eat and how to live like before, which change was hard to accept and hence likely increase mental breakdown in them.

6.4 Expectations of Pregnancy

This theme looks at the women's expectations during pregnancy and after pregnancy especially focusing on the pregnancy plans and desires, as well as the reactions of both the women and their partners after discovering the pregnancy. The findings suggest that women's pregnancy desire was based on whether they had planned the pregnancy or not; or whether they had wanted the pregnancy or not. Similarly, the reaction towards the pregnancy depends on the pregnancy plans and desires. The themes that came up are summarised in Figure 6.3 and discussed.

Figure 6.3 *Thematic Network of Expectations of Pregnancy*



Source: Fieldwork, 2022

6.4.1 Pregnancy plans and desires

6.4.1.1 *Planned versus unplanned pregnancies*

Women with planned pregnancies are less likely to be distressed by the pregnancy itself at the onset of pregnancy as compared to those with unplanned pregnancies. In this study, two women confirmed that their pregnancies were planned. These women also explained that they had planned with their partners to have the baby in that specific period and hence had good partner support. The women narrated:

“I wanted and planned the pregnancy and my husband too loved it. It has not made me feel bad as the first pregnancy.” (29- year- old HIV positive pregnant woman).

“I have no baby of my current husband, so I was prepared to be pregnancy likewise my husband was also prepared to get a baby.” (38- year- old HIV positive pregnant woman).

On the other hand, out of the eleven pregnant mothers who participated in an interview, seven mothers indicated having an unplanned pregnancy three of whom were HIV negative and four HIV positive.

Though most unplanned pregnancies come with many uncertainties, some of the mothers with unplanned pregnancy in this study indicated the pregnancy was wanted and hence made them happy. In their narratives, the mothers explained:

“Interestingly I was happy when I realized I was pregnant. But planning for it, no I didn’t. But yes it happened at the right time.” (38- year- old HIV positive pregnant woman).

“Not really. I had not planned getting pregnant now but I think I am okay with it.”(24- year- old HIV negative pregnant woman).

In addition, some women with a recent childbirth expressed having planned for their recent childbirth whereas others had not initially planned. Among those who indicated wanting and planning for their recent childbirth, both women were aged in their late 30s (ages 37 and 38). From their narratives, the women had the desire to have another baby and had made adequate preparations in terms of child spacing and other necessities needed to care for the child when they gave birth. The women indicated in their own voices:

“...I wanted to get another baby after a long time on family planning. I had first given birth when I was young and in school, so I wanted to give birth to another baby...” (38- year- old HIV positive woman who has recently given birth).

“Errm to analyze whether they're unwanted or wanted, of course they are not very many who are unwanted. Like I've said, some of these women, actually majority could be married but being neglected. So meaning in a marriage they could have agreed to have a child and like here, we always encourage them to be on family planning. So you find that their children who are wanted” (Key informant 004, TASO- Mulago).

Those women who noted not planning for their current childbirth were in their late 20’s and early 40s. One of them even went ahead to indicate that she conceived while on family planning which could have affected her mental wellbeing in one way or the other as a woman living with HIV who had to accept the pregnancy that she was not ready for. She recounted:

“Truth be told I had never planned getting pregnant for this baby. I just found it out later because I was on family planning. But the time I conceived for my current baby I was using a “coil” (intrauterine device-IUD), which was inserted in me. I don’t know why family planning methods in most cases are not always effective for me... unfortunately I conceived with it. I fear doing abortion because of my health condition and so I went ahead and gave birth.”(40- year- old HIV positive woman who has recently given birth).

6.4.1.2 Wanted versus unwanted pregnancies

In this study, another subtheme that came up was the wanted versus unwanted pregnancies among both HIV positive and HIV negative pregnant women. Some of the women mentioned that although the pregnancy was unplanned, they still wanted the pregnancy. In most cases, such mothers had waited a long time before conceiving which could be associated with conception challenges. Such mothers were happy about their pregnancy regardless of their socio-economic and HIV positive status. They were looking forward to the birth of their babies as recounted:

“Since I had waited for so long and the baby was not coming, so when the pregnancy came, I was so happy though I was not prepared like financially and all that. Because there is no right time or right person...like let me get the right person and I get pregnant, no, such things are not there. It is just by God’s grace.” (30- year- old HIV positive pregnant woman).

When it comes to unwanted and unplanned pregnancy, some women did not desire to get pregnant at that specific point in their lives. However, the partner’s pressure to have another child at a moment forced them to conceive to avoid relationship issues. One of the mothers recounted her experience as she had lost her baby and in a short time conceived while still healing from the double trauma of giving birth and losing a baby.

“Yes, I had just lost a baby and conceived after two months. I felt bad because I had gotten pregnant in a very short life span of two months when I was still healing both from birth and loss of my child. I just took it as a form of consolation telling myself that is what God allowed to happen. Otherwise both situations were traumatizing but God took me through.” (27- year- old HIV negative pregnant woman).

An informant also shared what she had noticed about unwanted and unplanned pregnancies:

“There was a couple who had just delivered here and we found out that they were almost 10 days pregnant and the baby was 6 months, so the relatives of the girl were insisting that, that thing has to be removed. They were even calling it a thing so we saw that there was real confusion in the family. We tried to talk to them and encourage them...” (Key informant 002, Mulago Specialised Women and Neonatal Hospital).

Having unplanned as well as unwanted pregnancy could have raised an emotional toil on the women especially when social and economic support is less.

6.4.2. Reactions, feelings, and thoughts after discovering the pregnancy

Pregnant mothers were asked about their personal as well as their partner's reactions, feelings, and thoughts after discovering their pregnancy. From the experiences shared, the partner's reaction ranged from partner's excitement to dislike of the pregnancy. In some instances, some women shared that there had been a change of partner's reaction. On the other hand, the reaction and feelings of the women included: mixed reactions, fear of losing pregnancy, and abortion as an alternative.

6.4.2.1 Women's reactions, feelings, and thoughts

Mixed reactions about pregnancy

Participants, both HIV positive and HIV negative explained experiencing mixed reactions towards their pregnancy. These reactions were attributed to various reasons including loss of financial support from their partner, feelings of being abandoned, and loss of love in the relationship. Also, people's response towards the pregnancy status of some of the mothers resulted in mixed feelings. Negative reactions reported included judgements especially from family and friends. These experiences were uncomfortable and brought fear into the mothers. For example, a mother narrated:

"...though I loved the pregnancy at first because of the love I have for my boyfriend, he has shown me his true heart that when he has money he will love me but if he is poor he will cease to love me and this makes me to be cautious. I am even already scared because there may be no money for paying the school fees of this child when time comes to go to school and he leaves me and his child uncared for." (26- year- old HIV positive pregnant woman).

Fear of losing pregnancy

From the findings, health related issues brought fear of getting a miscarriage in many of the prenatal women regardless their HIV status. For example, an HIV positive mother with health complications and who had also experienced difficulties with conception expressed the feeling of being scared to lose her pregnancy. This experience is further likely to bring about an emotional toil in the form of depression if the fear is not addressed:

"I also feel scared sometimes that what if I lose this pregnancy because of especially this epilepsy

that I have? That is the biggest problem and fear of getting miscarriage. I have that in my head. I hope nothing happens. I also hope there is no evil eye towards this belly and this pregnancy. I hope there is no evil hand; you know I keep having those thoughts in my mind because of the fear of losing it even before it comes to term.” (38- year- old HIV positive pregnant woman).

Abortion as an alternative

Some of the women indicated an earlier desire to have an abortion due to unplanned and unwanted pregnancies coupled with multiple responsibilities over other children. To others, the decision for having abortion as an alternative was due to the partner’s denial of the pregnancy, lack of pregnancy support, and a generally feeling of reluctance to continue with the pregnancy especially if they depended on the partners socially and economically. This was regardless of the age bracket ranging from a youth in her mid-20s to an adult person in her 40s. Nonetheless, the women made mention of trying to cope regardless of the situation. Moreover, these comments were mentioned by women who were HIV positive and could be attributed to multiple vulnerabilities that could be surrounding them, and can potentially influence depression. A woman and the key informant noted:

“I had thoughts of abortion just because I had to look for school fees and look for the land lord’s money whom we owed four months’ rent fee. So, with all this, then the pregnancy... You see, I already have five children who all need to be taken care of. My husband’s financial status is not that strong, myself too I earn a little from the job I am working; meaning we are already struggling to survive in the city...” (42- year- old HIV positive pregnant woman).

“others come when they are not ready for that pregnancy and they want abortion.” (Key informant 002, Mulago Specialised Women and Neonatal Hospital.

6.4.2.2 Partner’s reactions, feelings, and thoughts

How the person responsible for the pregnancy reacts after being told the news could influence support and care during the pregnancy period. It also has the potential of influencing the decision of keeping or aborting the pregnancy, even though the pregnancy was wanted by the woman. All these have an implication for the mental wellbeing of the mothers during the prenatal period. As a result, several experiences were shared on the women participants on their partners’ reactions, feelings, and thoughts about the pregnancies:

Partner's excitement versus dislike of the pregnancy

Mothers whose partners wanted a pregnancy narrated that their partners were excited, and this was noticed in their full support for the women. The support included going with the mothers for antenatal care visit, financial support, and inclusion of the women in decision making especially the type of health facility the mother would want to attend for antenatal and postnatal care. This helps in overcoming the mental distresses such a woman would face and also reinforces her change in emotions towards the pregnancy in case it was unwanted. On the other hand, women whose partners were not ready for the pregnancy (unplanned/ unwanted) reported partners' dislike of the pregnancy. One of the reasons behind this dislike was when the partner was either still a student and not ready to be a father. The mother were thus left in confusion on what to do given the fact that the partner showed disinterest in the pregnancy. Such experiences would increase the mothers' depression symptoms. The mothers had to say this:

“He thought I was joking at first, He was also scared and being that he was still a student, he was scared of taking responsibilities and every time he mentions abortion it would be like a debating position and I would always be on the opposition side. I feel it is weighing me down since I am also still in school” (21- year- old HIV negative pregnant woman)

Change of partner's reaction towards the pregnancy

Three out of the seven pregnant women living with HIV who participated in this study reported a change in their partners' reactions towards their pregnancies at some point. In their own words, the mothers expressed that at first the partners were happy with the pregnancy, but suddenly were no longer interested in being fathers. Whereas one of the mothers did not know why her partner had suddenly changed his mind about the pregnancy, the two mothers made mention of their partners complaining of more responsibilities from another wife and children, and inability to care for the pregnancy and the mother due to lack of financial capacity. All these have a potential of affecting the mental wellbeing of these women by being depressed. In some of their expressions, they noted:

“He was first happy with it, but he later changed his mind. He told me that he did not love the pregnancy and baby... that is when he disclosed that he already has a wife with three children and

so the responsibilities he has at hand are already too much for him... ” (45- year- old HIV positive pregnant woman).

“At first, we both liked the pregnancy and we were fine. But I don’t know how come that he changed his mind that he came telling me we abort the pregnancy for he is not ready to have a baby now. But before we were all excited about it and he loved the pregnancy very much that anytime we were together he would comment that why his child had not yet started playing in the womb and yet the pregnancy was just three weeks old... I am surprised that he is now totally changed.” (26- year- old HIV positive pregnant woman).

For postpartum women, most of their feelings towards the current childbirth was associated with their partners. For example, for those whose partners did not want and plan for the pregnancy it was evident that such partners disliked the current childbirth and blamed the mothers for failing to prevent the pregnancy. Furthermore, for partners who wanted a particular sex of child, they were unhappy with the current childbirth if the child’s sex was not what they wanted. To other mothers, change in partner’s reaction towards the current child was reported from being supportive towards taking care of the child to refusal to provide the required support. For example, participants commented on partner’s dislike of the childbirth, and change of reaction towards the child:

“my spouse felt bad when he realized that I was pregnant because he felt that it was too early. He didn’t mention it for me to abort but he was blaming me why I did not prevent the pregnancy. Even now he blames me for the current birth that I failed to prevent (Heavy Crying).” (28 - year- old HIV positive woman who has recently given birth).

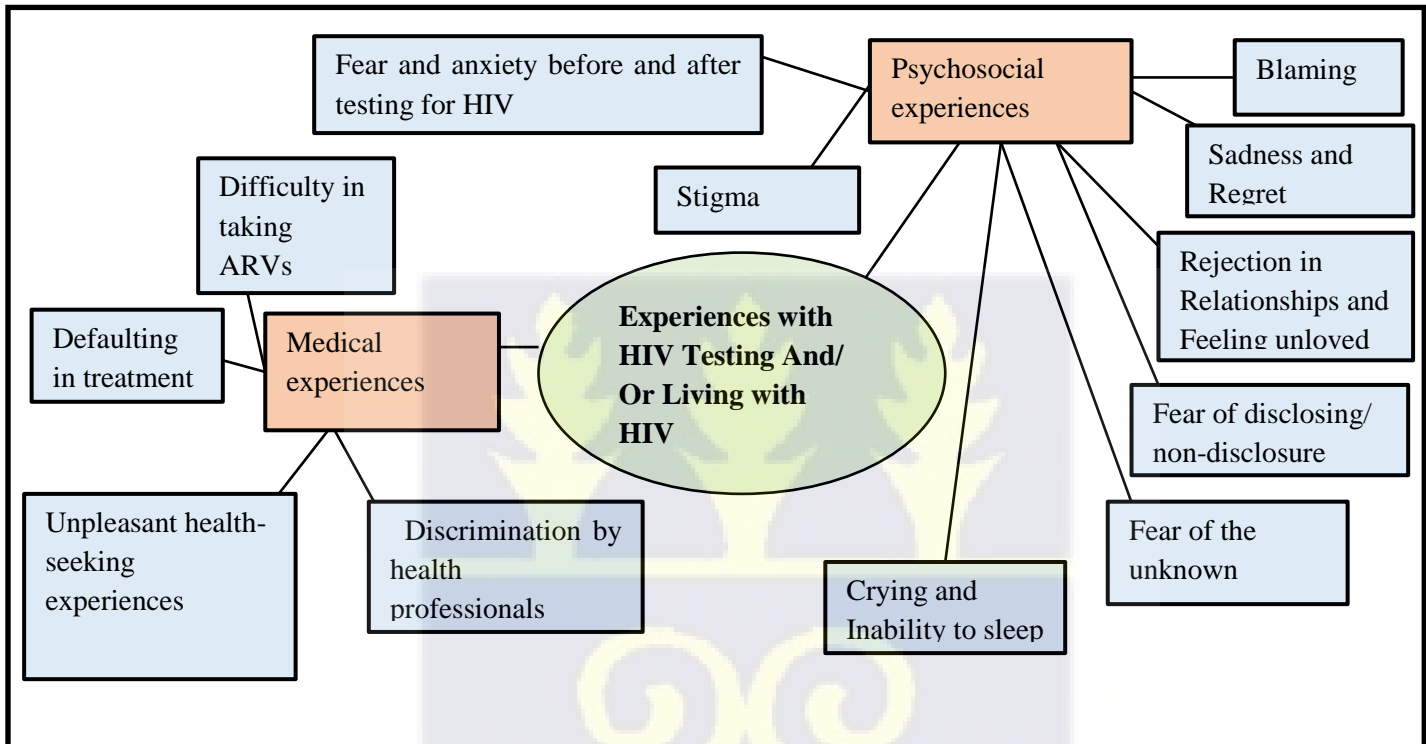
“... at the beginning you could call him that the baby is sick, he needs medication and he sends money. But nowadays when you call him he can tell you to look for herbs to give to the baby.” (37 - year- old HIV positive woman who has recently given birth).

The varying partners’ reactions, feelings, and thoughts towards the pregnancy and childbirth noted above result from several circumstances surrounding the women’s conception. For example, in the case of a planned pregnancy by the couple, positive experiences like excitement, social and financial support were experienced by the woman. On the other hand, negative experiences like the partners’ dislike of the pregnancy were experienced by the women if the pregnancy was not planned, the couple was still in school, among other circumstances.

6.5 Experiences with HIV testing and/ or living with HIV

When the participants were asked to narrate their experience when testing for HIV as well as living with HIV, a number of experiences were noted and these were mainly categorised into two organising themes as psychological and medical as illustrated in Figure 6.4

Figure 6.4 Thematic Network of Experiences with HIV Testing And/ Or Living with HIV



Source: Fieldwork, 2022

6.5.1 Psychosocial experiences

Fear and anxiety before and after testing for HIV

As part of ensuring prevention of mother to child transmission, it is mandatory for mothers to test for HIV during their antenatal visits. However, for some mothers, this comes with fear and anxiety of the outcome of these tests. Both the women participants and the key informant comment:

“Having gone through a lot and having affairs with many men, I was very afraid” (45- year- old HIV positive pregnant woman)

“Yes, during pregnancy, when you tell mothers to test for HIV, they have that fear, hmm, what

if they mention that I have the virus, what will I do? They will fear doing that test (laughs)”. (Key informant 003, Mulago Specialised Women and Neonatal Hospital).

Furthermore, when a positive result was obtained, the women indicated feeling a lot of fear and anxiety after testing HIV positive. They also reported worrying thoughts including of who infected them, why they got infected, and how would they break the news of their HIV status to their family members. All these factors have the potential of increasing depression occurrence. For example, a women and a key informant recounted:

“When I was told that I am HIV positive, I feared and first sat down. I felt very bad that I lost appetite for three days.” (38- year- old HIV positive pregnant woman)

“... When you're preparing them to take up the test, there is a lot of worry which is worsened when the results turn out positive” (Key informant 003, TASO- Mulago)

After the women’s knowledge of their HIV-positive status, fear of the unknown was experienced. The women’s narrations of their fear of the unknown were categorized into fear of death, fear about the children’s future, and fear of putting to birth. These three situations were mentioned as affecting the mental wellbeing of the women. For example, some women mentioned being afraid of dying and leaving behind their children. This fear resulted from knowing that they are living with HIV which they felt had shortened their lives and hence brought sadness to them. Both the women and the key informant commented:

“I think too much that I am positive and soon I will die. I usually find myself in deep thoughts...” (38- year- old HIV positive pregnant woman).

“They think they are going to die tomorrow and leave the babies. HIV can traumatise you, and so they think they are dying anytime and even if you try to tell them that when you take your drugs, you will be okay they will not listen.” (Key informant 001, Mildmay- Uganda).

Concerning the fear about the children’s future, most of the women’s narratives especially for postpartum mothers were about of who would support and care for their children if they died. One of the mothers

lamented:

“What worries me is that when I am no more who will take care of him? First and foremost even at my husband’s family, my mother in-law is also living with HIV; she has a lot of health complications including leukemia, HIV, and high blood pressure. And now the rest of the brothers and sisters in-law are all alcoholic and do not want to know what is happening with us. Now with all that, I get worried how this child will survive if it happens I leave him in this world at a tender age...” (40- year- old HIV positive woman who has recently given birth)

A woman commenting on fear of her child being stigmatized and neglected in case she dies expressed:

“The fear I have is that how will this child survive in this world with this kind of health I am having? Because today I am alive and tomorrow I may not be there. Who will stay with this child? Who will be there and willing to support him in his life in case I am no more? Because the rest of his siblings are all old and hence can try to fend for themselves. But for this one who is young, how will he survive? And because of stigma towards HIV, relatives and friends may reject him saying I cannot take in this child because the mother was infected. Who knows that this child is also infected? I don’t want to be disturbed and burdened with this child.” (37- year- old HIV positive woman who has recently given birth)

A key informant added on the women’s fear about their children’s future:

“The common one is children. Like all parents, what happens to my children? As much as there has been advancement on HIV treatment, people are living more and much longer with the advent of ARVs, but still, people think that once you are diagnosed HIV positive, you are likely to die the next day or next year. So, the biggest worry the parents have is about the children or what happens to my baby?” (Key informant 003, TASO- Mulago).

In addition, both the women and key informants attested to it that there were experiences on the fear of putting to birth. This came from concerns about their ability to give birth like the HIV negative women did, without complications. Others were also worried about infecting their unborn babies during delivery.

The participants narrated:

“The only question I ask myself is that which kind of midwife I will have this time. Will she be able to help me give birth to a negative baby since some people say that the doctor or midwife also determines a lot in case of giving birth to having a negative baby. That is why some women end up with asking C-Section claiming that this is safer than pushing the baby.” (29- year- old HIV positive pregnant woman)

“For those who are pregnant, what worries them most is how will put to birth? Will I give birth normally or I will be taken for caesarian?” (Key informant 003, Mulago Specialised Women and Neonatal Hospital).

From the above, living with HIV heightened fear and anxiety among the women due to several factors

including fear of dying early, uncertainty of their children's future, fear perinatal HIV transmission, among others which all are likely to increase depression among the women.

Blaming

Blaming was another experience identified among the women living with HIV, and this varied from self-blaming for having been infected or being blamed by another person for bringing the infection. For instance, one of the women who expressed her experience of being blamed by both her spouse and mother-in-law noted:

“At a moment, I am really feeling bad because I am currently pregnant, I am living with HIV; and when my mother-in-law got to know about it, the way she treats me its like a no body. She treats me as if I am the one who infected her son with HIV. She even once attacked me and ranted on how I am infected. From my mother-in-law's story, the son informed her that I am living with HIV and I infected him... I had to show her our result slips to prove that when we tested before we fell in love we were all found to be positive...we had just spent three days in our relationship and nothing had happened within us...thankfully his sister he had disclosed his HIV status to also came out and defended me that the brother was just lying against me.” (26- year- old HIV positive pregnant woman).

Fear of disclosing/ non-disclosure

In the current study, it was found that some women had challenges disclosing their HIV status to their partners and their family members. Hence, they received treatment in secrecy and fear, which could have an effect on their health seeking behaviour during their prenatal and postpartum periods as well as their mental wellbeing. Non-disclosure resulted from the fear of being abandoned by the partners, and fear of being stigmatised. Again, non-disclosure resulted from fear of being judged of having extra marital affairs.

A mother and key informant affirmed:

“Disclosing to my husband is one of the challenges I face. He may tell me that when I am sick he may leave me. The problem I don't know his status. If tested and found positive I know he can stay. But if tested negative and I am positive he may definitely leave, even if it is me, I can't stay.” (38-year- old HIV positive pregnant woman)

“Yes so failure to disclose especially to your sexual partner, remember you are staying or married with someone and you are in this loving relationship and you are hiding this big thing from him. I mean this is someone who should be supporting you in the course of your pregnancy, in the course

of your treatment as your medical companion. But you know this is someone now you are scared to reveal to because they might stigmatize you, they might leave you; you know all the stigma that comes around HIV. So, you eventually find that umm because they are unable to disclose and they are living in sort of a lie in quotes with their partner, it takes a toll on them.” (Key informant 005, TASO- Mulago)

Sadness and Regret

Other women narrated their experiences of testing and living with HIV as a life full of sadness and regrets.

This was mainly due to their HIV positive status that they could not change and therefore anything related to HIV/AIDS made them sad. For instance, the women narrated:

“I remember it was the world AIDS Day when I was watching the television, I saw miserable figures of people with bones. I felt bad and switched it off.” (38- year- old HIV positive pregnant woman)

“Yes, I accepted it the way it came but I sometimes regret what happened. I wish I get back my HIV negative status (Heavy Crying)..” (28- year- old HIV positive woman who has recently given birth)

Crying and Inability to sleep

Some prenatal and postpartum women recounted how they were affected emotional by the unexpected news of their HIV positive status, in that they were always crying in addition to not being able to sleep.

For example, a mother recounted:

“Ehh I used to cry in every moment of silence. I used to cry even during prayer and could lose tract and forget that I was praying, I would cry. I spent a full year in such a situation, having sleepless nights thinking of how I got infected since I am not the one who looked for the disease.” (42- year- old HIV positive pregnant woman).

Stigma

Even though people have been sensitized over the years against stigmatizing people living with HIV, it was found in this study that some of the women were still being treated in unfriendly manner for knowing that they were HIV positive. Moreover, the stigma noted was from family members as both the mother and key informant shared:

“I have faced stigma from my other relatives. Yes, my close family has been a pillar to me but those extended family members have not, they are so stigmatizing... you know I found myself telling them about my HIV status and after that I learnt what they had discussed on me with other people and

they started treating me in unfriendly way. I bust out in tears...” (38- year- old HIV positive pregnant woman).

“Some of them are mistreated that they are positives. Then some of them can come and start narrating that “musawo” (doctor) you see I didn’t want my family to know about my status but it so happened that they knew but it’s not so good to my side...now from that time, my mum, my relatives are ever on me that “oyo ayina akawuka aja kukasiiga abaana baffe “[that one is HIV positive and she will infect our children with the virus] can you imagine!” (Key informant 002, TASO- Mulago).

Feeling unloved and rejected in their relationship

It was also noted in this study that some women’s social lives were affected due to rejection in relationships or feeling unloved because of their HIV positive status. Some mothers even recounted the names they were called by their partners such as “rotten moving human being”, “moving dead bodies”, among others. The participants noted:

“Even I have had many men who come to me when they are interested in starting a relationship with me and I am like okay, thank you for liking me but know that I am HIV positive, I am on ARVs and I want you to know. One man told me that I do not associate with moving dead bodies. After one month another one came and he was all over, I love you, bla bla and I was like okay, but I need to tell you something and he was like what? I said no we need to sit somewhere and I told him. And he was like eh, a rotten moving human being? So I have faced challenges of rejection in relationships because of disclosing my status...” (38- year- old HIV positive pregnant woman).

“There is a mother who disclosed that her partner left, she got another man and after introduction she was left again. She later became pregnant to a third man and this time she told me I cannot tell the husband. Unfortunately, she lost a baby and the husband asked for HIV testing which made her to be stressed and depressed.” (Key informant 005, Mildmay- Uganda).

6.5.2 Medical experiences

Difficulty in taking ARVs

From the study, it emerged that some women found it challenging to take their ARVs as prescribed especially when the partners were present. This was as a result of the women’s non-disclosure of their HIV status and hence they had to devise means of taking the medicine in hiding as noted:

“When he is available it becomes a challenge. Remember the drugs I hide them and so I take my drugs in hiding so that he doesn’t see me.” (38- year- old HIV positive pregnant woman)

“Because they are unable to disclose to their partner, it takes a toll on them. They have to hide their medications you know, they have to be conscious about it because here the doctor is telling them be adhering, take your drugs at this particular time, at 8am. But then it is Saturday, Sunday, and your partner is there at 8am, you are sleeping in the same bed. You have to be emotionally alert, you have to think where am I going to hide my drugs so that he cannot see them, and yet I have to take them, I must come up with an excuse why I am disappearing, or why I am in the toilet everyday at 8am. So it is tasking because you have to keep with excuses, you have to keep on finding creative ways to swallow your medication.”(Key informant 005, TASO- Mulago)

Defaulting in treatment

Some women acknowledged that sometimes they had to miss taking their medication due to lack of food as they are supposed to eat something before medication. To others, the defaulting resulted from being scared of the side effects of the drugs like feeling dizzy, among others:

“Also, sometimes I find challenges taking my medication because I have to take it by 9:00pm. Sometimes I can find it hard to get some food to eat before taking medication.” (26- year- old HIV positive pregnant woman)

“I used to be given drugs from the clinic and fail to take it. I could take the drugs and skip some days because of the side effect. I used to feel dizziness and feared to take drugs. I could get stressed the moment I think of taking drugs. I could take the drugs and it stops in the throat.” (34- year- old HIV positive woman who has recently given birth)

Conversely, some women mentioned trying their best to adhere to the treatment guidelines by taking their medication as expected for the goodness of their children’s health. Those who could not find food at the time of medication ensured they took something light like porridge before their medication. They noted:

“Yes, I know breastfeeding when your viral load is high is a problem for baby’s infection. That is why at times where food is not there I see that at least I eat porridge before taking drugs as the baby is breastfeeding...” (34- year- old HIV positive woman who has recently given birth)

An informant added:

“The good thing they are motivated to see their babies HIV negative. Most of them ensure that they take their medicine at the right time. Whether it is costly or whatever the circumstance, they will find their ways out.” (Key informant 004, TASO- Mulago)

Unpleasant health-seeking experiences

It also emerged from the study that the women felt unsafe especially the health of the babies due to the

way they were being treated by some health professionals in some health facilities when they went to deliver their babies. Issues like demanding for money when identified as living with HIV, discrimination, among other acts of poor treatment were cited. In their voices the women narrated:

“Where we give birth the nurses are too reluctant and lack customer care. This nurse was listening to music and told me I have to wait for two songs to stop. The nurse who helped me to give birth mistreated me, she claimed I am poor, if I had money she could help me because she is also risking her life to work on me since I am HIV positive. I was at the final stage of delivery and the nurse was just listening to her music and not bothered about me...So the nurses should be advised to be kind to the mothers during delivery especially in public hospitals. I lamented as to why I became pregnant”. (37- year- old HIV positive woman who has recently given birth)

“I get scared so much because some health professionals where we give birth from, if you have not given some money and they see that on your file it is indicated that you have HIV, they may not do their honest part effectively and you end infecting your baby. This situation makes me scared and worried all the time”. (26- year- old HIV positive pregnant woman)

Another woman narrated her ordeal of how she was given her HIV test results:

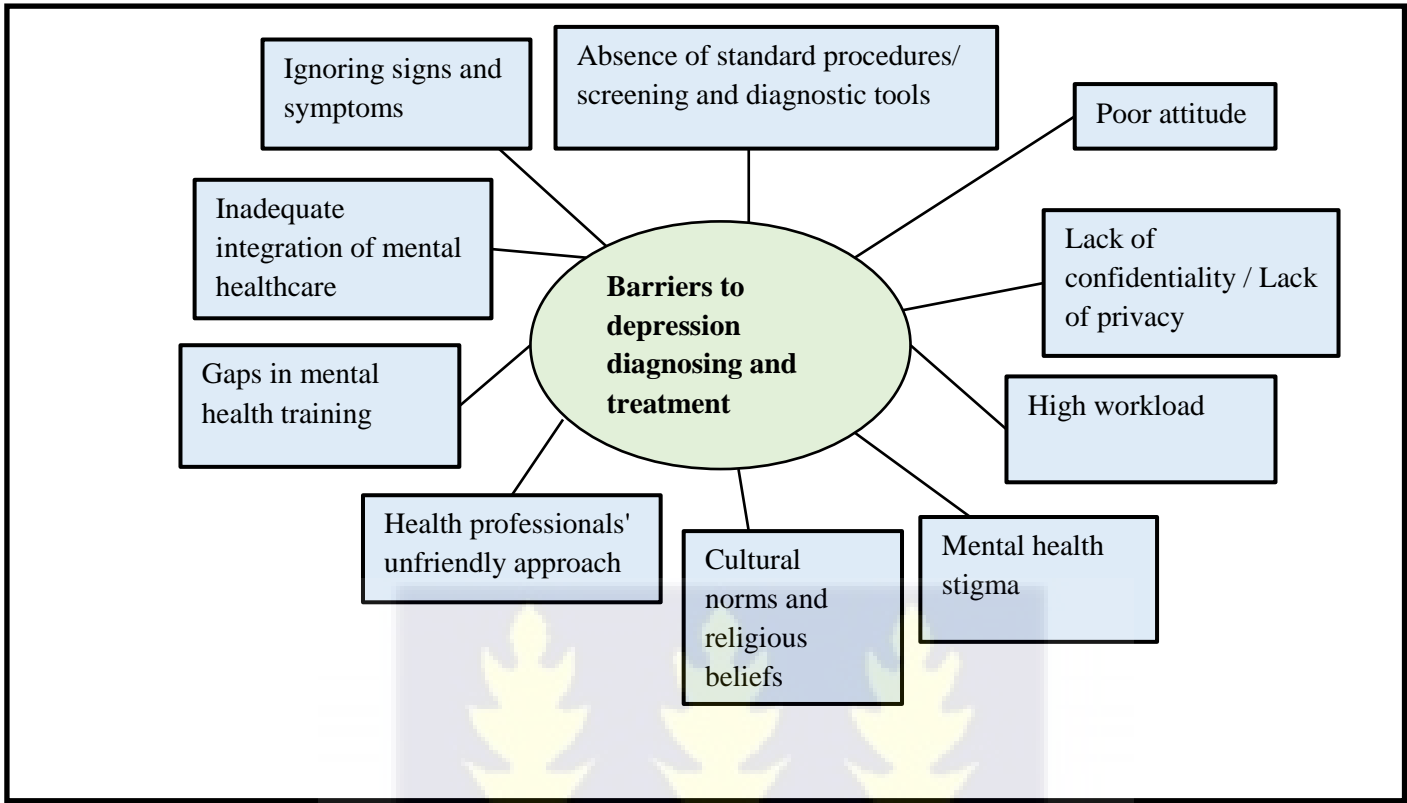
“How I received these results, I was never counseled... This is how she gave me the results, strengthen yourself, you are sick, I have found when you are HIV positive. Trace back where you got infected from, from which person” (38- year- old HIV positive pregnant woman)

The unpleasant health-seeking experiences faced by HIV positive mothers were expressed in terms of how sometimes the health professionals treated them. This was especially during crucial stages like receiving HIV test result and during delivery where perinatal HIV transmission is likely to occur if proper health care interventions are not done.

6.6 Barriers to diagnosis and treatment of prenatal and postpartum depression

Even though from the study prenatal and postpartum depression was an issue of concern, it was noted by the key informants in all the study sites that the health professionals and other persons working with these women had a number of factors that hindered them from diagnosing and treating prenatal and postpartum depression as Table 6.5 shows.

Figure 6.5 Barriers to diagnosis and treatment of prenatal and postpartum depression



Source: Fieldwork, 2022

Absence of standard procedures and screening/ diagnostic tools

The study found that there was a lack of standard screening and diagnostic tools to help the health professionals and other personnel working with these women in identifying prenatal and postpartum depression. As a result, most of the key informants mentioned using their work experience and the knowledge attained in training to observe any questionable behaviour among these mothers. Observations especially on the moods were made while interacting with the women, during service delivery, and during the admission process. This method, however, could result in missed opportunities for identification of depression symptoms in most women. This creates a barrier to intervention strategies during routine antenatal and postnatal care visits. In their own voices they noted:

“Mental health, okay is not a priority in the country but also even maternal mental health is not really yet a big priority. It is just a few hospitals that take an initiative to hire specialists but I don’t think

they have standard protocols or a tool used for screening depression in both pregnant and non-pregnant mothers (Key informant 004, Mildmay- Uganda).

“One is the scale. The scale because the screening tool we have I don't think it is validated for prenatal and postnatal. It's for the general population. And I think that is where we need to begin looking at. So, many of the women might go undiagnosed, probably the tool which we are using is not really able to pick the pre and postnatal depression signs” (Key informant 003, TASO- Mulago)

Inadequate integration of mental healthcare

Mental healthcare services, including gaps in providing services that target the mental wellbeing of prenatal and postpartum mothers, gaps in the enrollment of mental health professionals at the health facilities, limited training and knowledge among healthcare professionals about perinatal mental health among others were identified. The limited integration of mental health care in the overall maternal healthcare system could lead to failures to diagnose and intervene for prenatal and postpartum depression. For example, some of the key informants commented on the gaps in the enrollment of mental health professionals at the health facilities:

“No! we don't have a psychiatrist doctor or nurse within us, but we always consult with the psychiatric clinic in Mulago... we do the management of the obstetric part of it, and they also help us with their side of mental health. Or we always look for a social worker. But here we don't have a stationed psychiatric health professional”(Key informant 001, Mulago Specialised Women and Neonatal Hospital).

Gaps in mental health training

The study identified that limited training among healthcare professionals about perinatal mental health was the biggest issue in diagnosing and treating depression related issues among pregnant and women who have recently given birth. The limited mental health training was noted during professional training and specialisations as mid-wives, obstetricians, among others at the training institutions:

“Yes, our education system is a challenge and that needs to be addressed because some of these things like psychiatry and mental health that we study as health professionals, we don't go so deeply into it while at school. It is only give a portion of time in a semester and that is it. While more emphasis is put on other conditions like malaria, tuberculosis, where we study them for at least two years, you know. So I think even that our curriculum needs to emphasize on mental health so that the health workers get more awareness.” (Key informant 005, TASO- Mulago)

In addition to the above, limited training in mental health was said to result a knowledge gap for health professionals who deal with prenatal and postpartum mothers. This is an important contributing factor towards undiagnosed and untreated perinatal depression in many women seeking care:

“We don’t have experience in this area. In some cases we even try to generalize, and we think that's what usually happens in pregnant women.... I think I can say we have, but it's little knowledge about how to diagnose, how to treat, yah.”(Key informant 002, Mildmay- Uganda).

Poor attitude/ Health professionals' unfriendly approach

From the study, poor attitude of both the health professionals and the women was mentioned to be one of the hindering factors for the diagnosis and treatment of depression among pregnant and mothers who have recently given birth. On the side of the health professionals, behaviours like shouting, and being rude created fear in them and prevented them from opening up to the health workers. For example, some of the women noted:

“Using my own experience, when I come for treatment and I greet the health professional joyfully and present my file to him or her and I get a rude reply or shout at me to put the file down it really makes feel bad. I get scared so much and most of these health professionals now understand me as I often cry if you treat me that way. Even one time I gave up on picking my medication and walked away because to me I feel like you are mocking me. That ehheh she is HIV positive and so she has to beg us for her life and so I feel the pain deep inside me...” (26- year- old HIV positive pregnant woman)

On this aspect of health professional’s poor attitudes, the key informant added:

“Another thing would be our attitude. If you are not approachable or give the patients some bad expression when she calls you, you will realize that one is afraid to come and waste your time. Or if she comes to you, she will not open up. But if you are approachable and listening, it can help the women to come to you and express themselves how they feel.” (Key informant 001, Mulago Specialised Women and Neonatal Hospital).

It was further unveiled by the key informants that there was a tendency of ignoring the signs the women reported experiencing that relate to depression. This was due to the fact that the signs are similar to the ones experienced during pregnancy or after childbirth or just taking the complaints lightly, and seen as pretense:

“when mothers have just given birth, I expect them not to sleep well at night for one reason or the other because they have to take care of the baby or things like that. So if a mother tells you that I am not able to sleep at night and you ohh that normal, and yet that is a sign of depression. And also sometimes we think that is change in hormones and things like that. Yah and also sometimes we think it is pretense by these mothers” (Key informant 004, Mildmay- Uganda).

From the above narratives, the health professional’s poor attitude and unfriendly approach could be a hindrance to rapport creation and disclosure by the mothers. This therefore creates a gap in knowing if the women are going through some situations that could be causing depression for intervention purposes.

Lack of confidentiality / Lack of privacy

In order to diagnose and treat pregnancy and postpartum depression, confidentiality is crucial since it fosters openness, supports help-seeking behaviours, and helps combat stigma. Unfortunately, it was found in this study that the rooms where the clients and health professionals met were not favorable for mothers to express themselves. As a result, the mothers kept to themselves whatever challenges they went through as said:

“So the privacy issue is usually about space. Because even if it is two clinicians seeing you, you may be okay. But if you know there are other people, especially mainly other patients being there; like nearby, and you see some of these health facilities even lack these blinds to cover, in all there is no privacy and I think mainly is due to lack of space. So, they won’t feel comfortable sharing their information when they know there is someone else who could be hearing.” (Key informant 004, Mildmay- Uganda).

High workload

The key informants expressed concern about having an overwhelming number of patients to work on within a limited time. Again, the accountability given at the end of the day forced the health professionals to shorten the time spent with the mothers during their appointments. This could potentially undermine the diagnosis and treatment of prenatal and postpartum depression:

“But then the other reason that may be in our health facilities is that you know, most times you have little time to see patients, so you don’t go into details to understand all these other issues. You have a line of patients and so you just want them to come, ask a few things, write something on their card or what and move on to the next one. Like maybe you have five minutes or ten minutes for every

patient. That means you won't have time to probe and get this information. So the work load on the health workers is a big challenge.” (Key informant 004, Mildmay- Uganda).

Aside the high work load, changing of the health workers from one health unit to another after a certain period of time was cited to affect carrying out a consistent following-up on the women. As a result, patient and health professional rapport was hindered which element is key in mother's opening up and also identifying depressive symptoms on the side of the health professionals:

“This running of shifts and also transferring of the health workers from one health unit to another can affect proper assessment. Today I am here and of course I know the story of the patient. Then tomorrow some other person comes in, and the other day another person comes in. it is so hard to connect up that story... Yah, so if you stay longer with these patients, it can help you detect what is not going on well.” (Key informant 001, Mulago Specialised Women and Neonatal Hospital).

Cultural norms and religious beliefs

In the current study, one of the hindering factors to prenatal and postpartum depression was that some people still held the opinion that mental health issues are not medical disorders, but rather the outcome of spiritual or supernatural factors. Consequently, this led to seeking alternative mental health care by going to pastors or traditional healers/ witch doctors:

“Management may start from home when the caregivers or the patients may think or most times have their explanatory models like witch craft, they need prayers and things like that. So they have different explanatory models so most likely that is where they will first seek help”. (Key informant 004, Mildmay- Uganda).

The other aspect of the cultural norms and religious beliefs was related to traditional gender expectations where by women are expected to be enduring and bold in the face of challenges. This and many other societal pressures can contribute to prenatal and postpartum depression and also hinder the women's ability to seek help and access appropriate care. To this effect, a key informant said:

“You know here in Africa we believe that women should be tough with problems... You just go and pray and toughen up and become resilient. Yah so even those beliefs that we have might hinder diagnosis of some of these women...On their side they may also not be opening up because of our cultural beliefs about mental illness.” (Key informant 005, TASO- Mulago)

Mental health stigma

The negative attitudes and bias against mental illness was noted as one of the factors hindering the diagnosis and treatment of depression in prenatal and postpartum mothers. Negative labels and demeaning names, fear of social exclusion, among others can discourage women from seeking the necessary mental health support and treatment:

“... like I'd already alluded to, when you talk about mental health, people begin looking at it as a final destination being “Butabika” since it is a mental health hospital, that is the direct connection. “Balalu”[mad people]. So that negative attitude and bias people have towards mental health when you single it out can bring about stigma.”(Key informant 003, TASO- Mulago)

6.7 Discussion

The qualitative narratives highlighted the emotional and somatic depressive symptoms the women often experienced, confirming that these women were going through some level of depression. Previous studies like Govender et al. (2020), Rochat (2011); and Slomian et al. (2019) found similar emotional and somatic depressive symptoms, making it crucial to take into account the manifestations of these symptoms while treating and managing depression. As noted by Atuhaire et al. (2021) in their Ugandan study, the women's experiences of these emotional and somatic depressive symptoms was triggered by factors like having unplanned pregnancy, health complication, and lack of partner/ family support, among other factors. Moreover, the suicidal and homicidal ideations reported by some women in this study resulted from factors like feeling worthless, testing HIV positive, and gender-based violence. The women's decision to harm self or a loved one suggests being overwhelmed by the challenges faced and the inability to find positive coping strategies especially supportive social networks. This puts the lives of the mothers, their children, and their partners in danger if timely intervention is not received. According to Rochat et al. (2013), the suicidal ideation reported in their study resulted from testing positive for HIV which is confirmed in the present findings. These findings can be linked to the biopsychosocial model. This is because in order for

health care professionals to support and treat prenatal and postpartum women who manifest depression symptoms, they need to carry out a comprehensive assessment on the contributing factors and group them into the biological, psychological and social dimensions. For example some of the identified contributing factors like health complications, feeling worthless, HIV positive status, violence and abuse, among others fall into the three dimensions suggested by the biopsychosocial model. This could help in providing timely support thus overcoming dangerous symptoms like suicidal and homicidal ideations that not only put the mother and the baby at risk, but also other family members.

Findings on the experiences of current pregnancy or after giving birth suggest that the women went through both positive and negative experiences, which influenced their mental wellbeing. Similar to Maman et al. (2011), Mokwena & Mbatha (2021), and Seffren et al. (2018), it was currently found that the positive experiences such as availability of emotional, financial, social, and material support from family members helped the women to cope with the challenges they faced during their pregnancy and postpartum periods. Having a strong support network from family members may protect women living with HIV from experiencing depression (Psaros, Stanton, et al., 2020; Seffren et al., 2018). It is worth noting that the negative experiences like health complications, partner abandonment, and lack of support significantly impacted the mental well-being of the prenatal and postpartum women regardless of their HIV status. These findings agree with previous studies of Blom et al. (2010), Johansson et al. (2020), and Josefsson et al. (2002) who found health complications, partner abandonment being associated with prenatal and postpartum depression. Moreover, abandonment tends to reduce the support the women receive from their spouses and other family members, making it hard for them to provide for their needs and those of their children (Dlamini et al., 2019; Kyomuhendo et al., 2020, 2021; Tuthill et al., 2021).

The loss of jobs as well as the missed employment opportunities revealed in this study by particularly some pregnant women was due to employers perceiving them as less productive, HIV-related stigma at

work, or personal loss of hope to work. Partners of these women also faced job loss or employment challenges. Both partners' and women's job losses resulted in sudden financial strain, significantly affecting their mental health. This finding aligns with Tuthill et al. (2021), who observed a decrease in employment among pregnant women, leading to income disruption, stress, and concern not only for their own basic needs but also for their children. Similarly, Gertsch et al. (2013) noted the adoption of restricted lifestyles during pregnancy, which is consistent with the current study's findings.

The findings noted above on the theme of experiences of current pregnancy or after giving birth agree with the vulnerability-stress model. This model emphasizes on the relevance of protective factors and in this case the positive experiences like social support, having economic resources to pay for bills among others in enhancing coping and reducing the risk factors to experiencing depression, while negative experiences like health complications, spousal abandonment increase the vulnerability to experience depression (Kopelowicz et al., 2003).

Women gave different answers about their pregnancy and birth intentions. Consistent with previous studies by Bašková et al. (2023) in Slovakia and Ayele et al. (2016) in Ethiopia, the findings showed that the women planned their pregnancies or their recent children with their partners. Planning for pregnancy boosts happiness among couples, and helps with pre- and post-birth preparations (Hu et al., 2019; Redshaw & Henderson, 2013). The reported unplanned and unwanted pregnancies by some women resulted from being coerced by the partner, ineffective family planning methods, among other factors. This supports a study by Gyesaw and Ankomah (2013) in their Ghanaian study where sexual violence, and the desire for societal respect was reported by participants as contributing factors to their conception. An example of ineffective family planning method was demonstrated by Lewinsohn et al.'s (2018) South African study which reported a mother who conceived while on contraception.

Unplanned or unwanted pregnancies result in unhappiness, thoughts of abortion, family and partner conflict among other negative reactions which could affect the women's mental well-being (Enthoven et al., 2022; Lewinsohn et al., 2018; Ranatunga & Jayaratne, 2020). Additionally, unplanned or unwanted pregnancy is associated with delayed initiation of antenatal care (Biaggi et al., 2016; Carlander et al., 2023), which could be health threatening especially to the adolescent mothers who may want to conceal their pregnancies for fear of negative reactions like being ejected from home (Hill et al., 2015). Nonetheless, some women with unplanned pregnancies, especially those with conception issues, indicated a strong desire for their pregnancy. This echoes the findings of Bašková et al. (2023), where 26.9% of respondents had desired pregnancies that were not planned.

As previously reported by Alhassan et al. (2022) in South Africa and Uganda, Musheke et al. (2013) in Zambia, Gonçalves et al. (2013) in Brazil, and Bulterys et al. (2023) in Uganda, this study noted that pregnant and postpartum women living with HIV are faced with experiences like fear of disclosing, stigma, treatment defaulting, among others. Stigma could result into separation of couples leaving both the woman and her children financially vulnerable (Bulterys et al., 2023). These experiences undermine the women's mental and health outcomes. More so, fear of stigma may lead to not disclosing HIV status to spouses, hiding medications, and missing clinic appointments, which may hinder adherence to medication (Masereka et al., 2019; Vescovi et al., 2014). Additionally, Oshosen et al. (2021) and Ayele et al. (2016) report unprofessionalism by health workers in Tanzania and Ethiopia which could make the women feel like they are being stigmatised thus demotivating them from seeking health care. These findings agree with the vulnerability-stress model since evidence from the study indicates absence of protective factors of social support. This exposes the prenatal and postpartum women living with HIV to depression if they are biologically predisposed in the face of experiencing a series of stressful events like stigma, fear of disclosing HIV status, among others.

Diagnosing and treating prenatal and postpartum depression remains challenging in Kampala and Wakiso, Uganda. Key informants noted significant challenges including a lack of standardised screening and diagnostic procedures, inadequate integration of mental healthcare, and heavy workloads, similar to those reported in other studies by McNab et al. (2022), J. Goodman and Tyer-Viola (2010), and Bilszta et al., (2010). These barriers hinder successful treatment linkage, increasing the likelihood that depression in prenatal and postpartum mothers may go unnoticed and untreated by the health professionals (J. Kim et al., 2010).



CHAPTER SEVEN

PERINATAL CHARACTERISTICS AND DEPRESSION LEVELS AMONG WOMEN LIVING WITH HIV

7.1 Introduction

This chapter examines the variation in depression among women by the perinatal characteristics (prenatal and postpartum factors) using cross-tabulations and the Chi-Square tests. This bivariate level analysis will particularly include variables of: pregnancy history (unplanned/unwanted pregnancy, present/past pregnancy complications, gravidity status, trimester); health history (HIV status, chronic diseases, past depression status); lifestyle factors (alcohol use, smoking status, violence and abuse); family history (family depression status, alcohol use, smoking status); complications after delivery; the child's HIV status; food security; social support; dwelling conditions; and access to health care facility. In measuring the relationship between respondents' pregnancy history, health history, family history, complications after delivery; the child's HIV status; food security; social support; living conditions; and access to health care services; and the depression outcome; Pearson Chi-square test statistics were calculated for each of the independent and the dependent variables using a 95% confidence interval and an alpha value of 0.05 as the significance level. However, the results are first presented at the univariate levels in order to provide a clear picture of the study participants before the degree of relationship is identified.

7.1.1 Pregnancy History

The pregnancy history of the respondents are shown in Table 7.1. The Table shows that out of 231 respondents who were pregnant, about 62 percent of them had planned for the pregnancy while 38.1 percent had not planned for the pregnancy. Majority of them (57.1%) had been pregnant two to four times, followed by those who were in their first pregnancy (34.6%), and the least (8.2%) were those had been pregnant five or more times. While the highest proportion (48.5 percent) were in their third trimester, 33.3

percent and 18.2 percent were in their second and first trimester respectively. Again, about fifty-nine percent of the respondents with pregnancy indicated having no pregnancy complications whilst forty-one percent reported experiencing a pregnancy related complication. Nonetheless, the forty-one percent of women who reported having some form of pregnancy complication is still high and calls for alarm.

Table 7.1 Distribution of Respondents by Pregnancy History

Pregnancy History	Number (n=231)	Percentage
Planned/Wanted pregnancy		
No	88	38.1
Yes	143	61.9
Gravidity status		
Primigravida	80	34.6
Multigravida	132	57.1
Grandmultigravida	19	8.2
Trimester		
First trimester	42	18.2
Second trimester	77	33.3
Third trimester	112	48.5
Pregnancy complications (general)		
No	136	58.9
Yes	95	41.1

Source: Fieldwork, 2022

Specifics of Pregnancy complications

In Figure 7.1, findings on the kind on pregnancy complication experienced by the 95 (41.1%) respondents is presented. From it, fever (14.3%), poor nutrition (13.9%), and high blood pressure (10.8%) were the highly prevalent pregnancy complications with a more than 10 percent incidence. On the other hand, foetal problems (2.6%) which includes poor growth of the baby was also indicated.

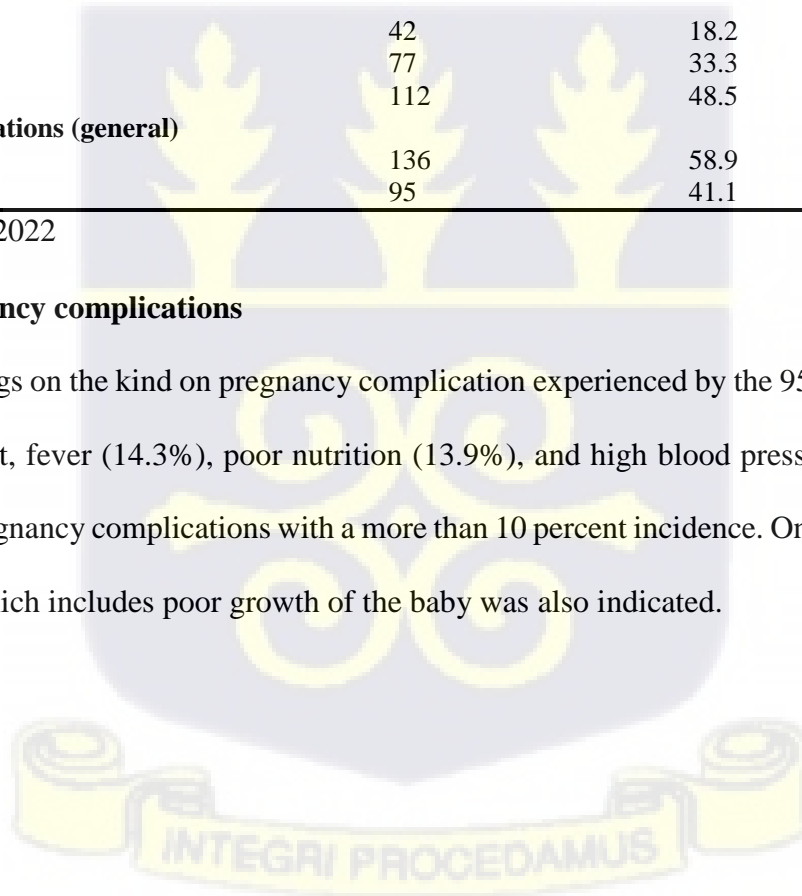
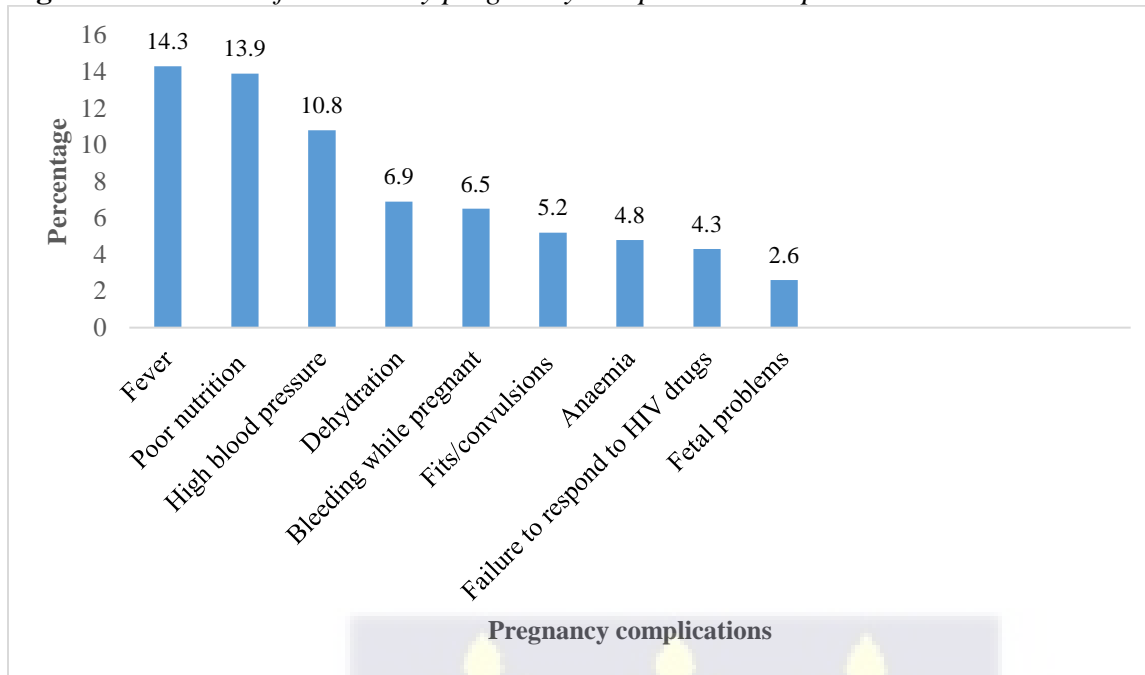


Figure 7.1 Percent of mothers by pregnancy complications experienced



Interviews with the women and the key informants also revealed experiences of complications during pregnancy. In their narratives, poor nutrition was cited by the mothers regardless of their HIV status. This included not having enough food and eating undesired food due to poor economic status:

“Concerning food during pregnancy, usually I get like two bananas and three Irish potatoes just because that is what is available.”(38- year- old HIV positive pregnant woman).

“True, we have some mothers who complain about food insecurity due to the economic situation. They will openly say that we don’t have food to eat at home. I try but fail to put food on the table for myself and family. Sometimes you don’t even find something to eat and end up taking medication on an empty stomach.” (Key informant 002, TASO- Mulago).

Other health complications from the narratives included high blood pressure, fever (which was usually referred to as malaria), among others were cited most and these put the lives of the mothers at risk:

“Personally I have high blood pressure and when I get worried I feel like it has gone high, I start breathing at a fast rate.” (26- year- old HIV positive pregnant woman).

“Some of these mothers they may be having like serious medical conditions. Like the mother comes in with severe malaria, she has pneumonia, she is a known sickler, and then she is pregnant. Then there are those with obstetrical conditions, she is having high pressures, she is having diabetes, errm then any other condition which all put the lives of the mothers at a risk.” (Key informant 001, Mulago Specialised Women and Neonatal Hospital).

7.1.2 Health History

Table 7.2 shows the health history of the respondents which includes their HIV status, chronic diseases, and the history experience of depression. The table indicates that more than half (52.5%) of the respondents were HIV negative whilst 47.5 percent were HIV positive. Moreover, majority of the women (71.2%) knew their HIV status whether positive or negative before getting pregnant. While a larger proportion were not having any chronic diseases (85.5%), 14.5 percent reported to the contrary. Similarly, almost all of the respondents (98.4%) said they never experienced depression prior to the study, and only 1.6 percent of them reported a history of depression.

Table 7.2 Distribution of Respondents by Health History

Health History	Number (n=497)	Percentage
HIV Status		
Positive	236	47.5
Negative	261	52.5
First time to know HIV status		
Before getting pregnant	354	71.2
During/ after giving birth	143	28.7
Chronic diseases		
Yes	72	14.5
No	425	85.5
Past depression status		
Ever depressed	8	1.6
Never depressed	489	98.4

Source: Fieldwork, 2022

The chronic diseases that were reported included hypertension, diabetes, cardiac disease, and asthma. This was confirmed by a key informant in a qualitative interview:

“...So may be like she has a health condition like blood pressure, or diabetes when she is pregnant, so all that brings to them fear and depression. Like when trying to find out how best they can survive with all these things that are occurring in their lives can contribute to depression.” (Key informant 002, Mildmay- Uganda).

Again, the interview narratives brought out other chronic conditions experienced that were not identified in the survey such as breast cancer, epilepsy, among others. These brought worry among the women on how they could survive with the conditions during their prenatal or postpartum period. A mother lamented

for example:

“I am epileptic, I have hormonal imbalance, meaning I have menstrual disorder where I bleed nonstop unless the doctor injects me like for a span of six month. This is the same me who is having asthma sinus, and so when it is raining, or in case any wind and cold gets to me, I get seriously sick. Then if there is lightening or thunder, I fall because of the epilepsy. Again epilepsy has side effects where sometimes my tongue can pull itself out and it would be there with flowing saliva. Now in all these, I end up with HIV. So I have gone through a lot and I have gone through enough.”
(38- year- old HIV positive pregnant woman).

7.1.3 Lifestyle factors

On lifestyle factors, Table 7.3 shows that a higher proportion (74.4%) of the respondents indicated “No” to alcohol use during pregnancy, whilst almost ten percent indicated “Yes” to alcohol use during pregnancy, and 16 percent declined to respond. In terms of alcohol use after giving birth 65 percent responded in the negative, 10 percent said “Yes” and 24 percent declined to respond. Moreover, 12.4 percent of the respondents had consumed alcohol both during pregnancy and after giving birth. When it comes to the status of violence and abuse, about 63 percent of the participants had never been abused, 19.3 percent had ever been abused, and 18 percent declined to respond.

Table 7.3 Distribution of Respondents by Lifestyle Factors

Lifestyle factors	Number	Percentage
Alcohol use during current pregnancy		
No	172	74.4
Yes	22	9.5
Can't mention	37	16.0
Alcohol use after giving birth		
No	173	65.0
Yes	28	10.0
Can't mention	65	24.4
Alcohol use during pregnancy and after giving birth		
No	168	63.1
Yes	33	12.4
Can't mention	65	24.4
Violence and abuse		
No	312	62.7
Yes	96	19.3
Can't mention	89	17.9

Source: Fieldwork, 2022

Qualitative narratives confirm that some women living with HIV turn to alcohol and drugs as a coping mechanism, potentially leading to addiction. One woman shared her experience of spending all her money on alcohol, sometimes leaving her children hungry:

“I try to drink to forget the problems and also manage to sleep... Sometimes I can earn five thousand shillings after a hard work and I find myself using that money to buy alcohol and yet I was meant to buy food for the children. And alcoholism is a bad thing because when drunk you end up giving out the only money remaining on you to a stranger who will not give you when in need...” (35- year- old HIV negative woman who has recently given birth)

Concerning the use of alcohol and the use of other drug substances among the prenatal and postpartum women, the key informants added:

“Ahh a few of them yes may take alcohol as a way of coping. And erm alcohol I think is used by both who are HIV negative and those who are HIV positive because I have encountered both of them.” (Key informant 004, Mildmay- Uganda).

“You talked of use of drugs. Of course, the data which we have says yes, there are some, especially the young women there are some who actually use drug substances.” (Key informant 003, TASO- Mulago)

In addition to the above narratives, participants in the qualitative interview mentioned violence and abuse, including controlling behaviours, emotional intimate partner violence, sexual intimate partner violence, and physical intimate partner violence. Controlling behaviours included preventing women from working or attending healthcare appointments. A woman said she was stopped from doing her business:

“I had started a saloon at home and he chased me claiming that his house is not a saloon and that ended the business. He could tell me that if you want to have a saloon go and rent outside.” (42- year- old HIV positive pregnant woman).

A key informant pointed to the women’s appointment blockage and being stopped from working:

“And the person even wants to come for appointment, you're blocking the person not to come for appointment, not to come for services, even if the person is sick... Now concerning their economic well-being, it is also affecting them, like I've seen some men who stopped their wives from working. Eh, he was always saying why are you going to work? Be here and wash clothes, cook, and that is it. Be a house housewife... This husband who refused her to work has also neglected her...” (Key informant 004, TASO- Mulago)

Instances of emotional intimate partner violence were recounted by the participants and these involved

the women's expressive words like lack of care, unapologetic partners, verbal abuse and insult, partner's usage of harsh words among others:

“Emotionally I am not fine. He seems not to care about me and he is unapologetic even when he is wrong. This makes me feel unloved and has affected me socially.” (28- year- old HIV negative woman who has recently given birth)

“When he gives me money he can abuse and insult me verbally because of the assistance he has given me, which is like only ten thousand shillings...” (38- year- old HIV negative woman who has recently given birth)

An informant added:

“One of them is, of course, emotional GBV or psychological, you know, those hash, hash things. Actually some men can verbally abuse their wives which puts them under emotional stress. They are really verbally abusing these women even before their children. They abuse women even before the community. Someone goes to where the woman maybe is having her small business, he abuses her there. So it is really, not easy for these.”(Key informant 004, TASO- Mulago)

Sexual abuse and exploitation from intimate partners and other people were also noted. This included instances of rape, a partner forcing the woman into a sexual act, among others. Additionally, it was identified that some of the sexual abuses resulted into unplanned pregnancies. Both the women and key informant participants noted:

“When he comes I just see that we engage into sexual intercourse and forces the act in my heart.. I just agree to sleep with him in order to win his heart not out of love; but in most cases it is him who benefits and not me...This is done with hope and expectation that he will provide some support to me...” (45- year- old HIV positive pregnant woman)

“...another thing is sexual violence. Some of them are being raped, they are denied from sex. Of course, when someone neglects you, sometimes you don't have sex. And if the person comes to have sex with you, instead he will force you to have sex with him. When you look at the women, some of their husbands are taking a lot of alcohol, they are drug addicts ehh, so sometimes they are raped in marriages and outside marriages....”(Key informant 004, TASO- Mulago)

Cases of physical intimate partner violence were also reported especially when the partner knows about the woman's HIV positive status, among other reasons. Commenting on this, a key informant narrated:

“There are those who are beaten by their partners...most of them it is because the partner has got to know that this one is on drugs, she has been keeping quiet, probably she wanted to infect me and violence starts from there”(Key informant 001, Mildmay- Uganda).

7.1.4 Family history of depression and substance use

The respondents' family history of depression and substance use are shown in Table 7.4. The Table shows 91 percent of the respondents had no family history of depression and so just about nine percent of them had a family member(s) with a history of depression. More so, more than half (52.9%) of the respondents had a family member who consumed alcohol, whilst 43.5 percent did not have a family member(s) who consumed alcohol, and 3.6 percent did not know. Again, majority of the respondents (74.4%) noted that none of their family members was smoking whereas those who had a smoking family member(s) were about 20 percent, and seven percent didn't know.

Table 7.4 Distribution of Respondents by Family History

Family history	Number (n=497)	Percentage
Family depression status		
Yes	46	9.3
No	451	90.7
Family Alcohol Use		
Yes	263	52.9
No	216	43.5
Don't know	18	3.6
Family Smoking Status		
Yes	99	19.9
No	370	74.4
Don't know	28	5.6

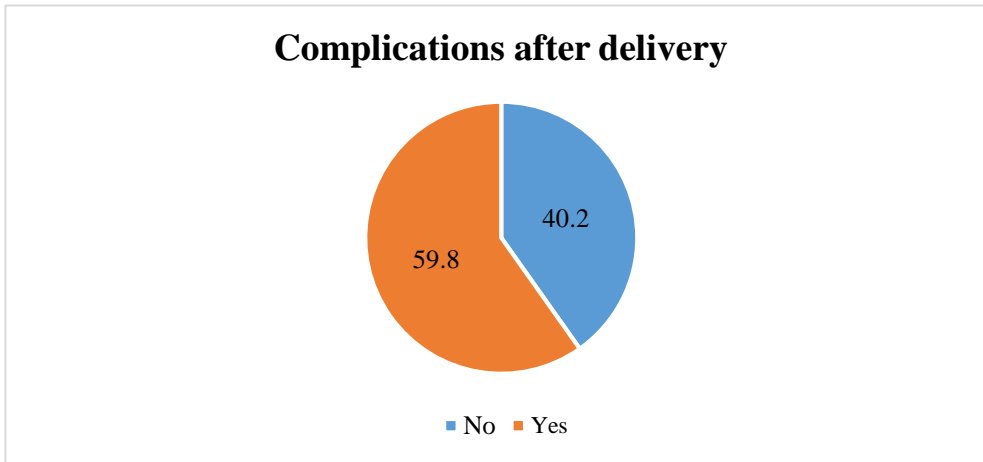
Source: Fieldwork, 2022

7.1.5 Complications after delivery

Figure 7.5 indicates that about three in five (59.8%) of the respondents had complications after delivery while 40.2 percent did not have any complication after delivery.



Figure 7.2 *Distribution of Respondents by Complications after Delivery*



Source: Fieldwork, 2022

Among the respondents who reported to have experienced complications after delivery, excessive vaginal bleeding (16.5%), pain and/or swelling around the nipples (15.4%), fever (15%) , and poor nutrition (13.2%) were the most indicated ones.

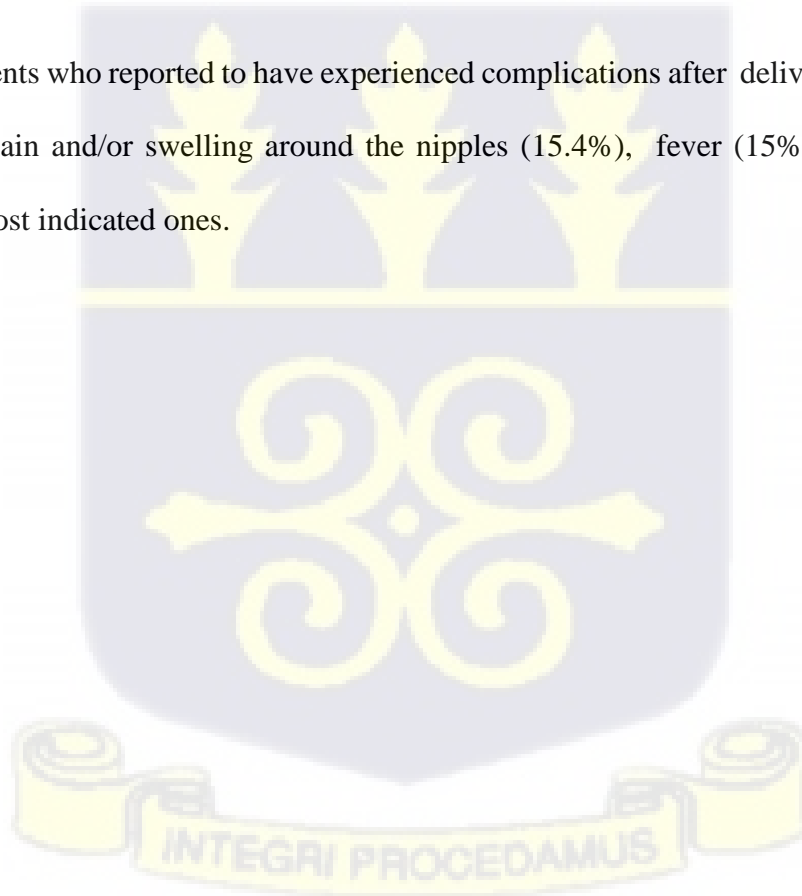


Table 7.5 Distribution of Respondents by Specific Complications after delivery

Complications after delivery	Number (n=266)	Percentage
Excessive vaginal bleeding		
Yes	44	16.5
No	222	83.5
Anaemia/blood transfusion		
Yes	8	3.0
No	258	97.0
Fever		
Yes	40	15.0
No	226	85.0
Dehydration		
Yes	10	3.8
No	256	96.2
Poor nutrition		
Yes	35	13.2
No	230	86.8
Pus discharge from the vagina		
Yes	5	1.9
No	261	98.1
Pain and/or swelling around the nipples		
Yes	41	15.4
No	225	84.6
Failure to respond to HIV drugs		
Yes	7	2.6
No	259	97.4

Source: Fieldwork, 2022

Insights from in-depth interviews confirmed the fact that the women experienced various complications after delivery. A woman with continuous bleeding lamented:

“...these family planning methods left me with the effect of bleeding which condition I don’t know when it will end. Even when I was pregnant with this child, the pregnancy almost terminated. I was even bleeding as well yet I was pregnant. Thankfully, I was rushed to the health hospital early in time and was put on injection treatment for three days while also being monitored...There even reached a time that I got serious STI infections” (40- year- old HIV positive woman who has recently given birth).

Furthermore, another major and common complication revealed in the narratives with the participants included sepsis development among caesarean mothers, which is the most painful experience they had as

one of them recounted:

“My condition wouldn’t be bad but I got some complications with this caesarean. The caesar is funny, you see outside it is drying up, but inside it is a wound. So, like a week, I got so much pain that made me to come back to the hospital. But lucky enough they gave me the medication and it healed.” (32- year- old HIV positive woman who has recently given birth).

Failure to respond to HIV drugs was common among women living with HIV. This included high viral load, which further compromises their health wellbeing and exposes the children to HIV infection.

Referring to this the participants noted:

“I was affected, because every time you are in thoughts you can’t remain the same. As you think, you lose weight. Every time I could come for appointment the CD4 had reduced. The counsellors noticed that I have lost weight. I talked to the counsellor over my challenges and she promised to call my husband”. (37- year- old HIV positive woman who has recently given birth).

“If you test their viral load and you announce to them that they are high, the first thing will be ohh my baby. Yeah, so the fear of infecting their child.” (Key informant 002, Mildmay- Uganda).

Postpartum mothers expressed concerns about poor nutrition, attributing it to insufficient food, imbalanced diets, and negative dietary changes. This situation, crucial for immunity and breastfeeding, poses physical and mental health challenges, as one mother lamented:

“Food and the care was not enough as required and expected which I think it affected me in a way...You could think of putting milk in porridge but that was not possible.” (37- year- old HIV positive woman who has recently given birth).

“She is not drinking a lot, she is not eating well, she is stressed because she has to breastfeed, and so she is going to be anemic.” (Key informant 002, Mulago Specialised Women and Neonatal Hospital).

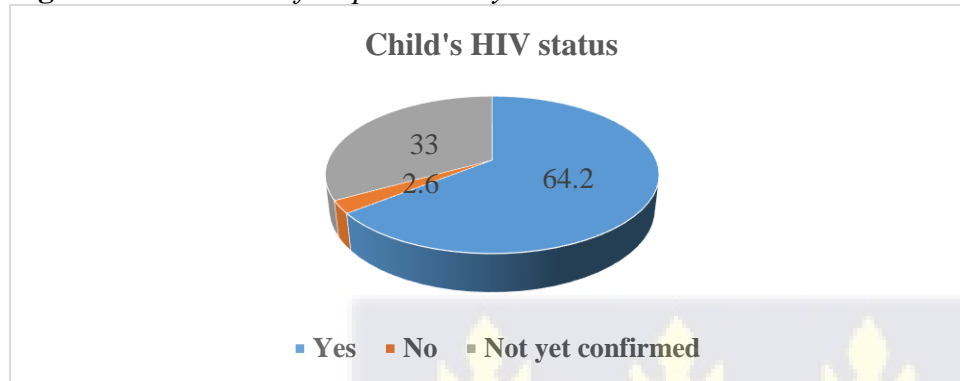
7.1.6 Mode of delivery

Caesarean section, spontaneous vaginal delivery, and assisted vaginal delivery were identified as the modes of delivery among the 266 women who had given birth. Amongst these, half had given birth through spontaneous vaginal delivery while 42 percent and eight percent had given birth through caesarean section and assisted vaginal delivery, respectively. The assisted vaginal delivery included using items like vacuum extraction, forceps delivery, among others.

7.1.7 Child’s HIV status

Figure 7.4 shows the child’s HIV status of the respondents. From the figure, 64.2 percent of the respondents knew their children’s HIV status, about 3 percent did not know, and 33 percent were yet to confirm their children’s HIV status.

Fig. 7.4 *Distribution of respondents by child’s HIV status*



Source: Fieldwork, 2022

The qualitative interviews revealed that HIV-positive women whose children's HIV status was unconfirmed experienced fear and anxiety while awaiting the results, given that they would only be disclosed at the next appointment. The necessity for three tests to confirm the child's status added to their distress, driven by the fear of a positive result being confirmed:

“Yes, the first test has been done but they have not yet given me the results. And this waiting period is actually hard because I am panicking” (32- year- old HIV positive woman who has recently given birth).

“Yes the child has been tested, but the results will be in February 2023. As for now I don’t know how things will turn out” (37- year- old HIV positive woman who has recently given birth).

One of the key informants confirmed:

“... all that waiting period before the discharge of their child, they are in the worrying moment. Will I come out when my child is negative? So, there is that stress in the waiting period...” (Key informant 003, Mildmay- Uganda).

7.1.8 Social support

Social support and its sources are indicated in Table 7.6 and Figure 7.5 respectively. From Table 7.6, it is noted that almost an equal proportion of the respondents received high and moderate social support, which

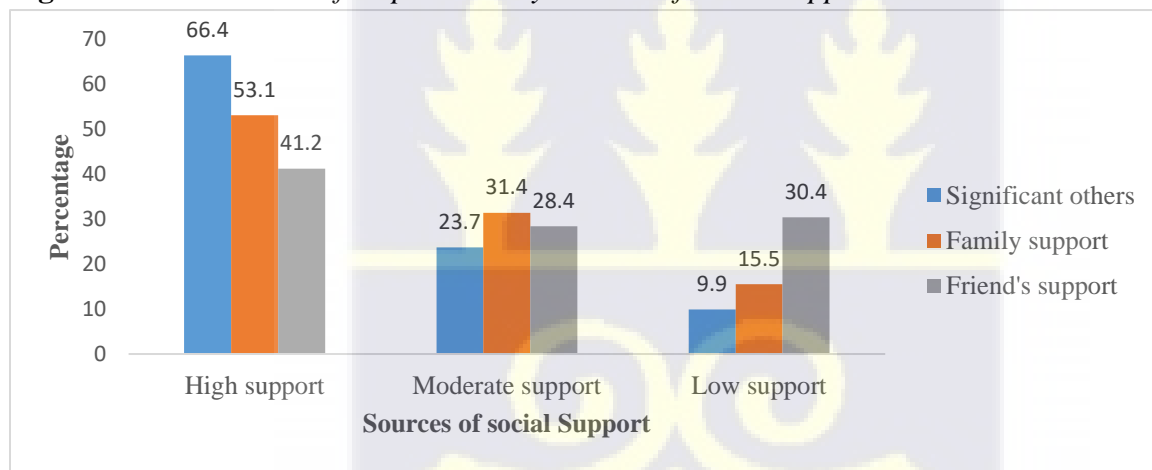
was 46.7 percent and 43.9 percent respectively. On the other side, however, the least proportion of 9.5 percent indicated receiving low social support. Additionally, the analysis of the sources of social support indicates that the highest score (66.4%) came from significant others, while moderate support (31.4%) and low support (9.9%) came from the family and friends respectively. Significant others are people in one's social network including non-family actors (Nakigudde et al., 2009; Hirsch, 1980).

Table 7.6 Distribution of Respondents Social Support

Social support	Number (n=497)	Percentage
Low support	47	9.5
Moderate Support	218	43.8
High support	232	46.7

Source: Fieldwork, 2022

Figure 7.5 Distribution of respondents by sources of social Support



Source: Fieldwork, 2022

7.1.9 Food insecurity

The food insecurity level of the respondents in this study indicates that more than half of them (53.5%) were food secure. Conversely, 46.5 percent of them were food insecure.

7.1.10 Access to the Health Care Facility

Distance from residence to a health facility could present a physical barrier and may influence health seeking behaviours. To pregnant women living with HIV and those who have given birth, travelling long

distance could impede prevention of mother to child outcomes. In this study, distance was expressed in kilometres, with a range of zero to one. Distance was calculated from miles to kilometres, where one mile was an equivalent to 1.6 kilometres. The results show that the mean distance the women travelled from their places of residence to the health facility was 17.11 kilometres; with a minimum distance of one kilometer and a maximum of 150 kilometres (Table 7.9).

Table 7.9 Distance ratio for Respondents

	Number	Ratio of Distance to health facility (Kilometres)			
		Mean	Std. Dev.	Min	Max
Full Sample	497	17.11km	18.24	1	150

Source: Fieldwork, 2022

In the qualitative narratives, women participants who had long distances to travel for their prenatal and postpartum services indicated having challenges to access the health services especially when they have no transport money. This can result in missing out clinic appointments which is dangerous especially for mothers living with HIV. Again, even to some mothers, long distances to their health facilities was not a choice but rather the only option to receive such antenatal and postpartum services; other mothers especially those living with HIV chose such facilities due to the fear of being stigmatized if they went to the facilities near their homes. The participants narrated:

“I struggle to see to it that I access the health facilities. This is due to the long distance I have to travel and come.” (38- year- old HIV positive pregnant woman).

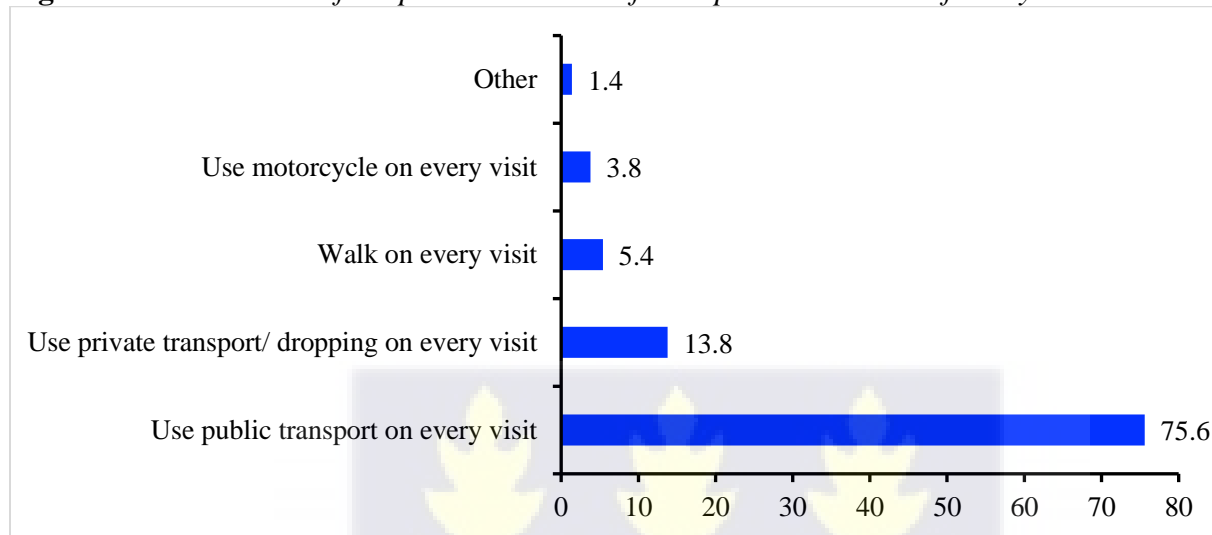
The challenge they have is sometimes how to get the medication. There will be a time they will not be able to reach the health facility for their medication due to long distance or even lack of money for transportation. (Key informant 002, TASO- Mulago).

7.1.10.1 Means of transport to the Health Facility

Aside the distance from the respondents’ homes to the health facility, the means of transport the participants use to go to the health facility were identified. The findings in this study indicate that a higher proportion (75.6%) of them used public transport to the health facility on every visit. Conversely, about

14 percent of the women used private transport/ dropping, 5.4 percent walked to the health facility on every visit, and 3.8 percent used motorcycles on every visit to the health facility. Figure 7.7 indicates the respondents' means of transport to the health facility.

Figure 7.7 *Distribution of Respondents Means of transport to the health facility*



Source: Fieldwork, 2022

7.2 Depression status and pregnancy history

Table 7.10 shows the association between depression prevalence by the pregnancy history of women living with HIV in comparison with the HIV negative group. From the table, only pregnancy complications among the HIV negative women was statistically significant with depression. Among the women living with HIV, those who had not planned/ wanted the pregnancy had the highest proportion (87%) of depression symptoms than those who had planned/ wanted their pregnancy (78%). Similarly, among the women who were HIV negative, those who had not planned/ wanted the pregnancy also showed higher depression (62.2 %) than those who had planned/ wanted their pregnancy (54.4%). In comparing both groups of women, depression prevalence was high among women with unplanned/unwanted although women living with HIV showed heightened depressive symptoms.

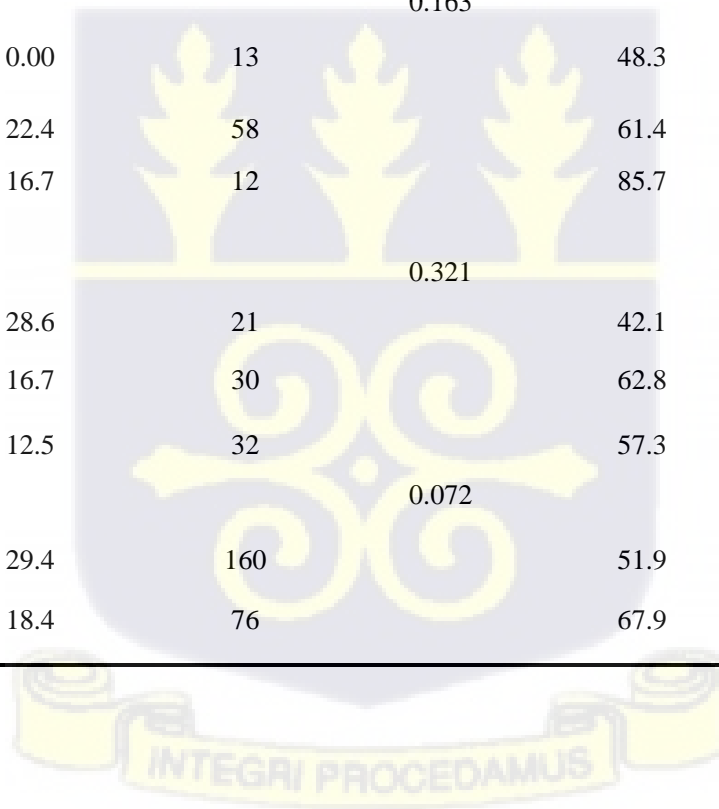
Again, findings on the gravidity status within women living with HIV indicate that those who had their first pregnancy showed higher depression symptoms (100%) compared to those in their fifth or more pregnancies (83.3%), as well as those in their second to fourth pregnancies (77.6%). However, when it comes to women who were HIV negative, those who had their fifth or more pregnancies exhibited higher depression (85.7%), followed by those in their second to fourth pregnancies (61.4%), and those who had their first pregnancy were less depressed (48.3%). When comparing both groups of women, women living with HIV greatly differed from other who are HIV negative in terms of their gravidity status and depression (e.g. high depression in first pregnant mothers living with HIV, contrary to high depression in HIV negative mothers within their fifth or more pregnancies).

About trimester, it is found that among women living with HIV, depression prevalence was higher (88%) among those who were in their third trimester than those who were in second trimester (83.3%), and first trimester (71.4%). But when it comes to HIV negative women, it is was rather found that those who were in their second trimester showed higher depression (62.8%) than those in the third trimester (57.3%) as well as first trimester (42.1%). When both groups of women are compared, unlike those living with HIV who showed higher depression symptoms among their third trimester, the HIV negative women had participants in their second trimester being highly depressed. With regards to pregnancy complications, the results showed that among the women living with HIV, those who had complications had significantly higher depression prevalence (81.6%) than those who did not have complications (70.6 %). Similarly, among the HIV negative women, those who had complications also showed higher depression (67.9 %) than those who did not have complications (51.9%). From the findings therefore, high depression prevalence was among women who experienced pregnancy complications regardless of their HIV status, although women living with HIV had heightened depression symptoms.

Table 7.10 Association between Pregnancy History and depression on the Edinburgh Postnatal Depression Scale

Pregnancy History	Women living with HIV			HIV negative women				
	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Planned/Wanted pregnancy				0.285				0.382
No	86.8	13.2	38		62.2	37.8	45	
Yes	77.8	22.2	45		54.4	45.7	92	
Gravidity status				0.163				0.093
Primigravida	100	0.00	13		48.3	51.7	60	
Multigravida	77.6	22.4	58		61.4	38.6	70	
Grand multigravida	83.3	16.7	12		85.7	14.3	7	
Trimester				0.321				0.315
First trimester	71.4	28.6	21		42.1	57.9	19	
Second trimester	83.3	16.7	30		62.8	37.2	43	
Third trimester	87.5	12.5	32		57.3	42.7	75	
Pregnancy complications				0.072				0.039
No	70.6	29.4	160		51.9	48.1	183	
Yes	81.6	18.4	76		67.9	32.1	53	

Source: Fieldwork, 2022



7.3 Depression status and health history

Table 7.11 shows the association between depression levels and the health history of respondents. The table indicates that only chronic diseases (p-value = 0.028) was significantly associated with depression among women living with HIV. The results within women living with HIV indicated that those having a chronic disease had greater symptoms of depression (89%) than those who did not have any chronic disease (72%). Similarly, among the women who were HIV negative, those with a chronic disease also showed higher depression (60.0 %). When comparing both groups of women, higher depression prevalence was among those having chronic disease regardless of the women's HIV status, although greater depression was observed among women living with. When it comes to the participant's history of depression, the results showed that women living with HIV who said they have ever experienced depression prior to this study showed higher depression levels (85.7%) than those who reported not to have a history of depression (73.8%).

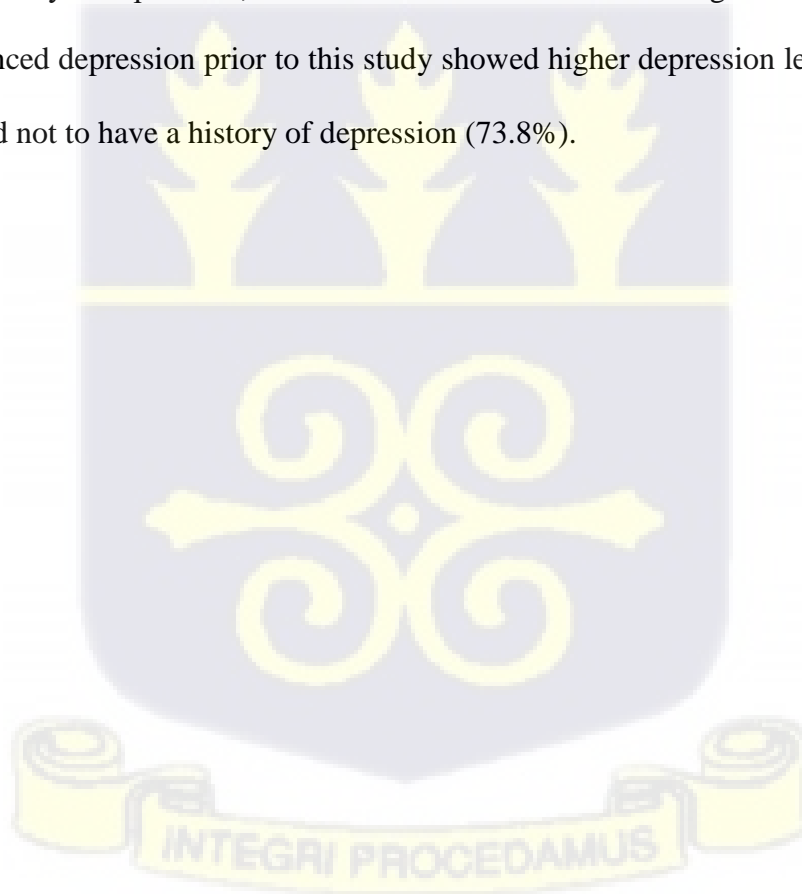
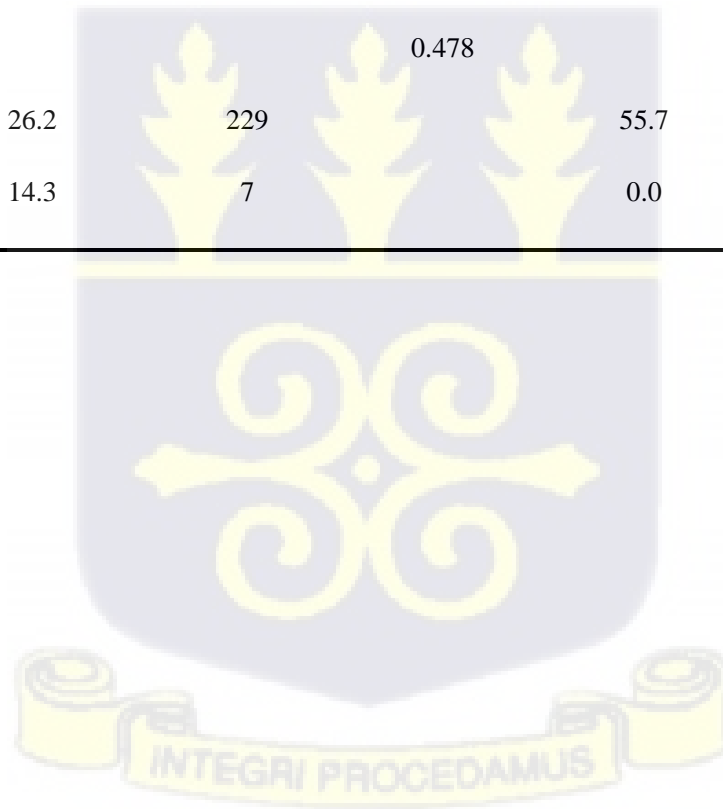


Table 7.11 Association between Health History and depression on the Edinburgh Postnatal Depression Scale

Health History	Women living with HIV			HIV negative women				
	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Chronic diseases				0.028				0.562
No	71.5	28.5	200		54.7	45.3	201	
Yes	88.9	11.1	36		60.0	40.0	35	
Past depression status				0.478				0.263
Never depressed	73.8	26.2	229		55.7	44.3	235	
Ever depressed	85.7	14.3	7		0.0	100	1	

Source: Fieldwork, 2022



7.4 Depression status and HIV characteristics

Table 7.12 shows that HIV status (p-value < 0.000) and time for knowing the HIV status (p-value= 0.009) were significantly associated with depression. From the table, a higher proportion (74.2%) of the depression prevalence was among women who were HIV positive than their HIV negative counterparts (55.5%). Moreover, women who first knew their HIV status during pregnancy or after giving birth were the most depressed (85.1%) compared to those who knew their HIV status before getting pregnant (69.1%). In addition, women living with HIV who indicated not knowing their children’s HIV status were all depressed (100%) compared to those whose children’s HIV status was yet to be confirmed (71%), as well as those who knew their children’s HIV status (68.2%).

Table 7.12 Association between HIV characteristics and depression on the Edinburgh Postnatal Depression Scale

Variable	Depression Percentage (%)		Number	Chi Square	p-value
	Depressed	Not depressed			
HIV Status				17.9894	0.000
Positive	74.2	25.9	236		
Negative	55.5	44.5	236		
First time to know HIV status				6.7841	0.009
Before getting pregnant	69.1	30.9	162		
During/ after giving birth	85.1	14.9	74		
Child’s HIV status				0.9735	0.615
No	100	0.0	2		
Yes	68.2	31.8	66		
Not yet confirmed	70.6	29.4	85		

Source: Fieldwork, 2022

7.5 Depression status and lifestyle factors

Table 7.13 shows the association between depression levels and lifestyle factors. Generally, within women living with HIV, alcohol use after giving birth, alcohol use both during pregnancy and after giving birth, and violence and abuse were significantly associated with depression. Conversely, among the HIV negative women, depression was significantly related to alcohol use during pregnancy, alcohol use after giving birth, alcohol use both during pregnancy and after giving birth, and violence and abuse. Specifically within women living with HIV, those who did not use alcohol during pregnancy showed higher depression (85.0%) than those who declined to respond (75%), and those who used alcohol (72.7%). This suggests that aside alcohol use during pregnancy, there are other factors causing depression among the women living with HIV. Contrary, the HIV negative women who used alcohol during pregnancy had higher depression (82%) than those who did not (58.0%), and those who declined to respond (40%).

Again, within the women living with HIV, higher depression was in those who used alcohol after giving birth (80.9%) than those who did not (75.0%), and those who declined to respond (52.5%). But when it comes to the HIV negative women, those who did not use alcohol after giving birth were highly depressed (60.6%) than those who used it (60.0%) and those who declined to respond (30.4%). Additionally, women living with HIV who used alcohol both during pregnancy and after giving birth were greatly depressed (80%) compared to those who did not (75.3%), and those who declined to respond (52.5%). On the other hand, the HIV negative women who did not use alcohol both during pregnancy and after giving birth were highly depressed (64.6%) than those who used it (36.4%), and those who declined to respond (30.4%). More so, higher depression symptoms were among women living with HIV who faced violence and abuse (88.2%) as well as the HIV negative women who faced violence and abuse (63.2%). However, abused women living with HIV were greatly depressed compared to their HIV negative counterparts.

Table 7.13 Association between Lifestyle Factors and depression on the Edinburgh Postnatal Depression Scale

Lifestyle factors	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Alcohol use during current pregnancy				0.496				0.046
No	85.0	15.0	60		59.1	40.9	105	
Yes	72.7	27.3	11		80.0	20.0	10	
Can't mention	75.0	25.0	12		36.4	63.6	22	
Alcohol use after giving birth				0.017				0.040
No	75.0	25.0	92		60.6	39.4	71	
Yes	80.9	19.1	21		60.0	40.0	5	
Can't mention	52.5	47.5	40		30.4	69.6	23	
Alcohol use during pregnancy and after giving birth				0.018				0.009
No	75.3	24.7	93		64.6	35.4	65	
Yes	80.0	20.0	20		36.4	63.6	11	
Can't mention	52.5	47.50	40		30.4	69.6	23	
Violence and abuse				0.001				0.006
No	70.9	29.1	117		60.0	40.0	175	
Yes	88.2	11.8	76		63.2	36.8	19	
Can't mention	58.1	41.9	43		33.3	66.7	42	

Source: Fieldwork, 2022

7.6 Depression status and family history

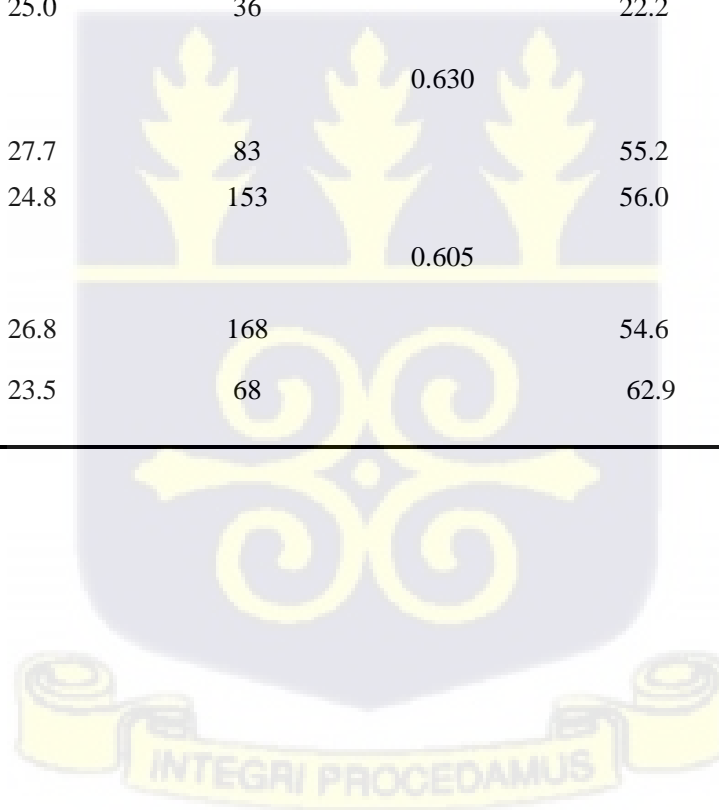
Table 7.14 shows that among the women living with HIV, none of the family history variable was significantly associated with depression, though a pattern was seen within the variables. On the other hand, family history of depression was significantly related to depression among the HIV negative women. The results showed that within the women living with HIV, those with a family member with depression history had the highest symptoms of depression (75%) than those who did not have a family member with depression history (74%). On the contrary, women who were HIV negative exhibited higher depression (57%) among those who did not have a family member with depression history than those with a family member with depression history (22.2%). When both groups of women are compared, opposite variations in depression prevalence by family depression status were observed. That is, higher depression among women living with HIV who have a family member with depression history, unlike among the HIV negative women where those without a family member with depression history being the highly depressed.

Regarding the prevalence of depression by family alcohol use, the results showed that among the women living with HIV, those with a family member who uses alcohol had higher depression (75.2%) than those who did not have a family member using alcohol (72.3 %). Similarly, among the HIV negative women, those with a family member who uses alcohol showed higher depression (56%) than those without (55.2%). These results suggest that high depression prevalence was among women with a family member who uses alcohol regardless of their HIV status, although women living with HIV had a considerably higher depression rate. The results further indicate that within the cohort of women living with HIV, those with a family member who smokes had higher depression (77%) than those who did not have (73.2 %). A similar trend of depression prevalence was observed among the HIV negative women, with higher depression being among those with a family member who smokes (62.9%) than those without (54.6%).

Table 7.14 Association between Family History and depression on the Edinburgh Postnatal Depression Scale

Family History	Women living with HIV			HIV negative women				
	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Family depression status				0.900				0.040
No	74.0	26.0	200		56.8	43.2	227	
Yes	75.0	25.0	36		22.2	77.8	9	
Family Alcohol Use				0.630				0.408
No	72.3	27.7	83		55.2	44.9	136	
Yes	75.2	24.8	153		56.0	44.0	100	
Family Smoking Status				0.605				0.408
No	73.2	26.8	168		54.6	45.5	209	
Yes	76.5	23.5	68		62.9	37.0	27	

Source: Fieldwork, 2022



7.7 Depression status and Mode of delivery, and Complications after delivery

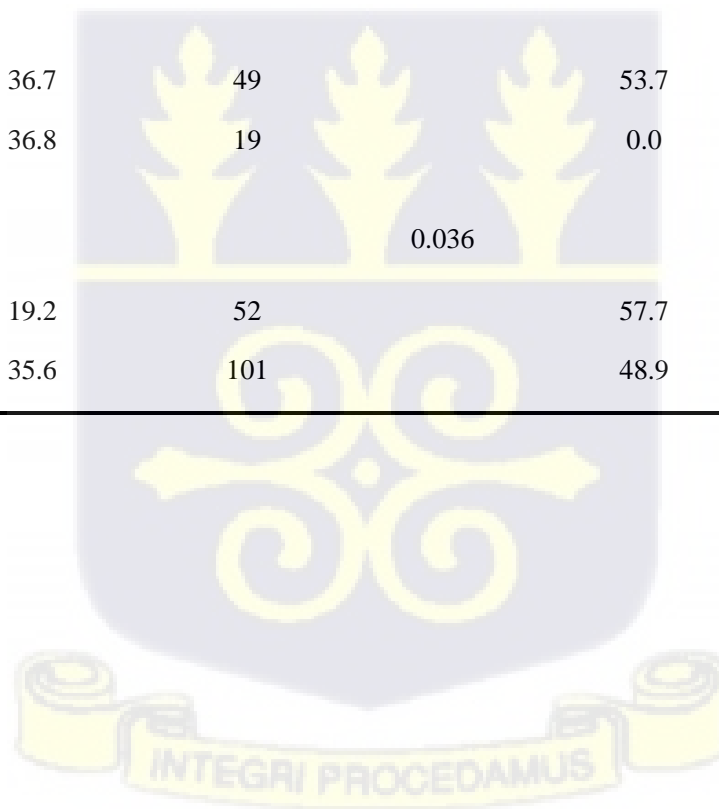
Table 7.15 shows that generally, mode of delivery was not significantly associated with depression regardless of the HIV status. On the other hand, complications after delivery among women living with HIV was significantly associated with depression (p -value=0.036). Specifically, within women living with HIV, those who had spontaneous vaginal delivery showed higher depressive symptoms (75.3 %) than those with caesarean section (63.3%), and assisted vaginal delivery (63.2%). Similarly, among the women who were HIV negative, those with spontaneous vaginal delivery (54.6%) than those with caesarean section (53.7%), while no depression was found among those with assisted vaginal delivery. When both women are compared, depression prevalence was again higher among those with spontaneous vaginal delivery regardless of the HIV status. However, women living with HIV showed heightened depressive symptom compared to their HIV negative counterparts.

Furthermore, the results showed that women living with HIV who did not experience any complication after delivery were highly depressed (81%) than those who had complications after delivery (64.4%). A similar trend of depression prevalence was shown among the women who are HIV negative, as those who did not have complications after delivery had higher depression (58%) than those who had complications (49 %). The findings therefore suggest that women who had no complications after delivery had higher depression prevalence regardless of the HIV status, although women living with HIV had a considerably higher depression rate.

Table 7.15 Association between mode of delivery, complications after delivery and depression on the Edinburgh Postnatal Depression Scale

Variables	Women living with HIV			HIV negative women				
	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Mode of delivery				0.271				0.557
Spontaneous vaginal delivery	75.3	24.7	85		54.6	45.5	44	
Caesarean section	63.3	36.7	49		53.7	46.3	54	
Assisted vaginal delivery	63.2	36.8	19		0.0	100	1	
Complications after delivery				0.036				0.383
No	80.8	19.2	52		57.7	42.3	52	
Yes	64.4	35.6	101		48.9	51.1	47	

Source: Fieldwork, 2022



7.8 Depression status and external factors

Table 7.16 shows that among women living with HIV, food insecurity and dwelling conditions were statistically significant with depression. On the other hand, social support and dwelling conditions were significantly related to depression among the HIV negative women. Specifically, the results show a pattern that depression prevalence among women living with HIV reduced with higher level of support, with women who had low support recording the highest proportion (81.3%) of depression while those who had moderate and high support had 76.2 percent and 67.9 percent depression levels respectively. A similar high depression prevalence in those with low support (92.9%) was observed among the HIV negative women. Those with high support (56.2%) followed this and moderate support was the least depressed (48.2%), which depressive pattern is quite different from that observed among the women living with HIV.

Concerning food security, the results within women living with HIV indicate that those who were food insecure had higher depressive symptoms (83.4%) than those who were food secure (57.7%). However, when it comes to women who were HIV negative, those who were food secure exhibited higher depression (57.1 %) than those who were food insecure (52.0 %). The opposite variations in observed depression prevalence among the two groups of women could be accounted by a number of factors peculiar to the women. For example women living with HIV are advised not take ARVs on an empty stomach which may be emotionally draining for those with food insecurity.

With regards to dwelling conditions, within the women living with HIV, those who lived in a personal separate house but at family homestead were highly depressed (93.3%). This was followed by those who lived in a shared house within family homestead (87%), those who lived in shared house within non family homestead (63%), and those who lived in a personal separate and family independent house were the least depressed (58%). On the contrary, the HIV negative women

showed higher depression prevalence those who lived in a shared house within non-family homestead (90.2%), followed by those who lived in a personal separate house but at family homestead (75.0%), and personal separate and family independent house (52%). HIV negative women who lived in a shared house within family homestead showed the least depression symptoms (32.3%). The nature of the women's dwelling conditions as well as the social ties available could influence depression symptoms among the HIV positive and HIV negative women.



Table 7.16 Association between External Factors and depression on the Edinburgh Postnatal Depression Scale

Variables	Women living with HIV			HIV negative women				
	Depression Percentage (%)		Number	p-value	Depression Percentage (%)		Number	p-value
	Depressed	Not depressed			Depressed	Not depressed		
Social support				0.262			0.008	
Low support	81.3	18.8	32		92.9	7.1	14	
Moderate Support	76.2	23.8	126		48.2	51.8	85	
High support	67.9	32.1	78		56.2	43.8	137	
Food insecurity				0.000			0.459	
Food secure	57.7	42.4	85		57.1	42.9	161	
Food insecure	83.4	16.6	151		52.0	48.0	75	
Dwelling conditions				0.000			0.000	
A shared house within family homestead	86.7	13.3	105		32.3	67.7	65	
Personal separate house but at family homestead	93.3	6.7	15		75.0	25.0	8	
A shared house within non family homestead	62.8	37.2	43		90.2	9.8	51	
Personal separate and family independent house	58.9	41.1	73		51.8	48.2	112	

Source: Fieldwork, 2022



7.9 Discussion

This chapter investigated the respondents' perinatal characteristics, and the association between those variables and depression. As previously established by Acheanpong et al. (2022) in Ghana, Bašková et al. (2023) in Slovakia, Elrassas et al. (2022) in Egypt, and Tesfaye & Agenagnew (2021) in Ethiopia, the findings showed that majority (62%) of the women had a planned/wanted pregnancy, were in third trimester, and had been pregnant for two to four times. More so, having half of the women who had given birth through spontaneous vaginal delivery corroborates with findings by Shitu et al. (2019) where about 63 percent of the participants had given birth through spontaneous vaginal delivery. According to Seidu et al. (2020), having frequent birth experiences via vaginal delivery as well as being young in age reduces the likelihood of having caesarean delivery.

Again, it was identified that some women experienced complications, with about three in five women experiencing complications after delivery, which is concerning as it poses potential health risks, including mental well-being. Although a few of the women had pregnancy complications, chronic diseases, and a history of depression, these conditions cannot be overlooked as they can potentially affect maternal health if unmanaged. These findings support those by Aktas & Calik (2015), Chinawa et al. (2016), Wubetu et al. (2020), and Zejnullahu et al. (2021) who identified similar findings. Moreover, complications may further lead to hospitalization, emergency C-sections, and elevated prenatal and postpartum depression risks (Ghaedrahmat et al., 2017; Ndege, 2018). The identified alcohol use among some women during pregnancy and after giving birth could be accounted for various reasons, like relaxation, socialising, coping with challenges, among others (Mental health foundation, 2006). However, alcohol use during pregnancy and postpartum can harm infant health, causing low birth weight and preterm birth. Additionally, increased alcohol intake raises the risk of depression (Boden & Fergusson, 2011; Kelly et al., 2002).

Having some women confirming that they have family member(s) with a history of depression, as well as family members who consume alcohol, and those who smoke is in agreement with Wubetu et al. (2020) and Dagnaw et al., (2022). These findings could help explain factors that influence the observed depression prevalence as well as the coping strategies adopted by the women when challenged. Existing literature has established a relationship between genetic factors and their influence to being vulnerable to depression and substance abuse (Nawi et al., 2021). Also, being raised in a setting where alcohol and smoking are common can influence the women to normalise these behaviours and use them to cope with challenging situations (Wathen, 2012). The social support received by women in this study was perceived to be moderate to high, and this came mainly from family and friends, echoing the results previously found in Ethiopia and Uganda (Ayele et al., 2016; Nakigudde et al., 2009; Tesfaye & Agenagnew, 2021). Even though more than half of the women in the current study were food secure (Abrahams & Lund, 2022), having some women being food insecure calls for attention. This is because food insecurity is linked to numerous health concerns, including anaemia, birth defects, gestational complications, low birth weight, depression and suicide (Ramalho et al., 2017).

In addition, having some women travel a maximum distance of 150 kilometres from their homes to the health facility using transport means like public transport, walking, motorcycles, among others could influence the women's health seeking behaviours. The observed women's long distance travel using various transportation methods confirms prior studies (H. Kim et al., 2021; Mee et al., 2020; Palk et al., 2020). On the contrary, the finding of public transport being the widely means of transport contrasts with Akullian et al. (2016) in Uganda where motorcycle/bodaboda (61.2%) and walking (33.3%) commonly used to access healthcare. Long-distance travel is noted among HIV-positive individuals for anonymity, reduced stigma, specialized services, and facility preference (Adwar et al., 2022; Mee et al., 2020; Olupot et al., 2021). However, long-distance travel is linked to lower treatment success rates and increased mortality (Olupot et al., 2021).

Findings at the bi-variate level revealed that although both women living with HIV and the HIV negative women had higher depression amongst women with unplanned/unwanted pregnancy, and those with pregnancy complications, heightened depressive symptoms were observed among the women living with HIV. Manikkam and Burns (2012) in South Africa, Zejnullahu (2021) in Kosovo, and Collin et al. (2006) in Zambia reported similar findings. Depression among women living with HIV with unplanned/unwanted pregnancy is associated with lack of support, worry on the childcare responsibilities (Choi et al., 2019; Tachibana et al., 2015). Also, women living with HIV with pregnancy complications fear infecting their child which increases depression (Aaron et al., 2015). These findings could be explained by the vulnerability stress model, as having multiple stressors like unplanned pregnancy which reduces partner support while experiencing a complication, in the face of HIV will trigger the onset of depression when genetically vulnerable.

The findings further identified variations in depression status by gravidity status with HIV negative women who were in their fifth pregnancies or more having higher depressive symptoms, while women living with HIV who were in their first pregnancy showed higher depression symptoms. The findings could imply existence of other complex factors based on the women's HIV status, that contribute to depression irrespective of the number of pregnancies ever had. According to Tachibana et al. (2015), women with a first pregnancy face countless mental stresses than those who have ever given birth resulting from worrying about the new motherhood responsibilities. Among the women living with HIV, those in their first pregnancy experience greater fears of having an infected child (Aaron et al., 2015) as well as being uncertain about the effects of the medication on the baby's development (Ashaba et al., 2017). Furthermore, the identified high depression among living with HIV who are in their third trimester could result from the fear of being treated unfriendly by health professionals during delivery (Ayele et al., 2016). Moreover, for women who could have known their HIV positive status during pregnancy, the fears of disclosing status, abandonment, among others could increase the depression risks among the women living with HIV (Brittain et al., 2019; Hatcher et al., 2014).

The established influence of chronic diseases on depression among the women living with HIV suggests that those with chronic conditions such as hypertension, diabetes, and asthma, among others are highly to get depressed. HIV positive women with a chronic disease can be exposed to reduced body immunity (Yousuf et al., 2020), which could increase depression among the women for fear of the unknown and infecting the child. Aktas and Calik (2015) in Turkey, and Acheanpong et al. (2022) in Ghana reported a similar link of high depression among prenatal and postpartum women with chronic conditions. However, the finding contradicts with Collin et al. (2006) in Zambia where chronic illnesses were not associated with depression among women with known HIV status. As found by Kwalombota (2002), Rodriguez et al. (2018), and Zhu et al. (2019), greater depression symptoms were recorded in HIV positive women, and those who knew their HIV status during pregnancy or after giving birth. Women diagnosed with HIV during pregnancy or after giving birth often find it difficult to accept and cope with the diagnosis (Cichocki, 2009). Numerous factors account for the depression experiences among prenatal and postpartum women living with HIV. These include stigma and abuse resulting from HIV status disclosure, abandonment, and loss of support, among others (Cichocki, 2009; Netshimbupfe, 2016). In addition, not knowing the child's HIV status increased depression among the women living with HIV, which corroborates findings by Mokwena et al. (2021) and Mbatha, et al. (2020), both studies conducted in South Africa. This depression results from fears of perinatal HIV transmission, and the mothers are relieved when the child tests HIV negative (Aaron et al., 2015). According to the vulnerability stress model, when a significant life crisis occurs like experiencing major illness, some of the mental disorders can emerge once predisposed to that condition. As noted in this study, having multiple major illnesses of HIV and a chronic conditions such as hypertension during pregnancy or after giving birth when biologically prone to depression makes the women vulnerable.

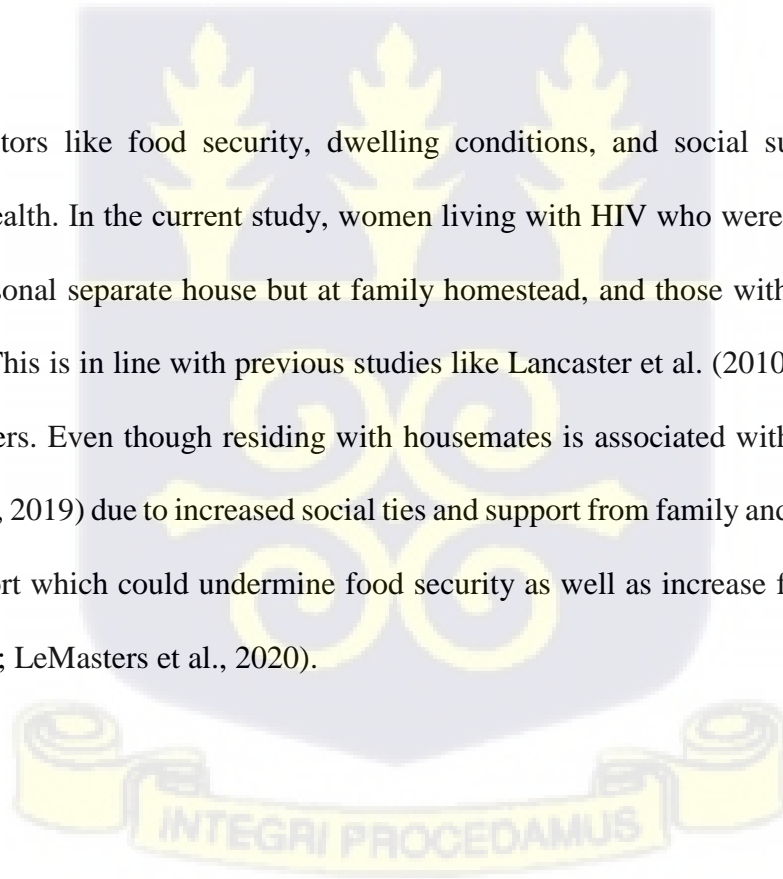
The observed significant relationship between alcohol use after giving birth, and alcohol use both during pregnancy and after giving birth and depression experience among both women living with

HIV and the HIV negative women is similar to that reported in other studies (Chersich et al., 2008; Kelly et al., 2002; Ramlagan et al., 2018). Women living with HIV in the study who used alcohol after giving, as well as those who used alcohol both during pregnancy and after giving birth had higher depression levels. This was contrary to the observed high depression levels among the HIV negative women who did not use alcohol after giving birth as well as those who did not use alcohol both during pregnancy and after giving birth. Among the women living with HIV, alcohol consumption is used to cope with stressors and unpleasant emotions like humiliation, fear of HIV disclosure and physical violence (Onyemaechi et al., 2017; Watt et al., 2014). Mothers who use alcohol during pregnancy can continue abusing it even after birth (Rotheram-Borus et al., 2015). Nonetheless, heavy alcohol use results to abuse which could affect the women's psychological well-being, quality of life and clinical outcomes (Kapetanovic et al., 2014; Raggio et al., 2019). Moreover, the observed depression among women who face violence and abuse has been previously reported (Manongi et al., 2020).

The current study identified high depression among women living with HIV who had a family member with a depression history, as well as those who had a family member who used alcohol or who smoked. Gebremichael et al. (2018) also reported similar trend of family depression history and perinatal depression development. Conversely, Tesfaye and Agenagne's (2021) findings of a significant association between women's depression status and their family depression history contradict with the present findings. Again, this study noted a strong relationship between complications after delivery and depression among women living with, with those who had not experienced complications after delivery being highly depressed. This could suggest the absence of family support as well as professional medical attention and counselling provided to women experiencing complications after delivery. This is contrary to Atuhaire et al. (2021) who noted depression among women with complications after delivery due to fatigue, emotional disturbances. It also disagrees with Collin et al. (2006) who did not find a significant association between delivery complications and depression.

The findings of the relationship between depression experience and substance abuse (women's alcohol use and family member with smoking and alcohol use), as well as family depression history relate to the vulnerability stress model. For example, the model notes depression experiences to result from interaction of a genetic link passed down in families and stressful events. Similarly, prenatal and postpartum women in this study who had family members with a depression history were depressed. Again, the vulnerability stress model recognizes the role of experiences that could have occurred in the womb or as a child due to the surrounding environment, behaviors, and lifestyle in influencing disorder when stressed (Demke, 2022). For instance growing in an environment of alcohol abuse can influence the women's behaviors to cope poorly with stress by using alcohol. This can lead to weakened genes prone to depression experiences if lifestyle is not changed and a support system is absent.

Also, external factors like food security, dwelling conditions, and social support influence the women's mental health. In the current study, women living with HIV who were food insecure, those who lived in a personal separate house but at family homestead, and those with lower support were overly depressed. This is in line with previous studies like Lancaster et al. (2010) and Madeghe et al. (2022), among others. Even though residing with housemates is associated with reduced depression risk (Mokhele et al., 2019) due to increased social ties and support from family and partner, HIV stigma hampers this support which could undermine food security as well as increase for women with HIV (Biaggi et al., 2016; LeMasters et al., 2020).



CHAPTER EIGHT

THE RELATIONSHIP BETWEEN PRENATAL AND POSTPARTUM FACTORS AND DEPRESSION AMONG WOMEN LIVING WITH HIV.

8.1 Introduction

This chapter examines the relationship between prenatal and postpartum factors and depression among the women at three levels (multivariate analysis) using binary logistic regression model to identify variables independently associated with depression, as well as determine the strength of this relationship while other variables are controlled for. The first model analyzed the likelihood of prenatal depression occurring while controlling for postpartum factors. The second model examined the likelihood of postpartum depression being experienced while controlling for prenatal factors, and the final model analyzed the overall likelihood of depression experienced by women living with HIV during their prenatal and postpartum periods. An alpha value of 0.05 was used as the significance level at 95% confidence interval.

8.2 Model 1: Relationship between Prenatal Factors and Depression

Table 8.1 shows results of the binary logistic regression model of the likelihood of prenatal depression while controlling for postpartum factors. Using a total of 231 observations, the pseudo R-squared estimate for this model is 0.312, with the Pearson Chi-square statistics of 92.560, and a corresponding probability value of 0.00. The influencing factors jointly and significantly cause changes in the dependent variable (depression). This demonstrates how the dependent variable regressed on different predictor factors was best fitted by the model. From the table, HIV status, social support, age, number of dependents, and gravidity status were the factors related with prenatal depression in Kampala and Wakiso districts, as the variables had a statistically significant relationship with depression. On the other hand, factors like currently working, having an income of 300,000 Ugandan shillings (i.e., US\$80) or more a months, being in the third trimester of pregnancy, and having pregnancy complications indicated a lower level of statistical significance level of $p < 0.1$. On the contrary, food

security, marital status, level of education, and planned/wanted pregnancy were not statistically significant in association with depression at the prenatal period.

The results show that women who were HIV negative had 0.23 times lower odds ratio (77% lower odds) of experiencing depression during the prenatal period compared to women who were HIV positive ($p < 0.01$). In addition, women who had social support were 90 percent less likely to experience depression ($p < 0.01$) compared to women who had no support. With regards to age, women in the age group 25–34 years had 74.2 percent reduced odds of experiencing depression when compared to women of age group 15–24 years, and this is statistically significant ($p < 0.05$). On the other hand, compared to women of the age group 15–24 years, women 35 years and older had 68.3 percent lower odds of experiencing depression during their prenatal period.

The results further indicate that having one or more dependents was associated with significantly lower odds (81.3%) of experiencing depressive symptoms as compared to women with no dependents ($p < 0.01$). Additionally, analysis of the gravidity status clearly indicates that women with the multigravida (second to fourth pregnancies) were 1.4 times as likely to experience depression as primigravida women (first pregnancy) and was statistically significant ($p < 0.05$). Conversely, the results pertaining to grand multigravida women (five or more pregnancies) were not statistically significant.

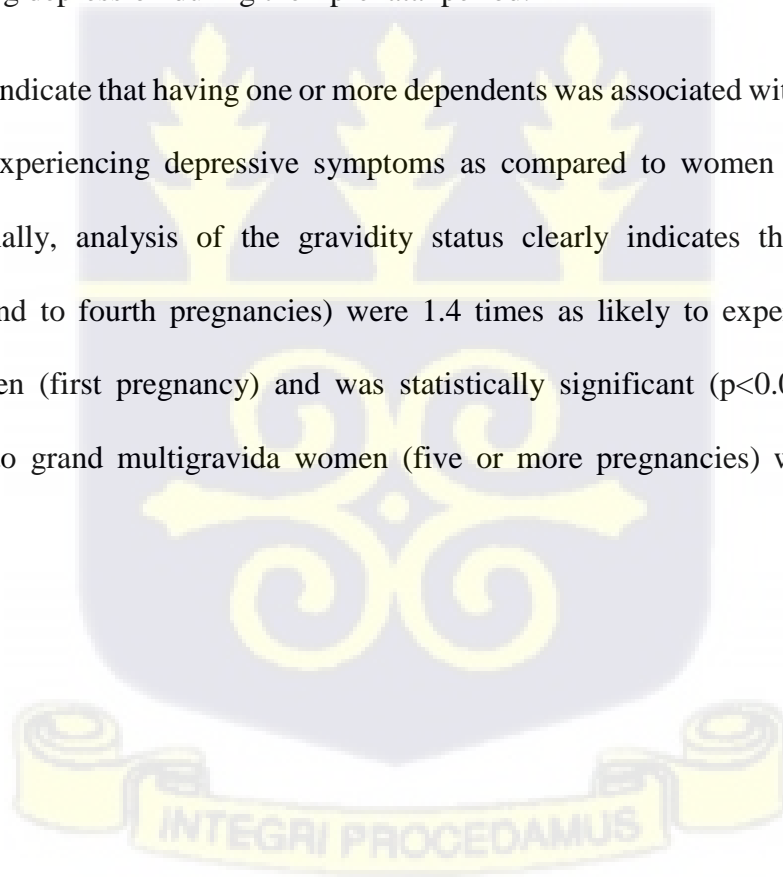


Table 8.1: Results of Binary Logistic Regression showing the Relationship between Prenatal Factors and Depression

EPDS	Odds Ratio	S.E	t-value (Z)	95% CI
HIV Status				
Positive (RC)				
Negative	0.23***	.121	-2.79	0.082 - 0.646
Social Support				
Had no support (RC)				
Had social support	0.105***	.058	-4.08	0.036 - 0.31
Food Security				
Food secure (RC)				
Food insecure	1.711	.686	1.34	0.78- 3.755
Marital Status				
Otherwise (RC)				
Married/living together	0.516	.657	-0.52	0.043- 6.263
Level of education				
Primary or less (RC)				
Secondary	1.825	1.124	0.98	0.546 - 6.101
Higher	1.63	1.119	0.71	0.424 - 6.262
Age Groups				
15-24 (RC)				
25-34	0.258**	.175	-1.99	0.068 - 0.977
35+	0.317	.264	-1.38	0.062 - 1.62
Employment status				
Not currently working (RC)				
Currently working	2.637*	1.366	1.87	0.955 - 7.279
Monthly average income (UGX)				
<=300,000 (RC)				
>=300,001	0.383*	.195	-1.88	0.141 - 1.041
Undisclosed amount	0.984	.951	-0.02	0.148 - 6.535
Number of dependents				
No dependent (RC)				
1 or more dependents	0.187***	.088	-3.54	0.074 - 0.473
Planned/Wanted pregnancy				
No (RC)				
Yes	0.8	.318	-0.56	0.367 - 1.743
Gravidity status				
Primigravida (RC)				
Multigravida	2.398**	1.041	2.01	1.023- 5.617
Grand multigravida	3.017	2.597	1.28	0.559 - 16.3
Trimester				
First trimester(RC)				
Second trimester	2.223	1.164	1.53	0.797- 6.202
Third trimester	2.359*	1.183	1.71	0.883 - 6.306
Pregnancy complications				
No (RC)				
Yes	1.974*	.741	1.81	0.946 - 4.118
Constant	67.2***	101.674	2.78	3.463 - 1303.903
Pseudo r-squared	0.312	Number of obs	231	
Chi-square	92.560	Prob > chi2	0.000	
Akaike crit. (AIC)	242.204	Bayesian crit. (BIC)	307.610	

Source: Fieldwork, 2022

RC-Reference Category

s.e.: standard error

CI- Confidence Interval

*** $p < .01$, ** $p < .05$, * $p < .1$

8.3 Model 2: Relationship between Postpartum Factors and Depression

In the Table 8.2, results of the binary logistic regression model of the likelihood of postpartum depression occurring while controlling for prenatal factors are shown. The Pseudo R-squared estimate for this model is 0.193 on a total of 266 observations. With the Pearson Chi-square statistics of 67.500 and the associated probability value of 0.00 show that the influencing factors collectively and significantly cause variations in the dependent variable (depression). This shows how the dependent variable, when regressed on a range of predictor factors, is best fitted by the model. The table shows that the factors related with depression among postpartum women were HIV status, number of dependents, and complications after delivery. However, knowing the child's HIV status, other sociodemographic and postpartum factors (e.g. social support, food security, marital status, level of education, age, employment, monthly average income, and mode of delivery) were not statistically associated with depression.

Evidence from the table indicates that HIV negative women were 73% less likely to experience depression compared to HIV positive women during the postpartum period ($p < 0.01$). The results on the number of dependents indicate that women who had one or more dependents were 88% less likely to experience depression as compared to women with no dependent ($p < 0.01$). Again, the results suggest that women who experienced complications after delivery had significantly lower odds (0.526), of experiencing depression during the postpartum period compared to women who did not experience complications ($p < .05$).



Table 8.3: Results of Binary Logistic Regression showing the Relationship between Postpartum Factors and Depression

EPDS	Odds Ratio	S.E.	t-value (Z)	95% CI
HIV Status				
Positive (RC)				
Negative	0.269***	.119	-2.96	0.113 - 0.641
Social Support				
Had no support (RC)				
Had social support	0.653	.286	-0.97	0.277 - 1.542
Food Security				
Food secure (RC)				
Food insecure	1.702	.568	1.60	0.885 - 3.273
Marital Status				
Otherwise (RC)				
Married/living together	0.421	.239	-1.53	0.139 - 1.278
Level of education				
Primary or less (RC)				
Secondary	0.757	.3	-0.70	0.348 - 1.644
Higher	0.456	.234	-1.53	0.166 - 1.249
Age Groups				
15-24 (RC)				
25-34	0.682	.306	-0.85	0.283 - 1.643
35+	0.679	.367	-0.71	0.235 - 1.961
Employment status				
Not currently working (RC)				
Currently working	1.591	.561	1.32	0.797 - 3.177
Monthly average income (UGX)				
<=300,000 (RC)				
>=300,001	1.317	.611	0.59	0.53 - 3.27
Undisclosed amount	1.43	.918	0.56	0.406 - 5.031
Number of dependents				
No dependent (RC)				
1 or more dependents	0.117***	.061	-4.11	0.042 - 0.325
Complications after delivery				
No (RC)				
Yes	0.526**	.167	-2.03	0.282 - 0.979
Mode of delivery				
Normal spontaneous delivery (RC)				
CS	0.808	.258	-0.67	0.432 - 1.511
Vacuum assisted delivery	0.777	.466	-0.42	0.24 - 2.515
Do you know the child's HIV status				
Yes (RC)				
No	5.773*	5.349	1.89	0.939 - 35.489
Not yet confirmed	0.891	.333	-0.31	0.428 - 1.852
Constant	93.949***	86.833	4.92	15.352- 574.939
Pseudo r-squared	0.193	Number of obs		266
Chi-square	67.500	Prob > chi2		0.000
Akaike crit. (AIC)	318.614	Bayesian crit. (BIC)		383.117

Source: Fieldwork, 2022

RC-Reference Category

s.e.: standard error

CI- Confidence Interval

*** $p < .01$, ** $p < .05$, * $p < .1$

8.4 Model 3: Relationship between Prenatal and Postpartum Factors and Depression

Table 8.4 shows results of the binary logistic regression model of the overall likelihood of depression experienced by women living with HIV during their prenatal and postpartum periods. Using a total of 497 observations, the pseudo R-squared estimate for this model is 0.232, with the Pearson Chi-square statistics of 150.098, and a corresponding probability value of 0.00. The influencing factors collectively and significantly cause variations in the dependent variable (depression). This demonstrates how the dependent variable regressed on different predictor factors was best fitted by the model. From the table, HIV status, social support, food security, age, employment status, number of dependents, violence and abuse, and family alcohol use were factors related to prenatal and postpartum depression among women in Kampala and Wakiso districts, as the variables had a statistically significant relationship with depression. Conversely, marital status, education level, monthly average income, chronic diseases, and when the HIV status was first known did not show any statistical relationship with depression. From the table, the results indicate that HIV negative women were 63 percent less likely to have depression experiences compared to HIV positive women ($p < 0.01$). In addition, those who had social support were 76 percent times less likely to experience depression compared to those who had no social support ($p < 0.01$). When it comes to food security, women who were food insecure were 84 percent more likely to experience depression compared to those who were food secure ($p < 0.05$). More so, women who were aged 25-34 years had 51 percent lower odds of experiencing depression compared to those aged 15-24 years ($p < 0.05$).

Women who were currently working were 1.1 times more likely to experience depression compared to those who were not currently working ($p < 0.01$). Furthermore, women who had one or more dependents were 82 percent less likely to experience depression compared to those with no dependents ($p < 0.01$). On the contrary, women who could not mention their violence and abuse experiences were 66 percent less likely to experience depression compared to those who did not experience violence and abuse ($p < 0.01$). Finally, women who had a family member who used alcohol were 94 percent more

likely to have depression experiences compared to those with no family member who uses alcohol (p<0.01).

Table 8.4: Results of Binary Logistic Regression showing the relationship between Prenatal and Postpartum Factors and Depression

EPDS	Odds Ratio	S.E.	t-value (Z)	95% CI
HIV Status				
Positive (RC)				
Negative	0.375***	.111	-3.32	0.21 – 0.67
Social Support				
Had no support (RC)				
Had social support	0.236***	.079	-4.30	0.123 – 0.456
Food Security				
Food secure (RC)				
Food insecure	1.846**	.461	2.46	1.132 - 3.013
Marital Status				
Otherwise (RC)				
Married/living together	0.443	.227	-1.59	0.162 - 1.21
Level of education				
Primary or less (RC)				
Secondary	0.92	.302	-0.25	0.484 - 1.75
Higher	0.628	.244	-1.19	0.293 - 1.347
Age Groups				
15-24 (RC)				
25-34	0.489**	.173	-2.02	0.245 - 0.978
35+	0.514	.217	-1.57	0.224 - 1.177
Employment status				
Not currently working (RC)				
Currently working	2.089***	.592	2.60	1.199 - 3.64
Monthly average income (UGX)				
<=300,000 (RC)				
>=300,001	0.746	.25	-0.88	0.387 - 1.438
Undisclosed amount	1.015	.5	0.03	0.387 - 2.667
Number of dependents				
No dependent (RC)				
1 or more dependents	0.18***	.059	-5.25	0.095 - 0.341
Chronic diseases				
No (RC)				
Yes	1.403	.49	0.97	0.708 - 2.784
Violence and abuse				
No (RC)				
Yes	1.562	.551	1.27	0.783 - 3.117
Can't mention	0.337***	.1	-3.68	0.189 - 0.602
Family Alcohol Use				
No (RC)				
Yes	1.94***	.457	2.81	1.223 - 3.079

When HIV status was first known

Before getting pregnant (RC)				
During pregnancy/ after giving birth	1.083	.268	0.32	0.666 - 1.759
Constant	72.531***	51.027	6.09	18.267 - 287.982
Pseudo r-squared	0.232	Number of obs	497	
Chi-square	150.098	Prob > chi2	0.000	
Akaike crit. (AIC)	533.158	Bayesian crit. (BIC)	608.912	

Source: Fieldwork, 2022

RC-Reference Category s.e.: standard error CI- Confidence Interval

*** $p < .01$, ** $p < .05$, * $p < .1$

8.5 Testing of hypotheses

Hypothesis 1: Women living with HIV are more likely to experience prenatal and postpartum depression compared to HIV negative women.

Results in Table.8.4 show that HIV negative women were 63 percent less likely to experience depression compared to HIV positive women ($p < 0.01$). Therefore, based on the evidence of a strong statistical relationship between HIV status and depression, the first hypothesis is accepted that, women living with HIV are more likely to experience prenatal and postpartum depression compared to HIV negative women.

Hypothesis 2: Women living with HIV who wanted/planned for pregnancy are less likely to experience depression compared to those who did not want/ plan getting pregnant.

The second hypothesis was tested using interaction effects in binary logistic regression analysis. The interaction effect was tested between planned/wanted pregnancy and depression in women living with HIV. From the table, women who were living with HIV and wanted/planned for pregnancy 47 percent less likely to experience depression compared to those who did not want/plan for their pregnancy. However, the observed relationship is not statistically significant, and hence there is no enough evidence to support the claim that women living with HIV who wanted/planned for pregnancy are less likely to be depressed. Based on the presented results, this hypothesis is rejected (Appendix A1).

Hypothesis 3: Women who are living with HIV and knew their HIV status before getting pregnant are less likely to be depressed compared to those who knew their HIV status during pregnancy and after giving birth.

Using the binary logistic regression analysis, the interaction between the time of knowing the HIV status and depression among the women living with HIV is tested. The results show that women who were HIV positive and knew their status during pregnancy and after giving birth were 1.557 times more likely to experience depression ($p < 0.05$) compared to those who were living with HIV and knew their status before getting pregnant. Based on the enough evidence from the observed strong statistical relationship, the researcher accepts the third hypothesis that: women who are living with HIV and knew their HIV status before getting pregnant are less likely to be depressed (Appendix A2).

Hypothesis 4: Women living with HIV having social support are less likely to experience depression compared to those without social support.

The interaction between the variables suggest that women who were HIV positive and had support from family/friends, religious bodies/ community, and health facilities had 17 percent lower likelihood of experiencing depression compared to those who were living with HIV and had no support. However, this interaction was not statistically significant. From the results, there was no enough evidence to support the claim that women living with HIV having social support are less likely to be depressed, as relationship was not statistically significant. Therefore, the hypothesis is rejected (Appendix A3).

8.6 Discussion

This chapter aimed to investigate the factors influencing prenatal and postpartum depression in women through a multivariate analysis. It involved examining the variables that were initially analyzed at the bivariate level and then exploring their effects when accounting for other factors. Additionally, the study aimed to assess the statistical significance of interactions between variables, leading to the testing of certain hypotheses. The study's findings revealed that during the prenatal period, no significant association was observed between depression and variables such as food security, marital status, level

of education, and planned/wanted pregnancy. Specifically, only the variable of planned/wanted pregnancy did not exhibit a significant link with depression when viewed at the bivariate level. However, during this same bivariate analysis, it was found that food security (p-value < 0.000), marital status (p-value = 0.004), and education (p-value < 0.000) exhibited statistical significance in relation to depression. The study's findings diverge from previous research in Ghana, Iran, Kenya, Uganda, South Africa, Tanzania, and Finland that established a connection between depression and variables like food security, marital status, education level, and planned/wanted pregnancy (Acheanpong et al., 2022; Ashaba, Kaida, Coleman, et al., 2017; Choi et al., 2019; Khoshgoo et al., 2020; Mirieri et al., 2020; Ngocho et al., 2019).

Again, previous studies found that unplanned or unwanted pregnancies resulted to prenatal depression due to negative attitude towards the pregnancy (Brittain et al., 2019; Ghaedrahmat et al., 2017; Sheeba et al., 2019), which association was found lacking in the present study. Based on the evidence provided by the study, the second hypothesis that “women living with HIV who wanted/planned for pregnancy are less likely to be depressed compared to those who did not plan/want the pregnancy” was rejected. The present findings disagree with previous studies that identified factors such as low income, being in the third trimester pregnancy, and having pregnancy complications to be associated with depression (Aktas & Calik, 2015; Biaggi et al., 2016; Hartley et al., 2011). This is because this study noted a weak relationship between those variables. On the other hand, the current study noted HIV status, social support, age, number of dependents, and gravidity status to influence depression during the prenatal period. If a woman had an HIV negative status, she was 77 percent less likely to be depressed. This confirms a study by Moseholm et al. (2022) that pregnant women who have HIV experience a significantly higher rate of negative psychosocial consequences compared to those without HIV. Fear of disclosure and perceived stigma are noted to contribute to heightened depression in pregnant mothers living with HIV (Gelaw et al., 2020; Abigail M. Hatcher et al., 2014).

More so, the established relationships that having support reduced the odds ratio of being depressed presents support as a protective factor for depression. Meaning women who lacked support were more likely to be depressed and this has been established in previous studies (Biaggi et al., 2016; Mirieri et al., 2020; Räisänen et al., 2014). Prenatal and postpartum women having informal support (e.g., family, friends, church community, etc.) as well as formal support (e.g. Non-governmental organisations, health facilities etc.) have the ability to cope with challenges even when depressed (Ashaba et al., 2017; Seffren et al., 2018). This is because high support makes one feel deeply loved (Onyemaechi et al., 2017; Psaros, Smit, et al., 2020). Unfortunately, informal support which is supposed to be the most available safety network in African families may lack if friends and family are similarly poor or in contexts where HIV stigma is prevalent (Brittain et al., 2017). More so, women in the age group 25–34 were noted to be less likely to be depressed compared to those aged 15-24. This finding supports that of Hartley et al. (2011) but contradicts that of Acheanpong et al. (2022) in Ghana who found advanced maternal age (≥ 35 years) being associated with depression in pregnancy. The observed depression among the 15-24 year group could emanate from varying factors motherhood stress and childcare, lack of support, complications such as intrauterine growth among others resulting from teenage pregnancy and motherhood (Atuyambe et al., 2005; Plan International, 2022; UNICEF, 2019). The results further indicate that having one or more dependents reduced the odds ratio of being depressed. In the Uganda and other African contexts, dependents usually include children and the elderly especially parents. Even though less is known about the relationship between increased number of dependents and reduced depression, insights from other studies can help explain this relation. Wang et al. (2020) highlight that in urban areas, having an additional child was linked to a 9 percent lower risk of depression. This could be attributed to the fact that a big family can increase social ties and emotional connection that is necessary in reducing loneliness and depression. In Ugandan and similar African contexts, the cultural expectation is that grown up children take on caregiving responsibilities for their elderly parents (Nhongo, 2004). This could foster social support and reduce the risk of

depression. In Uganda, pregnancy, childbirth, or need for care due to an illness, close family members like mothers, mothers-in-law, and sisters assume caregiving roles (Kyomuhendo et al., 2020; Rukundo et al., 2019; Zuo et al., 2022). Qi et al. (2022) emphasize family care's direct and indirect impact on depression. Finally at prenatal level, a noted high depression likelihood among multigravida women aligns with previous research (Abuidhail & Abujilban, 2014; Acheanpong et al., 2022).

The above noted factors influencing prenatal depression can be linked to the biopsychosocial model where both biological, psychological and social factors interact to influence mental illness. In this study, the women's biological factors (age, gravidity status), the psychological factors resulting from being HIV positive, and the social factors (having no dependents and absence of social support) increased their likelihood of experiencing depression.

At the postpartum period, social support, food security, marital status, level of education, age, employment, monthly average income, and mode of delivery were not statistically significant with depression at the multivariate level. The results are contrary to other studies which found these factors as significantly related with depression at the postpartum period (Ezzeddin et al., 2018; Ghaedrahmat et al., 2017; Moya et al., 2023; Xiong et al., 2018). The contradiction in the findings could suggest the cultural differences in the perception of experiences that might influence depression among the women in their postpartum period. While HIV status, number of dependents, and complications after delivery were identified to strongly influence depression, knowing the child's HIV status had a weaker relationship. Moya et al.'s (2023) research in Malawi confirmed the link between being HIV positive and severe postpartum depression, a connection corroborated by this study.

The discovery that women with one or more dependents were less prone to postpartum depression is unexpected. Given the urban context of the study, it was anticipated that women might prioritize smaller, nuclear families due to career demands and cost considerations. Contrarily, the findings suggest that residing with extended family members is culturally valued for its robust emotional and economic support during times of need. A noteworthy revelation is that women who experienced

complications after childbirth exhibited a lower likelihood of depression (Odds Ratio= 0.526, $p < 0.05$), contrary to the common understanding. Prior research typically associates complications with increased postpartum depression risk (Malekmohammadi et al., 2022; Ndege, 2018; Roozbahani et al., 2022). The contradiction may be due to swift medical care improving physical and emotional well-being. Complications prompt healthcare providers to offer guidance and reduce anxiety. Support from partners, families, and communities is crucial for women with complications, lowering the risk of postpartum depression. Moreover, Mbatha et al. (2020) found that knowledge of the baby's HIV status held no significance at the multivariate level, aligning with the present study. Factors like availability as well as accessibility of effective HIV treatments, presence of psychosocial support like counselling and support groups, as well as access to information might reduce fears about the child's HIV status.

When accounting for both prenatal and postpartum factors, the overall model revealed that marital status, education level, monthly average income, chronic diseases, and the timing of HIV status awareness were not statistically linked to depression. These results diverge from prior findings observed at individual prenatal and postpartum levels, where certain variables held statistical significance. Notably, marital status and education, previously significant, were not statistically significant in the overall model. The interplay of factors led to nuanced changes in variable significance, underscoring the complexity of depression determinants.

While prior studies linked being single or divorced, experiencing chronic illnesses, and having low education to depression during pregnancy and postpartum periods (e.g., Atuhaire et al., 2021; Azale et al., 2018; Dlamini et al., 2019; Gebremichael et al., 2018; Sawyer et al., 2010), the present study's results contradict the previous associations. Additionally, the timing when HIV status was first known held no statistical significance with depression. Furthermore, this study went a step ahead to discuss the effects of interactions between when the HIV status was first known and depression among women living with HIV. The interaction results indicated that women who were HIV positive and knew their status during pregnancy and after giving birth were more likely to be depressed compared to those who

were living with HIV and knew their status before getting pregnant. This finding resonates with Brittain et al. (2019), who linked antenatal HIV status discovery with elevated depression risk due to fears of disclosing status, abandonment, discrimination, and relationship strain (Brittain et al., 2019; Hatcher et al., 2014). However, this study contradicts Mokhele et al.'s (2019) findings, of no significant difference in postpartum depression between recently and previously diagnosed HIV positive women. Based on the results, the third hypothesis that women who are living with HIV and knew their HIV status before getting pregnant are less likely to be depressed is accepted.

The results prove that factors like having an HIV negative status, having social support, being aged 25-34, women who had one or more dependents, and those who could not mention their violence and abuse experiences, reduced the likelihood of being depressed. Interestingly, having one or more dependents was constantly showing a statistically significant relationship with depression at all the three levels of prenatal, postpartum, and the overall model. This suggests that number of dependents strongly influences depression outcome of the women in this study. The study provides strong evidence that women with HIV face a higher risk of both prenatal and postpartum depression compared to HIV-negative women, confirming the first hypothesis. This depressive experience is rooted in heightened stress due to uncertainties surrounding the health of unborn babies (Boonpongmanee et al., 2003; Hailemariam, 2015). Such anxiety is intertwined with fears of transmitting HIV to infants and concerns regarding the well-being of the child after birth (Ashaba, Kaida, Coleman, et al., 2017; Dunkley et al., 2018; Goin et al., 2020). The uncertainty is experienced throughout the infant testing period until the baby's negative HIV test result is confirmed (Shannon & Lee, 2008). Furthermore, HIV-positive women's worries are exacerbated by concerns about their maternal health, anxieties surrounding orphanhood, medication adherence, among others (Ashaba, Kaida, Coleman, et al., 2017).

Previous research, as noted by Psaros et al. (2020) and Onyemaechi et al. (2017) has shown that social support plays a crucial role in helping mothers combat depression by fostering feelings of love and

coping abilities. Additionally, an interaction effect was observed between social support and depression among HIV-positive women, where those with support from family, friends, religious communities, and health facilities had a lower likelihood of depression. However, the results were not statistically significant ($p=0.05$) led to the rejection of the fourth hypothesis. The likelihood of being depressed being low in women aged 25-34 years as compared to those aged 15-24 years at the prenatal and postpartum periods bring adolescents as a special age group that needs specific maternal healthcare interventions for timely detection and treatment of depression (Ndege, 2018; Sawyer et al., 2010). This is due to a body of research that presents the young age groups at an increased risk of depression (Atuhaire et al., 2021; Atuhaire & Cumber, 2018; Brittain et al., 2019). On the other hand, the reduction in depression with increasing number dependents reflects the presence of additional children and the cultural practices of intergenerational care in Uganda which may play a significant role in alleviating depression through enhanced social support networks and familial caregiving practices.

Again, being food insecure, women currently working, and having a family member who uses alcohol increased the likelihood of the women being depressed at the prenatal and postpartum periods. Food insecurity has been previously reported to increase depression, which could be greater in women living with HIV (Garcia et al., 2013; Tsai, Tomlinson, et al., 2016). Again, while previous research has shown prenatal and postpartum employment may protect against depression (Lewis et al., 2017), some researchers indicate that women's employment at this crucial periods could influence depression, which aligns with the current study. This is due to increased workloads leading to reduced opportunities for rest, recovery, and sleep, higher psychological demands, limited control over work schedules, and a diminished sense of control over both work and family life (Cho et al., 2022; Dagher et al., 2009; McGovern et al., 2011).

This study's findings of HIV status, age, employment status, social support, food security, number of dependents, violence and abuse, and family alcohol use as the factors influencing prenatal and

postpartum depression confirm the biopsychosocial model. According to the model, understanding the cause of illness requires looking at the three dimensions of the biological, psychological, and sociological. This is vital in improving the diagnosis as well as implementing effective support and intervene strategies.



CHAPTER NINE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

The research was conducted in urban communities of Kampala and Wakiso, Uganda, with a primary focus on investigating how an HIV-positive diagnosis influences depression among women during the prenatal and postpartum periods. The study sought to contribute to policy decisions and interventions aimed at enhancing the mental well-being of HIV-positive women in reproductive age groups in the country. The specific objectives included assessing the prevalence of prenatal and postpartum depression among HIV-positive women in these districts, evaluating their understanding of such depression, exploring their experiences during these periods, investigating the link between perinatal characteristics and depression in HIV-positive women, and analysing the factors contributing to prenatal and postpartum depression among this group of women.

This study employed the biopsychosocial model, and vulnerability-stress model to elucidate the factors influencing depression among women living with HIV during their prenatal and postpartum periods. Both quantitative and qualitative data were utilized to address the research questions. Data were primarily collected from TASO-Mulago, Mildmay-Uganda, and Mulago Specialised Women and Neonatal Hospital.

9.2 Summary of Findings

9.2.1 Prevalence of prenatal and postpartum depression

The univariate analysis revealed a significant concentration of pregnant or postpartum women in the 25-34 age group, while adolescent and youth child-bearing contributed to 15 percent. This trend aligns with fertility studies in Uganda and the region, which indicate persistent adolescent and youth childbearing, leading to unfavourable demographic and social consequences. This phenomenon contributes to rapid population growth, impacting resource-limited settings. Adolescent and youth fertility is driven by factors such as early sexual initiation, first births, and low contraceptive usage

(UBOS, 2018; Ghana Statistical Service, 2013; Statistics Department Uganda & Macro International, Inc., 1996). Furthermore, the evidence of a substantial portion of the women currently working is consistent with patterns observed in sub-Saharan Africa. This employment choice whether in the formal or informal sector is influenced by traditional gender roles that expect women to manage caregiving, childcare, and household tasks. For women with limited educational opportunities, the informal sector offers accessible opportunities to work. This trend likely explains the study's finding that over 60 percent of the women had 300, 000 shillings (80 US dollars) or less per month.

The study compared the EPDS and SRQ-20 depression screening tools and found that the SRQ-20 yielded lower depression symptom levels during prenatal and postpartum periods. Consequently, the study recommends using the EPDS for effective diagnosis of prenatal and postpartum depression symptoms within the cultural context of Uganda. By employing the widely used EPDS Instrument, the research unveiled a significant-general depression prevalence (64.4%) among the studied women in Kampala and Wakiso, Uganda. The findings also highlighted instances of suicidal thoughts among some women. Notably, pregnant women exhibited higher depressive symptoms (65.8%) compared to women who had recently given birth (63.2%). Both HIV-positive and HIV-negative women experienced depression at a rate exceeding 50 percent. However, women living with HIV had pronounced prenatal (81.9%) and postpartum (69.9%) depression compared to HIV-negative.

At the bivariate level, a statistically significant association was found between marital status, number of dependents and depression. Additionally, pregnancy and HIV status were significantly associated with the depression, as well as depression with childbirth and HIV status. On the other hand, age, level of education, religion, employment, and income were not associated with depression among women living with HIV especially. Women aged 15-24 had higher depression levels among both women living with HIV and HIV negative women, though the depressive symptoms were more pronounced in HIV positive women. A higher proportion of women with primary school education

were depressed as well as those who were single/divorced/ separated/ widowed. Furthermore, currently working status correlated with a higher proportion of depression among all the women regardless of their HIV status, though the HIV positive women were greatly affected. Again, women living with HIV with undisclosed amount of their monthly income showed the highest depressive symptoms. Moreover, women having an average monthly income of less than 100,000 shillings (approximately less than 27 USD) experienced greater levels of depression. Furthermore, women with no dependents had highest proportions of depressive symptoms compared to those with one or more dependents.

9.2.2 Knowledge of Prenatal and Postpartum Depression

Women in the study demonstrated moderate knowledge about prenatal and postpartum depression, mainly gained from social networks like family members, partners, relatives, friends, and neighbours. This underscores the significance of social support within this cultural context. Health professionals also contributed significantly to their knowledge. The women were able to identify symptoms of depression, including loss of interest, withdrawal, self-neglect, thoughts of harm, and physical changes. The women also showed awareness of key contributing factors, such as early pregnancy, lack of support, resource constraints, and pregnancy complications. Moreover, they acknowledged the potential effects of depression, encompassing effects on the mother's physical health, mother-child interaction, and child's growth.

Again, while most women preferred seeking professional help for prenatal and postpartum depression, some opted for informal remedies like family, friends, pastors/ prophets, and traditional healers. Uncertainty about accessing formal assistance arose for some. Traditional healers were trusted for their local remedies, pastors/prophets for spiritual healing, driven by hospital complexities and costs. Sadly, fear of discrimination, mistreatment, among others hindered symptom disclosure to health professionals, risking delayed interventions.

The study found significant associations between depression, HIV status, age, employment, income, and knowledge of prenatal and postpartum depression. Conversely, marital status and education showed no significant association. Depressed women exhibited higher "moderate" and "high knowledge" of both prenatal and postpartum depression. Among HIV-positive women, higher proportions had "High knowledge" which could be due to psychosocial support at the PMTCT clinics. However, overall knowledge, both for HIV-positive and general study population, was still relatively low, urging robust mental health education to bridge knowledge gaps. Younger respondents (15-24 years) lacked knowledge of prenatal and postpartum depression. Lower education, and being unmarried/separated/divorced correlated with reduced knowledge. Likewise, non-working women exhibited limited awareness of prenatal and postpartum depression.

9.2.3 Prenatal and postpartum experiences

Interviews with 21 women and 16 key informants unveiled how prenatal and postpartum experiences impact depression in the study context. Positive experiences acted as safeguards against depression, involving ability to care for self and the pregnancy/ baby, financial stability, health and housing access, and supportive family relationships. Conversely, negative experiences, including complicated pregnancies, health complications, partner abandonment, and job loss, contributed to depression risk. Failure to care for children resulted into anger, regret, and feelings of failure to fulfil motherhood expectations. These findings emphasize the role of experiences during pregnancy and childbirth in influencing women's mental health in terms of both protective and detrimental factors.

Regarding women's pregnancy plans, desires, and expectations, women with wanted and planned pregnancies experienced partner support and overall happiness. Planned pregnancies aided psychological and financial readiness. However, some planned pregnancies were not wanted due to timing. Such pregnancies resulted from conception pressure from partners. Some unplanned pregnancies resulted from failed family planning methods or short intervals between births, thus being

unwanted. On the contrary, other unplanned pregnancies were wanted, and these were among some women who had conception challenges. Women facing such unplanned yet desired pregnancies reacted with joy upon successful conception.

The study unveiled diverse reactions, emotions, and thoughts among women regarding their pregnancies, often encompassing both happiness and sadness. Mixed feelings were linked to relationship issues, insufficient partner support, and self-doubt about pregnancy management. Concerns about miscarriage and abortion were prevalent, particularly for unplanned pregnancies. Partners' responses were also significant and depended on partners' pregnancy wantedness. If the partners wanted the pregnancy, they would feel excited and happy. Conversely, lack of partner interest, blame, and unhappiness were reported in partners, especially for unplanned pregnancies and recent childbirths. Again, women in this study experienced both emotional and somatic symptoms of depression. Emotional symptoms included anger, difficulty concentrating, and suicidal and homicide ideation among others. Somatic symptoms involved sleep disturbances, physical pain, and weight loss to mention but a few. Women living with HIV faced various challenges, including uncertainties about their HIV condition, stigma, and missing treatment. The study further highlighted that diagnosing and treating prenatal and postpartum depression was challenging for healthcare providers due to lack of standardized procedures, limited mental health integration, gaps in mental health training, workloads, and privacy concerns. These obstacles could hinder recognising and treating depressed women.

9.2.4 Perinatal Characteristics and Depression Levels

The findings indicated that a majority of women in the study had planned pregnancies, were in the third trimester pregnancy, with around four out of seven being pregnant two to four times. More than two in five of the women had faced pregnancy complications. Prior history of depression, chronic diseases, and complications after delivery, were identified. Spontaneous vaginal delivery was common, and family histories revealed instances of depression, alcohol consumption, and smoking. Social support from family, friends, and significant others was reported as high. While more than half

were food secure, two out of seven faced severe food insecurity, potentially affecting prenatal and postpartum mothers, particularly those living with HIV. Nearly two out of five women lived in a personal separate and family independent house, while a significant proportion lived in a shared house within family homestead. The maximum travel distance reached 150 kilometres from individual homes to the health facilities. Longer distances were common for women living with HIV to maintain anonymity and reduce stigma exposure. Public and private transport were frequently used to reach healthcare facilities, while walking, water transport, and motorcycles were also utilized.

The results indicated that the variables significantly associated with depression among women living with HIV included chronic diseases, HIV status, time for knowing the HIV status, alcohol use after giving birth, alcohol use both during pregnancy and after giving birth, violence and abuse, complications after delivery, food security, and dwelling conditions. On the other hand, non-significant associations were noted between depression and planned/wanted pregnancy, gravidity status, pregnancy trimester, pregnancy complications, women's depression history, child's HIV status, alcohol use during pregnancy, family history of depression, family history of alcohol use, family smoking status, mode of delivery, and social support. Women living with HIV with pregnancy complications experienced elevated depression as compared to their HIV negative counterparts. Notably, depression symptoms were more prevalent among women living with HIV and those who discovered their HIV status during pregnancy or after childbirth. While depression symptoms were present in both HIV positive and HIV negative women in relation to food security, food insecure women living with HIV exhibited higher rates of depression. Again, greater depression was more prominent among women who lived in a personal separate house but at family homestead.

9.2.5 The Relationship between Prenatal and Postpartum Factors and Depression

The study revealed significant factors related to prenatal depression in the Ugandan districts of Kampala and Wakiso to include HIV status, social support, age, number of dependents, and gravidity status. In comparison to HIV-positive women, HIV-negative women had 77 percent reduced odds of

experiencing prenatal depression. Similarly, women with social support had an 89.5 percent reduced likelihood of experiencing depression compared to those without support. Compared to women aged 15–24 years, women of age 25–34 years had 74.2 percent lower odds of developing depression. Furthermore, having one or more dependents was linked to a significantly lower risk of developing depressive symptoms when compared to women without dependents. With regards to gravidity status, multigravida women were 1.4 times more likely than primigravida women to experience depression. The hypothesis that women living with HIV who wanted/planned for pregnancy are less likely to be depressed was not statistically significant and therefore it was rejected.

The study further highlighted the factors influencing postpartum depression, namely HIV status, number of dependents, and delivery complications. Notably, HIV negative women exhibited 73.1 percent lower odds of postpartum depression than HIV positive women ($p < 0.01$). Women with one or more dependents had 88.3 percent reduced odds of depression compared to those without dependents. Furthermore, experiencing complications after delivery was linked to 47.4 percent lower odds of depression ($p < 0.05$) in comparison to women without complications. The general model's outcomes highlighted significant factors influencing depression among women living with HIV in the Ugandan districts of Kampala and Wakiso during both prenatal and postpartum periods. Notable factors related with depression included HIV status, social support, food security, age, employment status, number of dependents, violence and abuse encounters, and family alcohol use. Specifically, HIV-negative women demonstrated a 62.5 percent reduced likelihood of depression compared to HIV-positive counterparts. The statistically strong relationship with a $p < 0.01$ presents enough basis to accept the hypothesis that “women living with HIV are more likely to experience prenatal and postpartum depression compared to HIV negative women”.

Additionally, those with social support exhibited a 76.4 percent lower odds of depression, while food insecurity increased the odds by 84.6%. Women aged 25-34 years had 51.1 percent lower odds of depression than those aged 15-24 years, and currently working women faced a 109.2 percent higher

likelihood of depression. Having one or more dependents was associated with 82 percent reduced odds, while women refraining from discussing abuse encounters showed a 66.3 percent lower likelihood of depression. Lastly, having a family member who used alcohol increased the odds by 94 percent. These findings collectively shed light on the complex array of factors impacting depression among women living with HIV in Kampala and Wakiso, Uganda during pregnancy and after giving birth. The hypothesis that women living with HIV having social support are less likely to be depressed was not statistically significant and therefore it was rejected. Contrary to the above, factors like marital status, education level, monthly average income, chronic diseases, and the time for knowing the HIV status showed no statistically significant link to depression. Nonetheless, the hypothesis test to identify the interaction between the time of knowing the HIV status and depression among the women living with HIV showed that women who were HIV positive and knew their HIV status during pregnancy and after giving birth were 1.557 times more likely to be depressed, with $p < 0.001$. The hypothesis that indeed women who are living with HIV and knew their HIV status before getting pregnant are less likely to be depressed was therefore accepted.

9.3 Conclusion

The study has demonstrated that even though the burden of prenatal and postpartum depression was high in both women living with HIV and HIV negative women, a significantly increased risk of these prenatal and postpartum depressive symptoms was more pronounced in women living with HIV, who knew their status during pregnancy and after giving birth. These show how maternal mental health is an issue of concern in the districts of Kampala and Wakiso, and the urgency for optimal management of comorbid HIV and depression. Additionally, the study identified instances of suicidal and homicide thoughts among some women which emphasizes how critical mental health issues are among women living with HIV during pregnancy and the postpartum periods. The finding on the prevalence of prenatal and postpartum depression in the present study undergirds the biopsychosocial model that when varying biological, psychological, and social factors interact together, it causes mental illness

and in this case depression. Despite the observed increasing prenatal and postpartum depression, health care providers encountered many barriers that hindered their effective identification and timely treatment of depression during these critical phases.

The comparative analysis of the EPDS and SRQ-20 depression screening tools provides valuable insights into the measurement and prevalence of prenatal and postpartum depression among women living with HIV in Kampala and Wakiso, Uganda. The study's recommendation to utilize the EPDS for effective diagnosis of prenatal and postpartum depression within this cultural context highlights the importance of selecting a tool that accurately captures the unique challenges and experiences faced by HIV pregnant and postpartum women in the urban setting.

This study also provided relevant information in the field of Demography and Population Studies in relation to reproductive health, mental health, and HIV condition which have implications for mortality, morbidity, and fertility. Demography and Population Studies focus on the study of fertility and mortality which are some of the components of population change. This study has evidently shed light on critical demographic, socioeconomic, and health related factors influencing depression among pregnant and postpartum women in the study context. The significant depression likelihood among women in the 15-24 age group, reflects the multiple vulnerabilities faced by the young population in Uganda including adolescent and youth childbearing in the face of living with HIV and poor mental health. The biopsychosocial model can explain the revealed factors associated with prenatal and postpartum depression among the women that for a mental illness to occur, the biological, psychological, and social factors all play a role. Recognising the interplay of these factors can help better understand why prenatal and postpartum women living with HIV are at increased risk for being depressed, thus informing holistic interventions and support systems tailored to meeting their unique needs.

The study again underscored the barriers in addressing the mental health needs of women living with HIV during pregnancy and the postpartum period. The mental health stigma, along with the challenges faced by healthcare providers in diagnosis and treatment, highlight how depression among this category of women can go unrecognized and untreated. This can adversely affect both maternal and infant health outcomes. Furthermore, the study sheds light on the cultural context and social support networks that play a crucial role in influencing women's mental well-being. Cultural norms and societal expectations impact how women perceive and cope with depression, with factors such as privacy, stigma, among others influencing help-seeking behaviours. These findings affirm the vulnerability stress model that protective factors like social support reduces both stress and the biological vulnerability to depression. Routine interaction of women in this study with numerous formal and informal support systems helped them to overcome experiencing depression. It also increased their knowledge on prenatal and postpartum depression, which is a stepping stone seeking treatment and other interventions. Contrary, negative experiences influenced depression.

Overall, these findings highlight the complex and multidimensional nature of depression and factors related to it as outlined by the biopsychosocial and the vulnerability stress models of mental illness. This evidence is essential for guiding policy development, implementation, and intervention strategies.

9.4 Recommendations

9.4.1 Policy recommendations

The study recommends policies that encourage the integration of routine screening for depression into prenatal and postpartum care for all women, whether HIV negative or in HIV care. This will enable early detection and interventions for depressed women who are pregnant and those who have recently given birth. To achieve this, there is a need for collaboration within stakeholders including the Ministry of Health, health care experts and partners into reproductive health, mental health and HIV to design and oversee the effective implementation of the set policies within the health facilities. Again, policies that address stigma, discrimination, and promote mental health integration within the broader

healthcare system are crucial and urgently needed. This will help conceptualizing depression and the role of each individual has in supporting women especially those living with HIV to overcome prenatal and postpartum depression. For effective mental health integration and sustainability of mental health programs across the country, the Ministry of finance in collaboration with other partners need to seek for funding from the government, non-governmental organisations, and other international agencies.

Since from the study some women lost their jobs due to their pregnancy status, as well as the working women being more likely to be depressed calls for advocating for workplace policies that support pregnant and postpartum women, including longer maternity leave, flexible work arrangements, and mental health resources to help support the mental wellbeing of working women during their prenatal and postpartum periods. This can be done through the Ministry of Gender, Labour and Social Development, in collaboration with policy makers, pregnant and postpartum women, as well as employers and other human rights agencies.

9.4.2 Recommendations for Practice

Since a relationship has been identified by this study between depression and being pregnant or giving birth at a younger age group of 15-24, the Ministry of health, health care facilities, non-governmental organizations and all partners interested in reproductive health need to strengthen the already existing programs on reproductive and sex education targeting adolescents and youth. This could involve implementing targeted comprehensive sexual education programs to adolescents and youth to provide accurate information on reproductive health, family planning, and safe sexual practices. This could help reduce early sexual initiation and unplanned pregnancies. Again, there is a need to increase accessibility and awareness of modern contraceptives, especially among adolescents and youth, to empower women to make informed choices about their reproductive health, help them make informed decisions about pregnancy timing, as well as address unplanned pregnancies. Various mediums that create friendly environment for transmitting knowledge to the adolescents and youth such as radio and

television talks, newspapers, music, online applications, and various social media handles could be used for sensitizations as this category of age group is increasingly interacting with social media.

In order to address the barriers identified to be faced by the health care professionals in identifying, diagnosing and treating prenatal and postpartum depression, a number of activities need to be done. For example, the Uganda's Ministry of Health in collaboration with partners into HIV care need to develop clear guidelines and standardized procedures and instruments across the country to help in diagnosing and treating depression among women living with HIV in prenatal and postpartum periods. There is also the need to strengthen the use of the EPDS depression screening tool in prenatal and postpartum care settings. Healthcare providers should receive training on the accurate administration and interpretation of the EPDS to ensure timely identification and treatment of depression. Again, there is a need to encourage and promote more mental health trained health professionals in the country in order to help deal with their scarcity identified in this study. This will enhance providing specialized mental health care services in the various health facility levels as well as improve access, diagnosis, and timely treatment of prenatal and postpartum depression. Additionally, there is a need for the Ministry of Health, the Ministry of Education in collaboration with various associations and councils responsible for various health care professionals to extensively emphasize course units on the subject of mental health during college and university training for healthcare professionals, including doctors, nurses, and midwives. This will enhance knowledge equipment as well as effective performance during practice in case they encounter women with symptoms of prenatal and postpartum depression. During the training, offering cultural sensitivity training to healthcare professionals to understand and respect cultural and religious norms that may influence women's mental health experiences is key. Additionally, emphasis on the importance of empathetic communication, active listening, and creating a supportive environment for women to discuss their mental health concerns is important. Furthermore, there is a need to train community health workers to provide basic mental health support and information at the grassroots level. These workers can play a crucial role in educating women about

depression (addressing misconceptions and promoting accurate knowledge), providing initial guidance, and referring the women to appropriate services. Education-based programs in Uganda needs to be strengthened. Therefore, the Ministry of Health together with the Ministry of Education in Uganda can collaborate with schools and educational institutions to introduce mental health education into the curriculum in order to foster an environment where individuals can learn about mental health early in life.

Health facilities need to develop and implement targeted mental health interventions for pregnant and postpartum women living with HIV, especially those at higher risk of depression. These interventions could include gynaecology and obstetrics health professionals collaborating with mental health professionals, counsellors and social workers to provide psychoeducation, counselling, and support to address depressive symptoms and reduce the prevalence of suicidal thoughts. Strengthening the already existing support will provide platforms that can provide a safe space for women to share their experiences, receive guidance, and connect with others who may be facing similar challenges. It would also be important that health facilities, government agencies and NGOs collaborate together to launch public health awareness campaigns to reduce stigma around mental health and HIV, promoting understanding and acceptance within communities. These awareness campaigns would also be a platform to educate women, families, and communities about the potential emotional challenges of pregnancy and postpartum periods, and the importance of seeking timely and appropriate mental healthcare during pregnancy and postpartum. This could encourage women to seek professional assistance without fear of judgment. Also, highlighting success stories of women who sought help and received effective treatment could encourage women to openly discuss their symptoms with healthcare providers. Creating avenues for user-friendly online resources, such as websites, videos, and social media campaigns in various local Ugandan languages as well ensuring accessibility for women with limited resources would be a roadmap for sustainable mental health interventions.

Since social support was identified as one of the protective factors for experiencing depressive symptoms, strengthening social support networks is needed by various health facilities dealing with women living with HIV especially the PMTCT clinics. This can be done by fostering community-based groups, and encouraging peer support in pregnancy and postpartum care to overcome depression in this vulnerable group of women. Again, developing family based- interventions that involve family members, providing them with information and resources to support the mental and physical well-being pregnant and postpartum women living with HIV is recommended. When family members are empowered with knowledge, they are able to detect abnormal signs and symptoms and hence support the women to seek the rightful intervention strategies. Additionally, encouraging partners to actively participate in antenatal and postnatal care visits could foster a positive and supportive environment that can contribute to improved women's mental well-being.

Since food insecurity was identified as one of the factors related with depression among the studied women, there is a need to strengthen social support offices at the HIV care centres by individual health organizations to promote and implement nutrition and food security programmes to ensure adequate access to healthy and balanced diets for pregnant and postpartum women living with HIV, particularly those facing severe food insecurity. This could be in collaboration with the Ugandan Ministry of Agriculture, Animal Industry and Fisheries and NGOs, CBOs, and partners into food security to support the women. Furthermore, HIV care centres in collaboration with partners and vocational schools need to implement poverty alleviation initiatives to support the economically disadvantaged prenatal and postpartum women. These initiatives could include circles, training in vocational skills like tailoring, weaving baskets, creating saving groups, among others to help provide economic support and sustainability to vulnerable women. These measures help mitigate the risk of depression as improved economic wellbeing would improve food security.

9.4.3 Recommendations for future studies

There is a need for continuous research and mixed methods data collection on reproductive health, mental health, and HIV to inform evidence-based policies and interventions that address the specific needs of women living with HIV in Uganda. Again, longitudinal studies will be relevant in capturing dynamic changes and trends of depression symptoms among the prenatal and postpartum women living with HIV over time. This could provide insights into culturally relevant interventions that are effective improving the mental wellbeing of prenatal and postpartum women living with HIV, as well as inform adjustments and improvements to existing programmes. In addition, this study was conducted in only three health facilities. Therefore, a broader study involving more health facilities across the country is recommended to yield findings that can be generalizable to the entire population.

9.5 Contribution to Knowledge

One of the contribution of this study is that generally, it adds to the literature in the area of maternal mental health and mental health, which are becoming of important concern in the African region. Secondly, this study differs from previous research by moving beyond the single approach of studying maternal mental health. The focus of this study as well as a mixed method research design employed makes it vital in helping fill the existing knowledge gap by examining how outcomes of the HIV-positive diagnosis could affect the mental health of women living with HIV in the urban areas of Uganda during both prenatal and postpartum periods. The quantitative aspect of the study identifies prevalence, perinatal characteristics, and relationships between HIV status, the perinatal period, and depression, offering insights into stressors affecting these women. On the other hand, the qualitative aspect explores their knowledge of depression and lived experiences, revealing social, political, and cultural contexts. It highlights coping strategies and informs healthcare providers on supporting women during pregnancy and postpartum. This would provide evidence-based knowledge for contextualized intervention strategies to support the mental well-being of HIV positive pregnant and postpartum women in the country.

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APPENDICES

APPENDIX A: HYPOTHESES TESTING RESULTS

Appendix A1: Results for Hypothesis 2

Women living with HIV who wanted/planned for pregnancy are less likely to experience depression compared to those who did not want/ plan getting pregnant.

EPDS	Odds Ratio	S.E	t-value (Z)	p-value	95% CI
Planned/wanted pregnancy#HIV Status					
No#Positive (RC)					
No#Negative	0.193***	.108	-2.95	0.003	0.065 - 0.576
Yes#Positive	0.53	.318	-1.06	0.29	0.164 - 1.716
Yes#Negative	0.202***	.105	-3.07	0.002	0.073 - 0.561
Constant	6.6***	3.167	3.93	0	2.577 - 16.906
Pseudo r-squared	0.057	Number of obs		231	
Chi-square	17.055	Prob > chi2		0.001	
Akaike crit. (AIC)	287.709	Bayesian crit. (BIC)		301.479	

Source: Fieldwork, 2022

RC-Reference Category

s.e.: standard error

CI- Confidence Interval

*** $p < .01$, ** $p < .05$, * $p < .1$

Appendix A2: Results for Hypothesis 3

Women who are living with HIV and knew their HIV status before getting pregnant are less likely to be depressed compared to those who knew their HIV status during pregnancy and after giving birth.

EPDS	Odds Ratio	S.E	t-value (Z)	p-value	95% CI
Time for knowing HIV status#HIV Status					
Before getting pregnant #Positive (RC)					
Before getting pregnant #Negative	0.696	.157	-1.61	0.108	0.448 - 1.083
During pregnancy and after giving birth #Positive	2.557**	.942	2.55	0.011	1.242- 5.263
During pregnancy and after giving birth #Negative	0.305***	.091	-3.98	0	0.17 - 0. 547
Constant	2.24***	.381	4.74	0	1.605 - 3.126
Pseudo r-squared	0.054	Number of obs		497	
Chi-square	34.711	Prob > chi2		0.000	
Akaike crit. (AIC)	620.545	Bayesian crit. (BIC)		637.379	

Source: Fieldwork, 2022

RC-Reference Category

s.e.: standard error

CI- Confidence Interval

*** $p < .01$, ** $p < .05$, * $p < .1$

Appendix A3: Results for Hypothesis 4

Women living with HIV having social support are less likely to experience depression compared to those without social support.

EPDS	Odds Ratio	S.E	t-value (Z)	p-value	95% CI
Social support#HIV Status					
Had no support#Positive (RC)					
Had no support#Negative	1.434	.829	0.62	0.533	0.462 - 4.452
Had support#Positive	.83	.441	-0.35	0.726	0.293 - 2.354
Had support#Negative	.197***	.105	-3.05	0.002	0.069 - 0.56
Constant	3.4**	1.73	2.41	.016	1.254- 9.216
Pseudo r-squared	0.103	Number of obs		497	
Chi-square	66.938	Prob > chi2		0.000	
Akaike crit. (AIC)	588.318	Bayesian crit. (BIC)		605.152	

Source: Fieldwork, 2022

RC-Reference Category

s.e.: standard error

CI- Confidence Interval

*** $p < .01$, ** $p < .05$, * $p < .1$



APPENDIX B: ETHICAL CLEARANCES AND APPROVAL LETTERS

Approval letter B1: Uganda National Council for Science and Technology (UNCST)



Uganda National Council for Science and Technology
(Established by Act of Parliament of the Republic of Uganda)

Our Ref: SS1488ES

16 November 2022

CLARE KYOMUHENDO
BUGEMA UNIVERSITY
Kampala

Re: Research Approval: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

I am pleased to inform you that on 16/11/2022, the Uganda National Council for Science and Technology (UNCST) approved the above referenced research project. The Approval of the research project is for the period of 16/11/2022 to 16/11/2023.

Your research registration number with the UNCST is **SS1488ES**. Please, cite this number in all your future correspondences with UNCST in respect of the above research project. As the Principal Investigator of the research project, you are responsible for fulfilling the following requirements of approval:

1. Keeping all co-investigators informed of the status of the research.
2. Submitting all changes, amendments, and addenda to the research protocol or the consent form (where applicable) to the designated Research Ethics Committee (REC) or Lead Agency for re-review and approval prior to the activation of the changes. UNCST must be notified of the approved changes within five working days.
3. For clinical trials, all serious adverse events must be reported promptly to the designated local REC for review with copies to the National Drug Authority and a notification to the UNCST.

Please note that this approval includes all study related tools submitted as part of the application as shown below:

No.	Document Title	Language	Version Number	Version Date
1	Translated informed consent for mothers	Luganda	2.0	27 July 2022
2	Informed consent form for mothers	English	2.0	27 July 2022
3	Project Proposal	English	2.0	
4	Approval Letter	English		
5	Administrative Clearance	English		
5	Informed consent form for the in-depth interview	English	2	27 July 2022
6	Informed consent form for the key informants interview	English	2	27 July 2022
7	translated copy of the informed consent form for the mothers	English	2	27 July 2022
8	English copy of IDI for HIV Negative Pregnant Women	English	2	27 July 2022
9	English copy of IDI for HIV Negative Women Who Have Recently Given Birth	English	2	27 July 2022
10	English copy of IDI for IDI for Pregnant Women Living With HIV	English	2	27 July 2022
11	English copy of IDI for Women Living With HIV Who Have Recently Given Birth	English	2	27 July 2022
12	English copy of the KII for Personnel Working with HIV Negative Pregnant Women and Those Who Have Recent	English	2	27 July 2022
13	English copy of the KII for Personnel Working with Women Living with HIV Who Are Pregnant and Those Who Have Recently Given Birth	English	2	27 July 2022
14	English version of the questionnaire for the mothers	English	2	27 July 2022
15	Risk Mitigation Plan 2	English	3	15 November 2022

Yours sincerely,

Hellen Opolot
For: Executive Secretary
UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

LOCATION CORRESPONDENCE

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Approval letter A2: Mildmay Uganda Research Ethics Committee (MUREC)



Research Ethics Committee (MUREC)

11 October 2022

Clare Kyomuhendo
Principal Investigator

Type: Initial Review

Expedited

protocol Amendment

Continuing Review

Other: Specify

Dear Clare,

Re: Research approval: # REC REF 0408-2022 "The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala, Uganda".

Thank you for submitting this application for approval of the above referenced protocol to MUREC.

I am glad to inform you that approval is hereby given to conduct the study; this approval is given following your exhaustive responses to initial comments raised by MUREC. The approval is for one Year, effective 11 October 2022 and will expire on 11 October 2023.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

- All co-investigators must be kept informed of the status of the research.
- Changes, amendments, and addenda to the protocol or the consent form must be submitted to the MUREC for re-review and approval prior to the activation of the changes. The MUREC application number assigned to the research should be cited in any correspondence.
- Reports of unanticipated problems involving risks to participants or other must be submitted to the MUREC. New information that becomes available which could change the risk:benefit ratio must be submitted promptly for MUREC review.

- Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The MUREC may conduct audits of all study records, and consent documentation may be part of such audits.
- Regulations require review of an approved study not less than once per 12-month period. Therefore, a continuing review application must be submitted to the MUREC **three months** prior to the above expiration date of **11 October 2023** in order to continue the study beyond the approved period. Failure to submit a continuing review application in timely fashion may result in suspension or termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.

- Approval from National Drug Authority should be sought where applicable.
- You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by the MUREC:

SN	Document Title	Language	Version	Version Date
1	Protocol	English	2.0	27 July 2022
2	Informed consent form for mothers	English	2.0	27 July 2022
3	Translated informed consent for mothers	Luganda	2.0	27 July 2022
4	Informed consent form for key informants	English	2.0	27 July 2022
5	In-depth interview guide for pregnant women living with HIV	English	2.0	27 July 2022
6	Translated in-depth interview guide for pregnant women living with HIV	Luganda	2.0	27 July 2022
7	In-depth interview guide for women living with HIV who have recently given birth	English	2.0	27 July 2022
8	Translated in-depth interview guide for women living with HIV who have recently given birth	Luganda	2.0	27 July 2022
9	In-depth interview guide for HIV negative	English	2.0	27 July 2022

	pregnant women			
10	Translated in-depth interview guide for HIV negative pregnant women	Luganda	2.0	27 July 2022
11	In-depth interview guide for HIV negative women who have recently given birth	English	2.0	27 July 2022
12	Translated in-depth interview guide for HIV negative women who have recently given birth	Luganda	2.0	27 July 2022
13	Key informant interview guide for personnel working with women living with HIV who are pregnant and those who have recently given birth	English	2.0	27 July 2022
14	Key informant interview guide: personnel working with HIV negative pregnant women and those who have recently given birth	English	2.0	27 July 2022
15	Survey instrument	English	2.0	27 July 2022
16	Translated survey instrument	Luganda	2.0	27 July 2022
17	Research project budget	English	1.0	2 July 2022
18	Risk mitigation plan (RMP)	English	1.0	2 July 2022



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Guiding Research For the Future



Approval letter B3: University of Ghana Ethics Committee for the Humanities (ECH)



UNIVERSITY OF GHANA
ETHICS COMMITTEE FOR THE HUMANITIES (ECH)

P. O. Box LG 74, Legon, Accra, Ghana

My Ref. No...ECH 012/22-23

August 23, 2022.

Clare Kyomuhendo
Regional Institute for Population Studies
University of Ghana
Legon

ETHICAL CLEARANCE
(ECH 012/22-23)

The protocol title below has been reviewed and approved by the ECH Committee.

TITLE OF PROTOCOL: THE BURDEN OF PRENATAL AND POSTPARTUM DEPRESSION AMONG WOMEN LIVING WITH HIV IN KAMPALA, UGANDA

PRINCIPAL INVESTIGATOR: CLARE KYOMUHENDO

Please note that the final review report must be submitted to the Committee at the completion of the study. Your research records may be audited at any time during or after the implementation. Any modification of this research project must be submitted to ECH for review and approval prior to implementation.

Please report all serious adverse events related to this study to ECH within seven (7) days verbally and in writing within fourteen (14) days.

This certificate is valid till August 22, 2023. You are required to submit annual reports for continuing review.

Please accept my congratulations.

Yours Sincerely,

Professor C. Charles Mate-Kole
ECH Chair

Tel: +233-303933866

Email: ech@ug.edu.gh

APPENDIX C: ADMINISTRATIVE APPROVAL LETTERS

Administrative letter C1: Mildmay Uganda



27 October 2022

Clare Kyomuhendo
Principal Investigator

Dear Clare,

RE: Administrative clearance for a research protocol titled: "The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala, Uganda."

Thank you for submitting a request for administrative clearance for the above-referenced study to Mildmay Uganda.

After a favourable administrative review, Mildmay Uganda (MUG) has no objection to granting you permission to recruit study participants from Mildmay Uganda-main site as indicated in the protocol, version 2.0.

You are reminded to comply with the provisions of the protocol version 2.0, dated 27/07/2022 as approved by Mildmay Uganda Research Ethics Committee (MUREC) and to follow the guidelines of Uganda National Council for Science and Technology, July 2014 and the covid19 guidelines, July 2020 in carrying out this research project.

You also have to commit to sharing;

Amendments: All proposed changes to the study must be approved by the MUREC in advance through the amendment process and MUG should be notified about the changes.

Adverse Events/Unanticipated Problems: You must inform MUG of all unanticipated problems and adverse events that occur at the site during your research study.

It is a requirement that you share your findings with MUG.

This clearance is valid for the same period as that provided by the Research Ethics Committee which approved the study.

Yours Sincerely,

A handwritten signature in black ink, appearing to read "Barbara Mukasa".

Dr. Barbara Mukasa

Executive Director

cc: Director, Medical services, MUG

cc: Chairperson, MUREC

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Mildmay Uganda is a Fraud-Free Organisation. Report fraud, illegal, or unethical behavior on 0800221101 (Toll free hotline) or email: whistleblower@mildmay.or.ug



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Mildmay Uganda



Mildmay Ug

Administrative letter C2: TASO Mulago



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1st November 2022

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TASO RHITE N. LANGO
Apac District Health Offices
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Our Ref: TASO REC/ADMC016/2022-UG-REC-009

Ms. Clare Kyomuhendo
University of Ghana
clare.kyomuhendo@gmail.com

Dear Clare

REF: ADMINISTRATIVE CLEARANCE FOR PROTOCOL: "THE BURDEN OF PRENATAL AND POST-PARTUM DEPRESSION AMONG WOMEN LIVING WITH HIV IN KAMPALA, UGANDA"

Thank you for submitting a request for administrative clearance for the above-referenced study. After a favorable administrative review, TASO (U) Ltd has no objection to granting you permission to recruit potential study participants from TASO (U) Ltd as enclosed in your letter dated 18th October 2022.

You are reminded to comply with the provisions of the protocol dated 27th July 2022 version 2.0 as approved by the Mildmay Research Ethics committee on 11th October 2022, the MOU signed and dated 19th October 2022, and to follow the guidelines of the Uganda National Council for Science and Technology, July 2014 and the COVID19 guidelines, July 2020 in carrying out this research project.

You also have to commit to sharing:

Amendments: All proposed changes to the study (including personnel, procedures, or documents) must be approved by the REC in advance through the amendment process and TASO REC be notified about the changes.

Adverse Events/Unanticipated Problems: You must inform the REC of all unanticipated problems and adverse events that occur during your research study.

It is a requirement by TASO that you submit the preliminary and final findings to TASO Research Ethics Committee and TASO (U) Ltd.

For further correspondence with us, our contact person is Dr. Simple Ouma, Research Manager, oumas@tasouganda.org +256 707708818 or Dr. Kagimu David, Vice-Chairperson, TASO REC, kagimud@tasouganda.org +256 740088355

Sincerely,

Dr. Etukoit Bernard Michael,
Executive Director, TASO (U) Limited
CC: Chairperson, TASO Research Ethics Committee (REC)
CC: Center Program Manager: Mulago, TASO (U) Ltd.



Administrative letter C3: Mulago Specialised Women and Neonatal Hospital

TELEPHONE: +256-417-888-700
E-MAIL: INFO:swnhmulago@gmail.com



MULAGO SPECIALIZED WOMEN AND
NEONATAL HOSPITAL
P.O. Box 22081
KAMPALA, UGANDA

IN ANY CORRESPONDENCE ON THIS
SUBJECT PLEASE QUOTE NO.

ADM/2022/12/D161

6th December, 2022

Ms. Kyomuhendo Claire
Principal Investigator
University of Ghana

ADMINISTRATIVE CLEARANCE FOR RESEARCH.

Reference is made to your letter requesting for permission to carry out research on ***"The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda"***.

I have reviewed the abstract and the approval letter by Mildmay Uganda Research Ethics Committee for a period of one year from 11th October, 2022 to 11th October, 2023.

This is to inform you that this study has permission to commence in this hospital. You will liaise with the Deputy Director, Dr. Jolly Nankunda and Dr. Tabuley Jackson who will directly monitor and supervise the conduct of the research.

I look forward to being regularly appraised of its progress and findings.

A handwritten signature in blue ink, appearing to read 'E Nabunya'.

Dr. Evelyn Nabunya

EXECUTIVE DIRECTOR

cc. *Deputy Director*

cc. *Dr. Tabuley Jackson*



APPENDIX D: RESEARCH INSTRUMENTS

Research instrument D1: A Survey Questionnaire



UNIVERSITY OF GHANA
REGIONAL INSTITUTE FOR POPULATION STUDIES

The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

A Survey Questionnaire

Respondent's ID Number:	
Facility Name:	Clinic ID No:
Name of the respondent:	Place of residence/Address:
Respondent's Contact:	Health facility visitation/appointment date: (DD/ MM / YYYY) ____/____/____
Date of interview: (DD/ MM / YYYY) ____/____/____	Time of interview:
Field worker initials:	Questionnaire Number:

SECTION A: RESPONDENT DEMOGRAPHICS

Q No	Questions	Response Options (Coding Categories)	Code
1	How old are you now? (<i>In completed years</i>)	____ years Don't know	99
2	What is your date of birth?	(DD/ MM / YYYY) ____/____/____	
3	Have you ever attended formal school?	Yes No	1 2
4	What is your highest level of education?	No Education Pre-school Lower primary (p1-p4) Higher primary (p5-p7) 'O' level Secondary (S1-S4) 'A' level Secondary (S5-S6) Vocational Teacher Training Nursing training College University Post graduate Don't know	1 2 3 4 5 6 7 8 9 10 11 12 99
5	To what ethnic group do you belong to?	Other (<i>Specify</i>) Baganda Banyakore Basoga Bakiga Banyoro Bagisu Iteso Batooro Langi Acholi Lugbara Karamojong Non-Ugandan Other (<i>Specify</i>)	1 2 3 4 5 6 7 8 9 10 11 12 13

6	What is your religion?	No Religion	1
		Christianity	2
		Islam	3
		Traditional/Spiritual	4
		Other Religion (<i>specify</i>)	
7	What is your current marital status?	Monogamous marriage	1
		Polygamous marriage	2
		Widowed	3
		Divorced	4
		Separated	5
		Single/Never married	6
		Cohabiting	7
8	What is your main occupation?	Unemployed	1
		Public servant	2
		Private sector employee	3
		Own business	4
		Agriculture	5
		Student	6
		Other (<i>Specify</i>)	
9	What is your average level of income per month?	_____ UGX Don't know	99
10	What is your current living conditions?	A shared house within family homestead	1
		Personal separate house but at family homestead	2
		A shared house within non family homestead	3
		Personal separate and family independent house	4
11	How many dependants do you have?	Total _____ Male _____ Female _____	

SECTION B: HIV STATUS

Q No	Questions	Response Options (Coding Categories)	Code
12	What is your current HIV status	Positive	1
		Negative (IF NEGATIVE, >>Q20)	2
13	For how long have you lived as HIV positive?	_____ Don't know	99
14	When did you first know about you HIV status?	Before getting pregnant	1
		During pregnancy	2
		After giving birth	3
		Other (<i>Specify</i>)	
15	How did you come to know about your HIV status?	Through Routine Counselling and Testing (RCT) at the health facility during antenatal care visit	1
		Through Client-initiated/ Voluntary Counselling and Testing (VCT) at the health facility or outreaches	2
		Through Community or Home-based testing (HBCT)	3
		Through couple HIV counselling and testing	4
		Other (<i>Specify</i>)	
16	Have you disclosed your HIV status to anyone?	Yes	1
		No (IF NO, >>Q19)	2
17	Which of the following people have you been able to disclose your HIV status to? (<i>Tick all that apply</i>)	Spouse	1
		Parent(s)	2
		Siblings	3

		Aunt(s)	4
		Uncle(s)	5
		Grand parents	6
		Children	7
		In-laws	8
		Friends	9
		Neighbour	10
		Other (<i>Specify</i>)	
18	Why did you choose to disclose your HIV status? (<i>Tick all that apply</i>)	Need for social support to cope with the diagnosis	1
		To relieve the stress associated with non-disclosure	2
		To facilitate HIV preventive behaviour	3
		Sense of ethical responsibility/concern for partner's health	4
		Failing health/severity of illness	5
		Other (<i>Specify</i>)	
19	What are the reasons for not disclosing your HIV status? (<i>Tick all that apply</i>) (IF YES to Q16, >>Q20)	Fear for loss of support	1
		Fear of isolation and abandonment	2
		Fear of stigma, rejection and discrimination	3
		Fear of violence	4
		Fear of upsetting family members	5
		Fear of accusations of infidelity	6
		Fear of divorce or separation	7
		Other (<i>Specify</i>)	
20	Do you know the HIV status of your spouse?	Yes	1
		No (IF NO, >>Q24)	2
21	What is his HIV status	Positive	1
		Negative	2
22	How did you know about the HIV status of your spouse?	He voluntarily told me about his HIV status	1
		I demanded to know about his HIV status	2
		Through Community or Home-based testing (HBHCT)	3
		Through couple HIV counselling and testing	4
		I landed on his result slip	5
		From friends	6
		Other (<i>Specify</i>)	
23	When did you first know about the HIV status of your spouse?	Before getting pregnant	1
		During pregnancy	2
		After giving birth	3
		Other (<i>Specify</i>)	

SECTION C: DETAILS OF CURRENT PREGNANCY

Q No	Questions	Response Options (Coding Categories)	Code
24	Is your current pregnancy the first, second, third, fourth, etc.?	First pregnancy	1
		Second pregnancy	2
		Third pregnancy	3
		Fourth pregnancy	4
		Fifth pregnancy	5
		Other (<i>Specify</i>)	
25	Did you plan having the current pregnancy	Yes, I did	1
		No, it just happened	2
		No, I was forced	3
		No, I was raped	4



		Other (<i>Specify</i>)	
26	How did the current pregnancy make you feel?	Very happy	1
		Happy	2
		Little happy	3
		Sad	4
		Very sad	5
27	What is the stage of your pregnancy?	First trimester – conception to 13 weeks (1-3 months)	1
		Second trimester – 14 to 26 weeks (4-6 months)	2
		Third trimester – 27 to 40 weeks (7-9 months)	3
28	How many antenatal clinic visits have you made?	1	1
		2	2
		3	3
		4+	4
29	What is your expected due date	_____	
30	What is your expected place of delivery?	Don't know	99
		Clinic	1
		Health Centre Level II	2
		Health Centre Level III	3
		Health Centre Level IV	4
		Hospital	5
		At home with traditional birth attendant	6
		Don't know	99
31	What reason (s) inform the choice of your expected place of delivery?	Other (<i>Specify</i>)	

SECTION D: DETAILS OF MOST RECENT CHILD BIRTH

Q No	Questions	Response Options (Coding Categories)	Code
32	Do you have any other child/ children prior to the current new born?	Yes	1
		No (If NO, >>Q35)	2
33	How many children do you have in all?	Total _____	
		Male _____	
		Female _____	
34	What is the birth interval between the last and the most recent child birth?	_____	
35	What is the date of birth of your most recent child you have had?	(DD/ MM / YYYY) ____ / ____ / ____	
36	Where did you deliver your most recent child from?	Clinic	1
		Health Centre Level II	2
		Health Centre Level III	3
		Health Centre Level IV	4
		Hospital	5
		At home with traditional birth attendant	6
	Other (<i>Specify</i>)	_____	
37	What reason (s) inform the choice of your current place of delivery?	_____	
38	What is the sex of your most recent child you have had?	Male	1
		Female	2
39	Do you know the HIV status of this child?	Yes	1
		No (If NO, >>Q42)	2
40	What is the HIV status of the child?	Positive	1
		Negative(If NEGATIVE, >>Q43)	2
41	How do you feel about your Child's HIV positive status?	Very often worried	1
		Often worried	2
		Sometimes worried	3
		Never worried	4



42	What are the reasons for not knowing the HIV status of your child? (<i>Tick all that apply</i>)	It is not necessary since I am HIV negative	
		The baby has not yet made the weeks in which he/she is supposed to be tested for HIV	
		I am yet to go to the hospital and have the baby tested	
		Other (<i>Specify</i>)	
43	Who else at home helps you with taking care of the child? (<i>Emphasis should be on practical daily care and not financial care</i>)	No help	1
		Partner	2
		Mother	3
		Father	4
		Grandmother	5
		In Laws	6
		Sibling	7
	Other (<i>Specify</i>)		

SECTION E: PREVALENCE OF PRENATAL AND POSTPARTUM DEPRESSION IN WOMEN LIVING WITH HIV

In this section, I would want to know how you feel since you are either pregnant or have recently had a baby. Please choose the answer that comes closest to how you have felt **IN THE PAST TWO WEEKS**, not just how you feel today.

The Edinburgh Perinatal/Postnatal Depression Scale (EPDS)

44. Each statement below has four (4) different choices indicating the way you feel. Please tick the answer that comes closest to the way you have been feeling over the past week

Questions	Response Options (Coding Categories)	Code
I have been able to laugh and see the funny side of things	As much as I always could	0
	Not quite so much now	1
	Definitely not so much now	2
	Not at all	3
I have looked forward with enjoyment to things	As much as I ever did	0
	Rather less than I used to	1
	Definitely less than I used to	2
	Hardly at all	3
I have blamed myself unnecessarily when things went wrong	Yes, most of the time	3
	Yes, some of the time	2
	Not very often	1
	No, never	0
I have been anxious or worried for no good reason	No, not at all	0
	Hardly ever	1
	Yes, sometimes	2
	Yes, very often	3
I have felt scared or panicky for no very good reason	Yes, quite a lot	3
	Yes, sometimes	2
	No, not much	1
	No, not at all	0
Things have been getting on top of me	Yes, most of the time I haven't been able to cope	3
	Yes, sometimes I haven't been coping as well as usual	2
	No, most of the time I have coped quite well	1
	No, I have been coping as well as ever	0
I have been so unhappy that I have had difficulty sleeping	Yes, most of the time	3
	Yes, sometimes	2
	Not very often	1
	No, not at all	0
I have felt sad or miserable	Yes, most of the time	3
	Yes, quite often	2
	Not very often	1
	No, not at all	0
I have been so unhappy that I have been crying	Yes, most of the time	3

	Yes, quite often	2
	Only occasionally	1
	No, never	0
The thought of harming myself has occurred to me	Yes, quite often	3
	Sometimes	2
	Hardly ever	1
	Never	0

The SRQ-20 questionnaire

45. Each statement about the way you feel has “YES” or “NO” answer. Please respond appropriately to the answer that comes closest to the way you have been feeling over the past 30 days.

Questions	Response Options (Coding Categories)	Code
Do you often have persistent headaches?	Yes	1
	No	2
Is your appetite poor?	Yes	1
	No	2
Do you sleep badly?	Yes	1
	No	2
Are you easily frightened?	Yes	1
	No	2
Do your hands shake?	Yes	1
	No	2
Do you feel nervous, tense, or worried?	Yes	1
	No	2
Do you often experience any of the following stomach after having your meals?*	Yes	1
	No	2
a) Constipation, b)Heartburn, c) Bloating		
Do you have difficulties with your thinking, for example, do you think too much?*	Yes	1
	No	2
Do you regularly feel unhappy?	Yes	1
	No	2
Do you get a feeling of wanting to cry but you cannot?*	Yes	1
	No	2
Do you find it difficult to enjoy your daily activities?	Yes	1
	No	2
Do you find difficulty in deciding on what activities (household chores) you will perform on a given day?*	Yes	1
	No	2
Do you have trouble completing your daily tasks?*	Yes	1
	No	2
Are you unable to play a useful role in life?	Yes	1
	No	2
Have you lost interest in things you used to enjoy?	Yes	1
	No	2
Do you feel that you are a worthless person?	Yes	1
	No	2
Has the thought of ending your life been on your mind	Yes	1
	No	2
Do you feel tired all the time?	Yes	1
	No	2
Do you have uncomfortable feelings in your stomach?	Yes	1
	No	2
Are you easily tired?	Yes	1
	No	2

SECTION F: DETERMINANTS OF PRENATAL AND POSTPARTUM DEPRESSION AMONG WOMEN LIVING WITH HIV

Q No	Questions	Response Options (Coding Categories)	Code
46	When did you start experiencing the symptoms indicated in question 44-45 above?	Before getting pregnant	1
		During pregnancy (If during pregnancy, >>Q48)	2
		After giving birth (If after giving birth, >>Q49)	3
		Other (Specify)	

47	If before getting pregnant, what do you think could have been the factors influencing those symptoms? (<i>Tick all that apply</i>)	I am always not treated well by my loved ones	Yes	1
			No	2
		My HIV positive status has always brought me fear of being rejected by my family	Yes	1
			No	2
		My HIV positive status has always brought me the fear of dying early	Yes	1
			No	2
		My HIV positive status has always brought me fear of being rejected by my community	Yes	1
			No	2
		My HIV positive status has always brought me fear of being rejected by my spouse/ potential lovers	Yes	1
			No	2
		I always have issues with thinking too much	Yes	1
			No	2
		I have no one I trust to talk to about my HIV status	Yes	1
			No	2
I have no one I trust to talk to about my problems	Yes	1		
	No	2		
The unexpected death of my loved one (s) affected my thinking	Yes	1		
	No	2		
<i>Other (Specify)</i>				
48	If during pregnancy, what do you think could be the factors influencing those symptoms? (<i>Tick all that apply</i>)	I did not plan/ want this pregnancy and this makes me hate everything about myself	Yes	1
			No	2
		It is my first-time being pregnant and therefore I have a lot of uncertainties on the end results	Yes	1
			No	2
		My past pregnancy had health complications and this keeps me worried for the present pregnancy	Yes	1
			No	2
		I first got to know about my HIV positive status when I was pregnant at the antenatal visit which is shocking as I didn't expect it	Yes	1
			No	2
		I do not want people to know my HIV status and this makes me hide when coming for PMTCT services	Yes	1
			No	2
		Because of my pregnancy and HIV status, I am not treated well by my family which makes me feel not liked	Yes	1
			No	2
		Because of my pregnancy and HIV status, I am not treated well by my spouse which makes me feel not liked	Yes	1
			No	2
		Because of my pregnancy and HIV status, I am not treated well by health workers which makes me feel not liked	Yes	1
			No	2
		Because of my pregnancy and HIV status, I am not treated well by other people which makes me feel not liked	Yes	1
			No	2
Because of my HIV status, I keep worried of transmitting the HIV virus to my unborn baby	Yes	1		
	No	2		
I have no stable housing while pregnant and this exposes me to risks of harm and danger	Yes	1		
	No	2		
I have no finances to take care of my pregnancy and health which is stressful	Yes	1		
	No	2		
<i>Other (Specify)</i>				
49	If after giving birth, what do you think could have been the	I gave birth to a baby girl which has affected how my husband and in-laws treat me	Yes	1
			No	2
			Yes	1

	factors influencing those symptoms?	I gave birth to a baby girl which has affected how my in-laws treat me	No	2
		Because of my HIV status, I get worried on the many things I have to do and not do when breastfeeding my baby	Yes	1
			No	2
		Since I gave birth I do not sleep enough which has increased my stress	Yes	1
			No	2
		I do not know how to take care of the baby and this keeps me worried in case I make any mistake that would harm the baby	Yes	1
			No	2
		I have no finances to take care of myself and my baby which is stressful	Yes	1
			No	2
		My child is yet to test for HIV and I am afraid on the outcome of the results	Yes	1
			No	2
		The results of my child came out positive for HIV and this is worrying me	Yes	1
			No	2
I have no enough support from others to take care for myself and the baby	Yes	1		
	No	2		
Because I am HIV positive, I fear dying and leaving my child/children young without mother's care	Yes	1		
	No	2		
Other (<i>Specify</i>)				
50	Have you experienced any of the following complications while pregnant?	High blood pressure	Yes	1
			No	2
		Fits/convulsions	Yes	1
			No	2
		Fever	Yes	1
			No	2
		Anaemia/ blood transfusion	Yes	1
			No	2
		Bleeding while pregnant	Yes	1
			No	2
		Dehydration	Yes	1
			No	2
		Foetal problems (e.g. unborn baby with poor growth)	Yes	1
No	2			
Poor nutrition	Yes	1		
	No	2		
Failure to respond to HIV drugs	Yes	1		
	No	2		
Other (<i>Specify</i>)				
51	Did you experience any of the following complications after delivery?	Excessive vaginal bleeding	Yes	1
			No	2
		Anaemia/blood transfusion	Yes	1
			No	2
		Fever	Yes	1
			No	2
		Dehydration	Yes	1
			No	2
		Poor nutrition	Yes	1
			No	2
		Pus discharge from the vagina	Yes	1
			No	2
		Pain and/or swelling around the nipples	Yes	1
No	2			
Failure to respond to HIV drugs	Yes	1		
	No	2		

		Other (<i>Specify</i>)		
52	What mode of delivery did you have?	Caesarean section	1	
		Spontaneous vaginal delivery	2	
		Assisted vaginal delivery (like Vacuum extraction, Forceps delivery, etc.)	3	
53	Do you have history of any of the following chronic diseases?	Hypertension (High blood pressure)	Yes	1
			No	2
		Diabetes (High blood sugar)	Yes	1
			No	2
		Asthma	Yes	1
			No	2
		Cardiac disease	Yes	1
			No	2
		Don't know		99
		Other (<i>Specify</i>)		
54	Do you have any history of mental illness?	Yes	1	
		No (If NO, >> Q57)	2	
55	Are you taking medication for your mental illness?	Yes am taking	1	
		No I have never taken	2	
		I stopped taking	3	
		Don't know	99	
56	Which medication are you taking? (<i>Can use the patient's medical records if available</i>)	_____		
		Don't know	99	
57	Do you have any of your relatives known to have mental illness?	Yes, my parents	1	
		Yes, my sibling	2	
		Yes, other relatives	3	
		No	4	
		Don't know	99	
58	Have you ever been abused?	Yes	1	
		No (If NO, >> Q65)	2	
59	When did the abuse occur?	Before getting pregnant	1	
		During pregnancy	2	
		After giving birth	3	
		During childhood	4	
		Other (<i>Specify</i>)		
60	Who is the abuser? (<i>You can tick all that apply</i>)	Spouse	1	
		Father	2	
		Uncle	3	
		Friend	4	
		Neighbour	5	
		Schoolmate	6	
		Stranger	7	
		Other (<i>Specify</i>)		
61	Which of the following forms of abuse do you relate to? (<i>You can tick all that apply</i>)	Childhood sexual abuse	1	
		Childhood emotional abuse	2	
		Childhood physical abuse	3	
		Emotional intimate partner violence	4	
		Physical intimate partner violence	5	
		Sexual intimate partner violence	6	
		Controlling behaviours	7	
		My partner prevents me from accessing ARV's treatment which has interrupted my response to drugs	8	
		My spouse stopped me from working in order to take care of myself during pregnancy and after giving birth	9	
		Other (<i>Specify</i>)		

62	What could be the reasons for your abuse?	I was always isolated when young and this exposed me to abuse at a younger age	1	
		I grew up in a family lacking support and guidance from adults which increased my risks of being abused when young	2	
		Violence began particularly after informing my partner that I have been tested positive for HIV	3	
		Violence began particularly after informing my partner of my pregnancy	4	
		I conceived without the knowledge of my partner and resulted into abuse	5	
		Violence began when I gave birth to a baby girl	6	
		Don't know	99	
		Other (<i>Specify</i>)		
63	Are you still being abused?	Yes	1	
		No	2	
64	How often are you abused?	Very often	1	
		often	2	
		Sometimes	3	
65	Have you been taking any alcohol drink during this pregnancy, after giving birth, etc.? (If NO, >> Q69)	During this pregnancy	Yes	1
			No	2
		After giving birth	Yes	1
			No	2
		Both during pregnancy and after giving birth	Yes	1
			No	2
66	Which alcoholic brand (<i>Tick all that apply</i>)	A 285-ml bottle or can of beer	1	
		A 120-ml glass of wine (factory distilled or locally brewed)	2	
		A 30-ml glass/tot of a spirit or gin (factory distilled or locally brewed)	3	
		Don't know	99	
		Other (<i>Specify</i>)		
67	How often have you been taking alcoholic drinks?	Daily	1	
		4-5 times a week	2	
		2-3 times a week	3	
		Once a week	4	
		2-3 times a month	5	
		Once a month or less	6	
68	On those days you drank, how many drinks did you usually have?	6 drinks per day	1	
		Over 2-3 drinks per day	2	
		No more than 2-3 drinks per day	3	
69	Have you been smoking any tobacco products during this pregnancy, after giving birth, etc.? (If NO, >> Q73)	During this pregnancy	Yes	1
			No	2
		After giving birth	Yes	1
			No	2
		Both during pregnancy and after giving birth	Yes	1
			No	2
70	Which of the following products do you smoke or use?	Manufactured cigarettes	Yes	1
			No	2
		Hand-rolled cigarettes	Yes	1
			No	2
		Pipefuls of tobacco	Yes	1
			No	2
		Cigars	Yes	1
			No	2
		Other (<i>Specify</i>)		
		71	How many sticks do you smoke or use each day on average?	Manufactured cigarettes _____
Hand-rolled cigarettes _____	2			
Pipefuls of tobacco _____	3			

		Cigars _____	4	
		Other (<i>Specify</i>) _____		
		Don't know	99	
72	How often do you smoke?	Daily	1	
		Weekly	2	
		Monthly	3	
		Occasional	4	
73	Do you use any other substance of abuse?	Yes	1	
		No (If NO, >> Q78)	2	
74	Which other substance do you abuse?	_____		
75	How often do you abuse the substance?	Daily	1	
		Weekly	2	
		Monthly	3	
		Occasional	4	
76	For how long have you been smoking or using substance daily?	_____		
77	What are your reasons for alcoholism/smoking/substance abuse? (<i>You can tick all that apply</i>)	It is the way to cope with the stress I experience	1	
		It is a way to retain my social connection during my difficult period	2	
		To kill boredom and have fun since I have a few opportunities for recreation outside home	3	
		The behaviour is supported by my peers	4	
		It is because I lack attachment to the pregnancy	5	
		It is because I lack attachment to the baby	6	
		It is influenced by my addiction	7	
		Other (<i>Specify</i>) _____		
78	Do you have any of your relatives known to use alcohol, smoke, etc.?	Use alcohol	Yes, my parents	1
			Yes, my sibling	2
			Yes, other relatives	3
			No	4
			Don't know	99
		Smoke	Yes, my parents	1
			Yes, my sibling	2
			Yes, other relatives	3
			No	4
			Don't know	99

SOCIAL SUPPORT

The Multidimensional Scale of Perceived Social Support (MSPSS) questionnaire

I am interested in how you feel about the following statements. Read each statement carefully and indicate how you feel about it.			
Instructions:			
Tick "1" if you Very Strongly Disagree			
Tick "2" if you Strongly Disagree			
Tick "3" if you Mildly Disagree			
Tick "4" if you are Neutral			
Tick "5" if you Mildly Agree			
Tick "6" if you Strongly Agree			
Tick "7" if you Very Strongly Agree			
Q No	Questions	Response Options (Coding Categories)	Code
79	There is a special person who is around when I am in need	Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6

80	There is a special person with whom I can share my joys and sorrows	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
81	My family really tries to help me	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
82	I get the emotional help and support I need from my family	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
83	I have a special person who is a real source of comfort to me	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
84	My friends really try to help me	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
85	I can count on my friends when things go wrong	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
86	I can talk about my problems with my family	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
87	I have friends with whom I can share my joys and sorrows	Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
88		Very Strongly Agree	7
		Very Strongly Disagree	1
		Strongly Disagree	2

	There is a special person in my life who cares about my feelings	Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
		Very Strongly Agree	7
89	My family is willing to help me make decisions	Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
		Very Strongly Agree	7
90	I can talk about my problems with my friends	Very Strongly Disagree	1
		Strongly Disagree	2
		Mildly Disagree	3
		Neutral	4
		Mildly Agree	5
		Strongly Agree	6
		Very Strongly Agree	7

SECTION G: KNOWLEDGE OF PRENATAL AND POSTPARTUM DEPRESSION

Q No	Questions	Response Options (Coding Categories)	Code
91	How much do you know about prenatal depression?	Very much	1
		Quite a bit	2
		Somewhat little	3
		Very little	4
		None	5
92	How much do you know about postpartum depression?	Very much	1
		Quite a bit	2
		Somewhat little	3
		Very little	4
		None	5
93	From whom/where did you hear about prenatal depression? (You can tick all that apply)	Friend(s)	1
		Parent(s)	2
		Husband/Partner	3
		Other Relative	4
		Neighbour	5
		Health worker	6
		Social worker	7
		Counsellor	8
		Mass media (TV, Radio)	9
		Outreach/training	10
		Internet	11
94	From whom/where did you hear about postpartum depression? (You can tick all that apply)	Friend(s)	1
		Parent(s)	2
		Husband/Partner	3
		Other Relative	4
		Neighbour	5
		Health worker	6
		Social worker	7
		Counsellor	8
		Mass media (TV, Radio)	9
		Outreach/training	10
		Internet	11
	Other (Specify)		

95. What are the symptoms of prenatal depression? (You can tick all that apply)

SYMPTOMS OF PRENATAL DEPRESSION	Yes=1	No=2
Sleeping too much		

Getting difficulty in sleeping		
Crying easily even for little things		
Trouble concentrating, remembering things, and making decisions		
A strong sense of failure and of no use in life		
Feeling responsible or regretful for your current situation		
Loss of interest or pleasure in things you love doing		
Persistently feeling down/ unhappy and discouraged because of a situation		
Withdrawal from family and friends		
Loss of interest in caring for yourself		
Having joy and being happy in life		
Constantly having changes in behaviour to highs and lows		
Eating much more than usual		
Having no desire for food		
Losing weight without the desire to do so		
Gaining weight without the desire to do so		
Feeling restless or having trouble sitting still		
Feelings of anger often over seemingly small matters		
Aches or pains, headaches that do not have a clear physical cause or do not ease even with treatment		
Recurrent thoughts of dying, killing, or harming oneself		
Other (specify)		
Don't know	99	

96. What are the symptoms of postpartum depression?

SYMPTOMS OF POSTPARTUM DEPRESSION	Yes=1	No=2
Sleeping too much		
Difficulty sleeping even when the baby is sleeping		
Crying easily even for little things		
Trouble concentrating, remembering things, and making decisions		
A strong sense of failure and of no use in life		
Feeling responsible or regretful for your current situation		
Loss of interest or pleasure in things you love doing		
Persistently feeling down/ unhappy and discouraged because of a situation		
Withdrawal from family and friends		
Loss of interest in caring for yourself		
Having joy and being happy in life		
Constantly having changes in behaviour to highs and lows		
Eating much more than usual		
Having no desire for food		
Losing weight without the desire to do so		
Gaining weight without the desire to do so		
Feeling restless or having trouble sitting still		
Feelings of anger often over seemingly small matters		
Aches or pains, headaches that do not have a clear physical cause or do not ease even with treatment		
Recurrent thoughts of dying, killing, or harming oneself or the baby		
Persistent doubts about the ability to care for the baby		
Trouble forming an emotional attachment with the baby		
Other (specify)		
Don't know	99	

97. What factors do you think can cause prenatal depression? (You can tick all that apply)

FACTORS THAT CAUSE PRENATAL DEPRESSION	Yes=1	No=2
Getting pregnant at a young age		
Getting pregnant when you did not intentionally plan about		
When you do not have the required resources to take care of oneself and the expected baby		
Lack of support from family and friends		
Having a family member with a history of depression or another mental illness		
Negative feelings about the pregnancy		
Having an HIV positive status and fear for infecting the baby		
Having an HIV positive status and fear for the future		

Heavy drinking of alcohol		
Smoking cigarettes and other substance abuse		
Suffering constant abuse from a loved one		
Experiences of complications during pregnancy such as high blood pressure, vaginal bleeding, being informed the unborn baby has poor growth		
Having a previous experiences of mental illness		
Other (specify)		
Don't know	99	

98. What factors do you think can cause postpartum depression? (You can tick all that apply)

FACTORS THAT CAUSE POSTPARTUM DEPRESSION	Yes=1	No=2
When you do not have the required resources to take care of oneself and the expected baby		
Lack of support from family and friends		
Having a family member with a history of depression or another mental illness		
Having an HIV positive status and fear for infecting the baby		
Having an HIV positive status and fear for the future		
Heavy drinking of alcohol		
Smoking cigarettes and other substance abuse		
Suffering constant abuse from a loved one		
Having a previous experience of mental illness		
Experiencing complications after delivery such as excessive vaginal bleeding, vaginal tear, fever, etc.		
Giving birth to a baby girl when you wanted a baby boy		
Giving birth to a baby boy when you wanted a baby girl		
Lack of enough sleep		
Other (specify)		
Don't know	99	

99. What do you think are the effects of prenatal depression in mothers and/or their babies? (You can tick all that apply)

EFFECTS OF PRENATAL DEPRESSION	Yes=1	No=2
Babies can be born too early before the 37 weeks of pregnancy have been completed		
Depression can lead to a child being born with low weight		
The pregnancy may be lost due to depression		
Depression may undermine adherence to antiretroviral regimens in HIV positive mothers which may influence mother-infant HIV transmission		
High thoughts of ending one's life in mothers who are depressed		
Other (specify)		
Don't know	99	

100. What do you think are the effects of postpartum depression in mothers and/or their babies? (You can tick all that apply)

EFFECTS OF POSTPARTUM DEPRESSION	Yes=1	No=2
Depression can negatively affect how the mother interacts with her baby		
Children of depressed mothers have high chances of developing mental health problems later in years		
High thoughts of ending one's life in mothers who are depressed		
Depression may undermine adherence to antiretroviral regimens in HIV positive mothers which may influence mother-infant HIV transmission		
Babies of depressed mothers may issues in interacting with others as they grow		
Other (specify)		
Don't know	99	

KNOWLEDGE OF PROFESSIONAL HELP FOR DEPRESSION

Q No	Questions	Response Options (Coding Categories)	Code
101	Do you think there is professional help and/or treatment for depressed mothers who are pregnant?	Yes, there is and it is adequate	1
		Yes, there is but it is minimal	2
		I am not sure if there is any	3
		No, there isn't	4
		Don't know	99
102	Do you think there is professional help and/or treatment for depressed mothers who have given birth?	Yes, there is and it is adequate	1
		Yes, there is but it is minimal	2
		I am not sure if there is any	3

		No, there isn't		4
		Don't know		99
103	Where can depressed mothers who are pregnant obtain the professional help and/or treatment from?(You can tick all that apply)	General public hospital		1
		Private hospital		2
		Mental health hospital		3
		Clinics		4
		Fieldworker		5
		Pharmacy /chemical store		6
		PMTCT clinics		7
		Don't know		99
		Other (Specify)		
104	Where can depressed mothers who have given birth obtain the professional help and/or treatment from?(You can tick all that apply)	General public hospital		1
		Private hospital		2
		Mental health hospital		3
		Clinics		4
		Fieldworker		5
		Pharmacy /chemical store		6
		PMTCT clinics		7
		Don't know		99
		Other (Specify)		
105	Would you be willing to report the symptoms of depression you may be experiencing to a health professional?	Yes		1
		No		2
106	Would these factors prevent you from reporting depression symptoms to a health professional? (You can tick all that apply)	Fear of being discriminated by the health professionals since mental illness is associated with bad omen	Yes	1
			No	2
		Fear of being discriminated by my family since mental illness is associated with bad omen	Yes	1
			No	2
		Fear of being judged since mental illness is associated with having done something that might have annoyed God	Yes	1
			No	2
		Fear of being poorly treated since people suffering from mental illness are considered useless	Yes	1
			No	2
		Fear of having my baby taken away from me because of my mental status.	Yes	1
			No	2
Traditionally, a person with mental illness is believed to be bewitched and, therefore, there is no way witchcraft can be taken to the health professionals	Yes	1		
	No	2		
Other (Specify)				
107	Do you believe in seeking treatment when having depressive symptoms from the following people?	A Traditional healer	Yes	1
			No	2
		A Pastor/ Prophet	Yes	1
			No	2
Other (Specify)				
108	Why would you prefer seeking treatment from the people mentioned above?	To seek for God's healing since issues with mental health is a sign that God has punished you for doing something wrong	Yes	1
			No	2
		Traditional healers have power from our ancestors to heal mental health issues	Yes	1
			No	2
		Traditional healers have power from our ancestors to tell who is making you suffer those mental health issues	Yes	1
			No	2
		The required hospital procedures before seeing the doctor are too long for me handle	Yes	1
			No	2

		Other (<i>Specify</i>)			
SECTION H: CHALLENGES					
Q No	Questions	Response Options (Coding Categories)	Code		
109	What challenges are you faced with? (You can tick all that apply)	There is a long distance from my home to the health facility	Yes No	1 2	
		The required procedures to follow during the clinic visits are too many and tiring	Yes No	1 2	
		One has to wait several hours before receiving the services	Yes No	1 2	
		The waiting room at the clinic is very small which makes self-expression to the health personnel difficult in fear of being overheard by fellow clients	Yes No	1 2	
		The workers at the health facility are not enough which delays the process of receiving the necessary medical attention	Yes No	1 2	
		The way the health care service providers treat us is not good	Yes No	1 2	
		I face financial challenges to take care of myself and the pregnancy	Yes No	1 2	
		I face financial challenges to take care of myself and the baby	Yes No	1 2	
		My partner does not give me any practical help when in need	Yes No	1 2	
		My relatives do not give me any practical help when in need	Yes No	1 2	
		I am treated in unpleasant way by others because of my HIV status	Yes No	1 2	
		The new motherhood experience has increased my work load and responsibility towards the child/ children at home single handily	Yes No	1 2	
		Other (<i>Specify</i>)			
		1110	What is the distance between your place of residence and the health facility you attend?	_____	99
		111	What means of transport do you use to go to the health facility?	I use public transport on every clinic visit to the health facility	1
				I use private transport/ dropping on every clinic visit to the health facility	2
I walk to the health facility on every clinic visit to the health facility	3				
Other (<i>Specify</i>)					
		Don't know	99		

HOUSEHOLD FOOD INSECURITY

Q No	Questions	Response Options (Coding Categories)	Code
112	In the past four weeks, did you worry that your household would not have enough food?	Yes	1
		No (If NO>>Q114)	2
113	How often did this happen?	Rarely (once or twice in the past four weeks)	1

		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
114	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	Yes	1
		No (If NO>>Q116)	2
115	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
116	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	Yes	1
		No (If NO>>Q118)	2
117	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
118	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	Yes	1
		No (If NO>>Q120)	2
119	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
120	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes	1
		No (If NO>>Q122)	2
121	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
122	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	Yes	1
		No (If NO>>Q124)	2
123	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
124	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	Yes	1
		No (If NO>>Q126)	2
125	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3

126	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	Yes	1
		No (If NO>>Q128)	2
127	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3
128	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	Yes	1
		No (If NO>>Q130)	2
129	How often did this happen?	Rarely (once or twice in the past four weeks)	1
		Sometimes (three to ten times in the past four weeks)	2
		Often (more than ten times in the past four weeks)	3

SECTION I: SUPPORT SYSTEMS AND INTERVENTIONS

Q No	Questions	Response Options (Coding Categories)	Code
130	Have you received any support from your family/ friends?	Yes	1
		No (If NO>>Q132)	2
131	Which forms of support do you receive from your family/ friends? (<i>You can tick all that apply</i>)	They encourage me when I am down	1
		They help me with the physical activities at home	2
		They support me financially	3
		They provide me with food	4
		They always visit to check on me	5
		Other (<i>Specify</i>)	
132	Have you received any support from religious bodies/ community?	Yes	1
		No (If NO>>Q134)	2
133	Which forms of support do you receive from your religious bodies/ community? (<i>You can tick all that apply</i>)	They encourage me when I am down	1
		They help me with the physical activities at home	2
		They support me financially	3
		They provide me with food	4
		They always visit to check on me	5
		My church leaders pray for me	6
134	What forms of support do you receive from your health facilities? (<i>You can tick all that apply</i>)	I receive counselling services from the health care providers	1
		I get ARV medication from the health care providers	2
		I get antidepressant medication from the health care providers	3
		I am referred to other service providers to receive other services I need	4
		I meet with other clients at my health facility which enables us to interact and share our experiences	5
		Other (<i>Specify</i>)	

SECTION J: COPING STRATEGIES

Q No	Questions	Response Options (Coding Categories)	Code
135	How do you deal with the challenges you face? <i>You can tick all that apply</i>	I ask for help from my relatives	1
		I ask for help from friends	2
		I avoid situations that might stress me	3

	I avoid people who might stress me	4
	I distract myself by involving in activities that will make me forget the challenges	5
	I pray and put my trust in God that He will help me	6
	I accepted my situation since I cannot change anything about it	7
	Since I am alone by myself, I work hard to provide for myself and my baby	8
	I take some alcohol to forget all my troubles	9
	I listen to music to keep me calm	10
	Taking some sticks of cigarettes help me calm down	11
	I sometimes think of ending my life so that I don't suffer again in life	12
	Other (<i>Specify</i>)	

Thanks for participating in this study



Research instrument D2: In-depth interview guide for pregnant women Living with HIV



UNIVERSITY OF GHANA
REGIONAL INSTITUTE FOR POPULATION STUDIES

Study title: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

In-depth Interview Guide: Pregnant Women Living With HIV

Introduction and Permission / consent form

Hello. My name is Kyomuhendo Clare from the Regional Institute for Population Studies, University of Ghana, Legon. Thank you for agreeing to talk to me. I am conducting a study on The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the Ministry of Health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. The study focuses on understanding the factors that contribute to depression, what you know about prenatal and postpartum depression, and any prenatal and/or postpartum experiences as a Woman Living with HIV.

I would like to assure that the details of this discussion will not be shared with anyone else; and your names will be kept confidential. So, feel free to express your opinions openly. If you do not feel comfortable with this arrangement, you do not have to participate. If you decide not to grant me this interview, there will be no penalty for it. Also, to be able to remember what you said during this meeting, I kindly ask your permission to record this interview using a tape recorder. It will also enable us move faster with this discussion as I do not have to write everything you say. No other person will be able to listen to the recording, and it will be deleted when we have finished the study. Thank you very much for your co-operation.

Do I have your permission to commence with the interview?

Warm-up

How do you feel about coming here today?

Section A: Demographic Information

1. What is your name?
2. How old are you?
3. What is your religion?
4. What is your highest level of education?
5. What is your current marital status?
6. How many children have you ever had?
7. How many people do you live with?
8. Who is the breadwinner of this household?
9. What work do you do
10. What is your employment status?
11. For how long have you been living with HIV?
12. What is your current source of income?
13. What is the distance between your home and the medical facilities for your PMTCT?

Section B: Experiences of current pregnancy

1. Can you tell me the story of this pregnancy, how has your pregnancy been like?
2. What were your thoughts about getting pregnant?
 - Probe for plans of pregnancy, desires for pregnancy, expectations
 - Probe for her feelings (both positive and negative) about the pregnancy after she discovered that she was pregnant
 - Probe how her thoughts and feelings about the pregnancy changed over time
3. How did your partner feel about your getting pregnant?
 - Probe for perceptions of her partners' plans for pregnancy, desires for pregnancy and expectations

- Explore whether her partner knew her HIV status around the time she got pregnant and how HIV may have affected his thinking.
 - Explore partner's HIV status.
- 4 (a) How do you feel during this pregnancy? I am interested in things that affect your mind
- Explore feelings (both positive and negative) and experiences
 - If relevant to depression, probe further for emotional & somatic symptoms. (Symptoms of depression may include fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty)
- (b) For each feeling:
- Can you tell me more about it?
 - Why do you think you feel this way?
 - How is this impacting your daily life? (both positive and negative)
 - If symptoms are problematic, how are you trying to fix or getting help?
 - How is this different from your other pregnancies? (if the person has had previous pregnancy)
5. (a) What are the challenges you face that could affect your mental wellbeing?
- (b) For each challenge:
- Can you tell me more about it?
 - Why do you think is causing it?
 - How is this affecting your daily life?
 - How are you trying to fix or getting help for this problem? Explore the negative coping strategies, e.g., alcoholism, smoking, suicide contemplation, etc.)

Section C: Experiences of HIV testing and the pregnancy

6. As part of PMTCT, you were asked to test for HIV. Can you tell me what that was like?
- Probe how she felt learning about her status?
 - Probe if knowing her diagnosis changed how you feels about herself? How/what changed?
 - Probe if learning about her diagnosis changed how she feels about her pregnancy?
7. Most pregnant mothers living with HIV experience worries from time to time. Have you experienced any such worrying thoughts recently?
8. Do you have any worries about your unborn baby? Can you tell me a bit about these worries?
9. Have you told other people about your diagnosis?
10. If yes: How have they reacted? If no: any reasons why you have not shared with anyone?
11. Is there anything else you would like to add about your experience after testing for HIV?
12. Describe the sources of support where you can get help when in need.

Section D: Knowledge of prenatal and postpartum depression

13. Can you please explain to me what you know about depression (knowledge and awareness of depression)?
- 14 (a) What are some emotional challenges or problems that may generally affect women living with HIV during pregnancy? (By mental health problems, I am talking about things like feeling nervous or worried or sad).
- Probe further for emotional and somatic symptoms of depression (e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty)
- (b) For each problem mentioned above:
- I. Can you tell me more about it?
 - II. How does it affect women's health?
 - III. How does it affect people's daily life?
 - IV. What do people call this problem?
 - V. How do women deal with this problem?
 - VI. Tell me about how HIV impacts this problem?
 - VII. Where can people go to get help for this problem?
- Probe for perceptions of seeking support from traditional healers and religious leaders
- 15 What are the risks and long-term outcomes of prenatal depression in women living with HIV? Please describe them.

Ending questions

As a reminder, I am interested in learning about the experiences, the changes in thoughts, emotions, and body that occur in women living with HIV during pregnancy. Is there anything else you believe is important for me to know about your prenatal experience before wrapping up our interview? Thank you for spending the time talking to me.

Research instrument D3: In-depth interview guide for Women Living with HIV who have recently given Birth



UNIVERSITY OF GHANA
REGIONAL INSTITUTE FOR POPULATION STUDIES

Study title: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

In-depth Interview Guide: Women Living With HIV Who Have Recently Given Birth

Introduction and Permission / consent form

Hello. My name is Kyomuhendo Clare from the Regional Institute for Population Studies, University of Ghana, Legon. Thank you for agreeing to talk to me. I am conducting a study on The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the Ministry of Health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. The study focuses on understanding the factors that contribute to depression, what you know about prenatal and/ or postpartum depression, and any postpartum experiences as a Woman Living with HIV.

I would like to assure that the details of this discussion will not be shared with anyone else; and your names will be kept confidential. So, feel free to express your opinions openly. If you do not feel comfortable with this arrangement, you do not have to participate. If you decide not to grant me this interview, there will be no penalty for it. Also, to be able to remember what you said during this meeting, I kindly ask your permission to record this interview using a tape recorder. It will also enable us move faster with this discussion as I do not have to write everything you say. No other person will be able to listen to the recording, and it will be deleted when we have finished the study. Thank you very much for your co-operation.

Do I have your permission to commence the interview?

Warm-up

How do you feel about coming here today?

Section A: Demographic Information

1. What is your name?
2. What old are you?
3. What is your religion?
4. What is your highest level of education?
5. What is your current marital status?
6. How many children have you ever had?
7. How many people do you live with?
8. Who is the breadwinner of this household?
9. What work do you do?
10. What is your employment status?
11. For how long have you been living with HIV?
12. What is your current source of income?
13. What is the distance between your home and the medical facilities for your PMTCT?

Section B: Experiences of current child birth

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

1. Can you tell me the story of your current birth, how has your life been like?
2. (a) How did you feel in the first weeks and months after giving birth?
 - Probe for positive feelings/ experiences in the weeks to months after giving birth
 - Probe for negative feelings/ biggest concerns in the weeks to months after giving birth
 - Probe further for emotional and somatic symptoms of depression (*e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty*)
- (b) For each feeling:
 - Can you tell me more about it?

- Why do you think you felt this way?
- How does this affect your daily life?
- If symptoms were problematic, how are you trying to fix or get help? Explore the negative coping strategies, e.g., alcoholism, smoking, suicide contemplation, etc.)
- How is this different from your experience with other child birth? (if the person has had previous child birth).

Section C: Experiences of HIV positive status and child birth

3. Tell me a little about your child and how he/she is doing.
4. Most mothers living with HIV experience worries from time to time. Have experienced any such worrying thoughts recently?
5. Do you have any worries about your baby? Can you tell me a bit about these worries?
6. Do you worry about coping with the baby? Do you feel you have support?
7. Has your child been tested for HIV? *If yes*, can you tell me a little about that?
 - Probe how she felt about taking the child for testing?
 - Probe on what was the result?
 - Probe how she felt after learning about the baby's result?
 - Probe if learning about the baby's diagnosis changed how she feels about him/her?
 - Probe if she has told anyone else about the baby's result?
8. If child not yet tested for HIV, explore why not.
9. How are your current experiences affecting your life generally?
 - *Explore at personal level, family level and perceptions of community.*
 - *Explore for positive changes and experiences, and negative experiences as well*
 - *Describe the sources of support where you can get help when in need?*

Section D: Knowledge of prenatal and postpartum depression

10. Can you please explain to me what you know about depression (knowledge and awareness of depression)?
11. (a) What are the emotional or mental health problems that may affect women living with HIV after giving birth? (By mental health problems, I am talking about things like feeling nervous or worried or sad).
 - Probe further for emotional and somatic symptoms of depression (*e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty*)
- (b) For each problem mentioned above:
 - I. Can you tell me more about it?
 - II. How does it affect women's health?
 - III. How does it affect people's daily life?
 - IV. What do people call this problem?
 - V. How do women deal with this problem?
 - VI. Tell me about how HIV impacts this problem?
 - VII. Where can people go to get help for this problem?
 - Probe for perceptions of seeking support from traditional healers and religious leaders
12. (a) What are some emotional or mental health problems that may affect women living with HIV in the first few weeks to months after giving birth?
 - *Probe further for emotional and somatic symptoms of depression (e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty)*
- (b) For each problem mentioned above:
 - I. Can you tell me more about it?
 - II. How does it affect women's health?
 - III. How does it affect people's daily life?
 - IV. What do people call this problem?
 - V. How do women deal with this problem?
 - VI. Tell me about how HIV impacts this problem?
 - VII. Where can people go to get help for this problem?
13. Can you please explain to me what you know about depression (knowledge and awareness of depression)?
14. What are the risks and long-term outcomes of postpartum depression in women living with HIV? Please describe them.

Ending questions

As a reminder, I am interested in learning about the experiences, the changes in thoughts, emotions, and body that occur in women living with HIV a few weeks and months after giving birth. Is there anything else you believe is important for me to know about your postpartum experience before wrapping up our interview?
Thank you for spending the time talking to me.

Research instrument D4: In-depth interview guide for HIV negative pregnant women



UNIVERSITY OF GHANA
REGIONAL INSTITUTE FOR POPULATION STUDIES

Study title: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

In-depth Interview Guide: HIV Negative Pregnant Women

Introduction and Permission / consent form

Hello. My name is Kyomuhendo Clare from the Regional Institute for Population Studies, University of Ghana, Legon. Thank you for agreeing to talk to me. I am conducting a study on The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the Ministry of Health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. The study focuses on understanding the factors that contribute to depression, what you know about prenatal and/or postpartum depression, and any prenatal experiences as an HIV negative pregnant woman.

I would like to assure that the details of this discussion will not be shared with anyone else; and your names will be kept confidential. So, feel free to express your opinions openly. If you do not feel comfortable with this arrangement, you do not have to participate. If you decide not to grant me this interview, there will be no penalty for it. Also, to be able to remember what you said during this meeting, I kindly ask your permission to record this interview using a tape recorder. It will also enable us move faster with this discussion as I do not have to write everything you say. No other person will be able to listen to the recording, and it will be deleted when we have finished the study. Thank you very much for your co-operation.

Do I have your permission to commence the interview?

Warm-up

How do you feel about coming here today?

Section A: Demographic Information

1. What is your name?
2. How old are you?
3. What is your religion?
4. What is your highest level of education?
5. What is your current marital status?
6. How many children have you ever had?
7. How many people do you live with?
8. Who is the breadwinner of this household?
9. What work do you do?
10. What is your employment status?
11. What is your current source of income?
12. What is the distance between your home and the medical facilities for your ANC?

Section B: Experiences of current pregnancy

1. Can you tell me the story of this pregnancy, how has your pregnancy been like?
2. What were your thoughts about getting pregnant?
 - Probe for plans of pregnancy, desires for pregnancy, expectations
3. What were your thoughts about getting pregnant?
 - Probe for plans of pregnancy, desires for pregnancy, expectations
 - Probe for her feelings (both positive and negative) about the pregnancy after she discovered that she was pregnant
 - Probe how her thoughts and feelings about the pregnancy changed over time
4. How did your partner feel about your getting pregnant?
 - Probe for perceptions of her partners' plans for pregnancy, desires for pregnancy and expectations
5. (a) How do you feel during this pregnancy? I am interested in things that affect your mind
 - Explore feelings (both positive and negative) and experiences
 - If relevant to depression, probe further for emotional & somatic symptoms. (Symptoms of depression may include fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in

things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty)

- (b) For each feeling:
- Can you tell me more about it?
 - Why do you think you feel this way?
 - How is this impacting your daily life? (both positive and negative)
 - If symptoms are problematic, how are you trying to fix or getting help?
 - How is this different from your other pregnancies? (if the person has had previous pregnancy)

4 (a) What are the challenges you face that could affect your mental wellbeing?

- (b) For each challenge:
- Can you tell me more about it?
 - Why do you think is causing it?
 - How is this affecting your daily life?
 - How are you trying to fix or getting help for this problem? Explore the negative coping strategies, e.g., alcoholism, smoking, suicide contemplation, etc.)

Section C: Experiences of HIV testing and the pregnancy

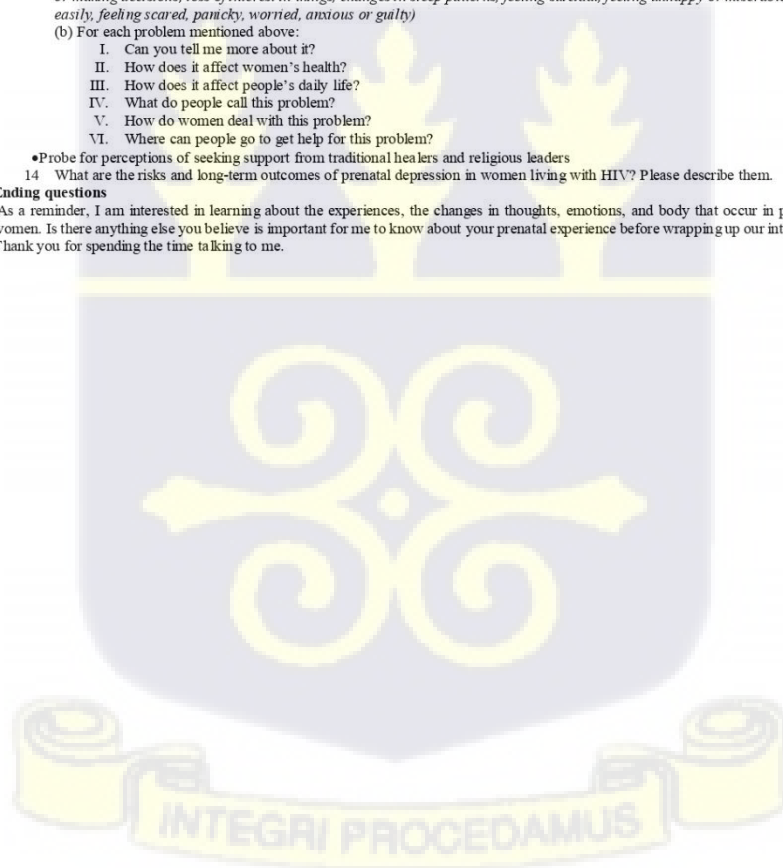
7. As part of PMTCT you were asked to test for HIV. Can you tell me what that was like?
8. As part of PMTCT, you were asked to test for HIV. Can you tell me what that was like?
 - Probe how she felt learning about her status?
 - Probe if knowing her diagnosis changed how you feels about herself? How/what changed?
 - Probe if learning about her diagnosis changed how she feels about her pregnancy?
9. Most pregnant mothers experience worries from time to time. Have you experienced any such worrying thoughts recently?
10. Do you have any worries about your unborn baby? Can you tell me a bit about these worries?
11. Describe the sources of support where you can get help when in need.

Section D: Knowledge of prenatal and postpartum depression

12. Can you please explain to me what you know about depression (knowledge and awareness of depression)?
- 13 (a) What are some emotional or mental health problems that may generally affect pregnant women? (By mental health problems, I am talking about things like feeling nervous or worried or sad).
 - Probe further for emotional and somatic symptoms of depression (e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty)
- (b) For each problem mentioned above:
 - I. Can you tell me more about it?
 - II. How does it affect women's health?
 - III. How does it affect people's daily life?
 - IV. What do people call this problem?
 - V. How do women deal with this problem?
 - VI. Where can people go to get help for this problem?
- Probe for perceptions of seeking support from traditional healers and religious leaders
- 14 What are the risks and long-term outcomes of prenatal depression in women living with HIV? Please describe them.

Ending questions

As a reminder, I am interested in learning about the experiences, the changes in thoughts, emotions, and body that occur in pregnant women. Is there anything else you believe is important for me to know about your prenatal experience before wrapping up our interview? Thank you for spending the time talking to me.



Research instrument D5: In-depth interview guide for HIV Negative Women Who Have Recently Given Birth



REGIONAL INSTITUTE FOR POPULATION STUDIES

Study title: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

In-depth Interview Guide: HIV Negative Women Who Have Recently Given Birth

Introduction and Permission / consent form

Hello. My name is Kyomuhendo Clare from the Regional Institute for Population Studies, University of Ghana, Legon. Thank you for agreeing to talk to me. I am conducting a study on The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the Ministry of Health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. The study focuses on understanding the factors that contribute to depression, what you know about prenatal and/ or postpartum depression, and any postpartum experiences as an HIV negative woman who has given birth.

I would like to assure that the details of this discussion will not be shared with anyone else; and your names will be kept confidential. So, feel free to express your opinions openly. If you do not feel comfortable with this arrangement, you do not have to participate. If you decide not to grant me this interview, there will be no penalty for it. Also, to be able to remember what you said during this meeting, I kindly ask your permission to record this interview using a tape recorder. It will also enable us move faster with this discussion as I do not have to write everything you say. No other person will be able to listen to the recording, and it will be deleted when we have finished the study. Thank you very much for your co-operation.

Do I have your permission to commence the interview?

Warm-up

How do you feel about coming here today?

Section A: Demographic Information

1. What is your name?
2. How old are you?
3. What is your religion?
4. What is your highest level of education?
5. What is your current marital status?
6. How many children have you ever had?
7. How many people do you live with?
8. Who is the breadwinner of this household?
9. What work do you do?
10. What is your employment status?
11. For how long have you been living with HIV?
12. What is your current source of income?
13. What is the distance between your home and the medical facilities for your PNC?

Section B: Experiences of most recent child birth

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

1. Can you tell me the story of your current birth, how has your life been like?
2. (a) How did you feel in the first weeks and months after giving birth?
 - Probe for positive feelings/ experiences in the weeks to months after giving birth
 - Probe for negative feelings/ biggest concerns in the weeks to months after giving birth
 - Probe further for emotional and somatic symptoms of depression (e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty)
- (b) For each feeling:
 - Can you tell me more about it?
 - Why do you think you felt this way?

- How does this affect your daily life?
- If symptoms were problematic, how are you trying to fix or get help? Explore the negative coping strategies, e.g., alcoholism, smoking, suicide contemplation, etc.)
- How is this different from your experience with other child birth? (if the person has had previous child birth).
- 3. Tell me a little about your child and how he/she is doing.
- 4. Most mothers who have just given birth experience worries from time to time. Have you experienced any such worrying thoughts recently?
- 5. Do you have any worries about your baby? Can you tell me a bit about these worries?
 - Probe if she worries about coping with the baby
 - Probe if she feels she has the support
- 6. How are your current experiences affecting your life generally?
 - *Explore at personal level, family level and perceptions of community.*
 - *Explore for positive changes and experiences, and negative experiences as well*
 - *Describe the sources of support where you can get help when in need?*

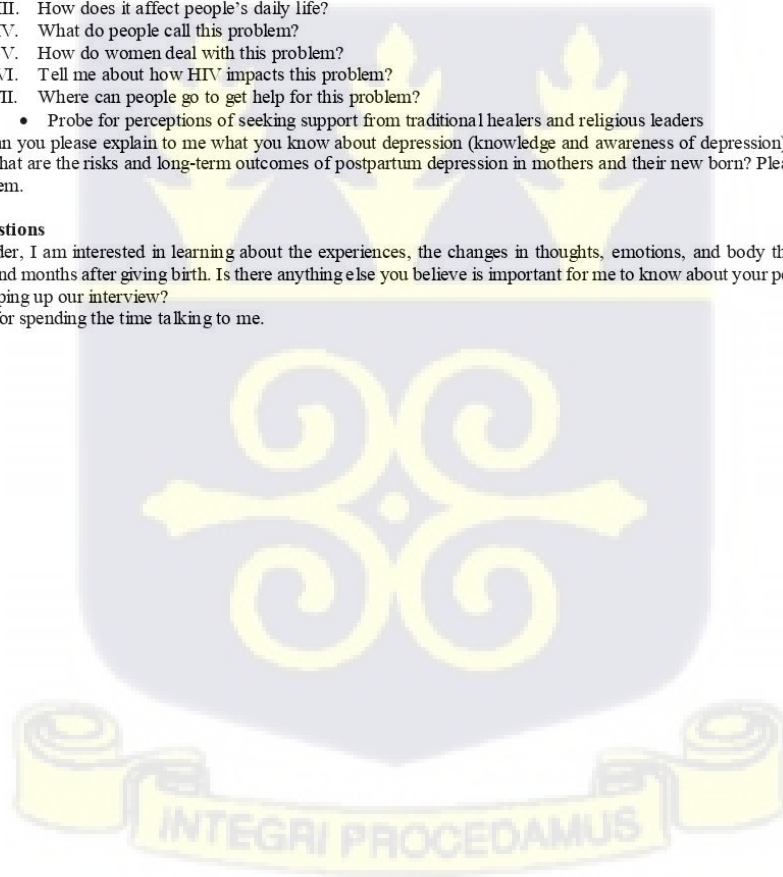
Section D: Knowledge of prenatal and postpartum depression

7. Can you please explain to me what you know about depression (knowledge and awareness of depression)?
- 9 (a) What are some emotional or mental health problems that may affect women in the first few weeks to months after giving birth? (By mental health problems, I am talking about things like feeling nervous or worried or sad).
 - Probe further for emotional and somatic symptoms of depression (*e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty*)
- (b) For each problem mentioned above:
 - I. Can you tell me more about it?
 - II. How does it affect women's health?
 - III. How does it affect people's daily life?
 - IV. What do people call this problem?
 - V. How do women deal with this problem?
 - VI. Tell me about how HIV impacts this problem?
 - VII. Where can people go to get help for this problem?
 - Probe for perceptions of seeking support from traditional healers and religious leaders
10. Can you please explain to me what you know about depression (knowledge and awareness of depression)?
11. What are the risks and long-term outcomes of postpartum depression in mothers and their new born? Please describe them.

Ending questions

As a reminder, I am interested in learning about the experiences, the changes in thoughts, emotions, and body that occur in women a few weeks and months after giving birth. Is there anything else you believe is important for me to know about your postpartum experience before wrapping up our interview?

Thank you for spending the time talking to me.



Research instrument D6: Key informant interview guide for personnel working with HIV negative pregnant women and those who have recently given birth



UNIVERSITY OF GHANA

REGIONAL INSTITUTE FOR POPULATION STUDIES

Study title: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

Key informant Interview Guide: Personnel Working with HIV Negative Pregnant Women and Those Who Have Recently Given Birth

Introduction and Permission / consent form

Hello. My name is Kyomuhendo Clare from the Regional institute for Population Studies, University of Ghana, Legon. Again thank you for agreeing to talk to me. I am conducting a study on The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the Ministry of Health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. I am interested in knowing your experiences in working with women during their prenatal and postpartum periods, particularly, their mental health experiences, and if mental checkup is done on these women when they come for antenatal and postnatal care, the mental health support services provided, and whether there are some social cultural norms regarding mental health testing and health seeking behavior.

I need to remind you that if you decide not to grant me this interview, there will be no penalty for it. However, I will be grateful if you will like to talk to us. Also to be able to remember what you said during this meeting, I kindly ask your permission to allow me to record this interview using a tape recorder. It will also enable us move faster with this discussion as I do not have to write everything you say. **Please do I have the permission to record the discussion we are going to have?** Again, no other person will be able to listen to the recording, and it will be deleted when we have finished the study. Thank you very much for your co-operation.

Before we begin the discussion, do you have any question for me?

Do I have your permission to commence the interview?

Warm up

Let me start by asking some details about you and your job

SECTION A: Demographic Information

1. What is your name?
2. How old are you?
3. What is your religion?
4. What is your highest level of education?
5. Your job title?
6. For how long have you been working in that position?

Section B: Views about the experiences of being pregnant and/or after giving birth

1. (a) What are the emotional or mental health problems that may affect mothers during pregnancy or after giving birth? Explain
 - Probe further for emotional and somatic symptoms of depression (e.g. *fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty*)
- (b) For each emotions mentioned above:
 - How does it affect women's health?
 - How does it affect people's daily life?
 - What do people call this problem?
 - How do women deal with this problem?
2. What are the mental health experiences of women who are pregnant? *Explore both positive and negative experiences*
3. What are the mental health experiences of women who have given birth? *Explore both positive and negative experiences*
4. What do most mothers worry about during pregnancy or after giving birth?
5. What are the challenges pregnant women face during prenatal periods that could affect their mental health?
6. (a) What are the challenges women who have given birth face during postpartum periods that could affect their mental health?
 - (b) For each challenge:
 - Can you tell me more about it?
 - Why do you think is causing it?
 - How is this affect the women's daily lives?
 - How do they try to fix or get help for this problem? (Explore the negative coping strategies e.g. alcoholism, smoking, suicide contemplation, etc.)

Section C: Support Systems and interventions

7. What are the sources of mental health support available for women during their prenatal and postpartum periods?
 - Explore government and NGOs support
 - Explore informal support (e.g. family, friends, churches, etc.)

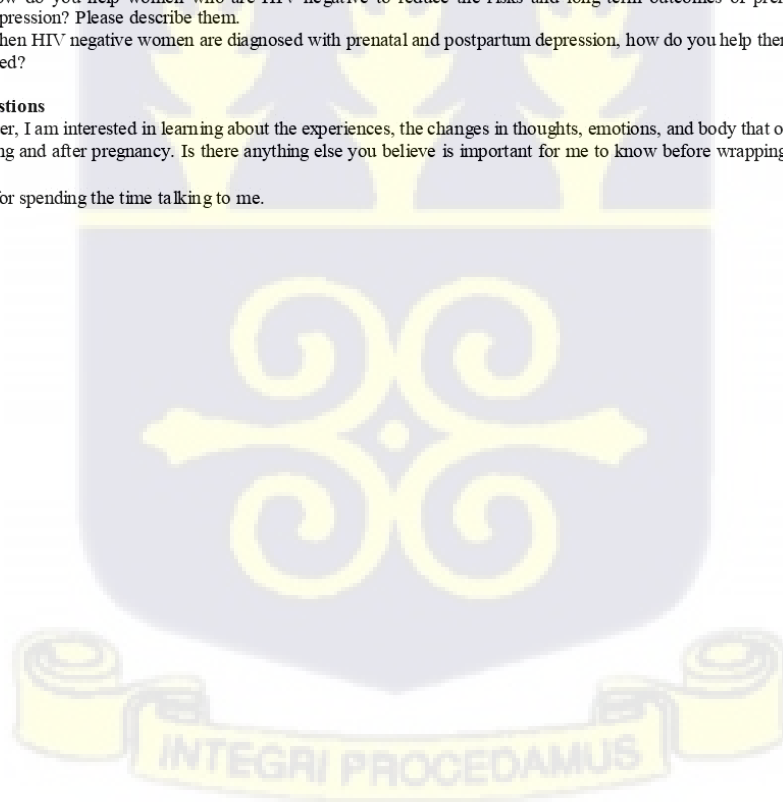
Section D: Knowledge and health professionals' perceptions of prenatal and postpartum depression

8. How do health professionals perceive prenatal and postpartum depression, and how do they deal with it?
9. What are your personal attitudes about prenatal and postpartum depression? Why?
 - Probe if prenatal and postpartum depression in HIV negative women is a concern (*Why or Why not?*)
 - Probe for the risks and long-term outcomes of prenatal and postpartum depression in HIV negative women
 - Probe for factors that influence prenatal and postpartum depression among HIV negative women
10. What influences your attitude towards prenatal and postpartum depression in HIV negative women? Explain how and why?
11. What are the factors that enable health practitioners to recognize, diagnose, and treat symptoms related with prenatal and postpartum depression in HIV-negative women?
12. What are the factors that hinder health professionals from recognizing, diagnosing, and treating symptoms related with prenatal and postpartum depression in HIV-negative women?
13. What factors assist you in managing the symptoms of pregnancy and postpartum depression in HIV-negative women? Please elaborate.
14. What factors hinder you in managing the symptoms of prenatal and postpartum depression HIV-negative women? (*Probe for cultural influence*)
15. What could be done to help you in easily managing the symptoms of pregnancy and postpartum depression in HIV-negative women?
16. What circumstances might make it difficult for you to gain more knowledge about prenatal and postpartum depression in HIV-negative women?
17. What can be done to assist you in gaining more knowledge about prenatal and postpartum depression in HIV-negative women?
18. How do you help reproductive-aged women who are HIV negative to gain appropriate knowledge about the risks and long-term outcomes of prenatal and postpartum depression?
19. How do you help women who are HIV negative to reduce the risks and long-term outcomes of prenatal and postpartum depression? Please describe them.
20. When HIV negative women are diagnosed with prenatal and postpartum depression, how do you help them to get the help they need?

Ending questions

As a reminder, I am interested in learning about the experiences, the changes in thoughts, emotions, and body that occur in HIV negative women during and after pregnancy. Is there anything else you believe is important for me to know before wrapping up our interview?

Thank you for spending the time talking to me.



Research instrument D7: Key informant interview guide for personnel working with women Living with HIV who are pregnant and those who have recently given birth



REGIONAL INSTITUTE FOR POPULATION STUDIES

Study title: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

Key informant Interview Guide: Personnel Working with Women Living with HIV Who Are Pregnant and Those Who Have Recently Given Birth

Introduction and Permission / consent form

Hello. My name is Kyomuhendo Clare from the Regional Institute for Population Studies, University of Ghana, Legon. Thank you for agreeing to talk to me. I am conducting a study on The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the Ministry of Health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. I am interested in knowing your experiences in working with women living with HIV during their prenatal and postpartum periods, particularly, their mental health experiences, and if mental checkup is done on these women when they come for PMTCT, the mental health support services provided, and whether there are some social cultural norms regarding mental health testing and health seeking behaviour.

I need to remind you that if you decide not to grant me this interview, there will be no penalty for it. However, I will be grateful if you will like to talk to us. Also, to be able to remember what you said during this meeting, I kindly ask your permission to allow me to record this interview using a tape recorder. It will also enable us move faster with this discussion as I do not have to write everything you say.

Please do I have the permission to record the discussion we are going to have? Again, no other person will be able to listen to the recording, and it will be deleted when we have finished the study. Thank you very much for your co-operation.

Before we begin the discussion, do you have any question for me?

Do I have your permission to commence the interview?

Warm up

Let me start by asking some details about you and your job

SECTION A: Demographic Information

1. What is your name?
2. How old are you?
3. What is your religion?
4. What is your highest level of education?
5. Your job title?
6. For how long have you been working in that position?

Section B: Views about the experiences of women living with HIV during pregnancy and/or after giving birth

1. (a) What are the emotional or mental health problems that may affect mothers living with HIV? Explain.
 - Explore both during pregnancy and after giving birth
 - Probe further for emotional and somatic symptoms of depression (*e.g. fatigue, sadness, memory issues or trouble concentrating or making decisions, loss of interest in things, changes in sleep patterns, feeling suicidal, feeling unhappy or miserable, crying easily, feeling scared, panicky, worried, anxious or guilty*)
- (b) For each emotions mentioned above:
 - How does it affect women's health?
 - How does it affect people's daily life?
 - What do people call this problem?
 - How do women deal with this problem?
 - Tell me about how HIV impacts this problem?
2. What are the mental health experiences of women who get pregnant when knowing their HIV positive status? *Explore both positive and negative experiences*

3. What are the mental health experiences of women who come to know about their HIV positive status during pregnancy? *Explore both positive and negative experiences*
4. What worries do most mothers living with HIV have from time to time?
5. What are the challenges women living with HIV face during prenatal periods that could affect their mental health?
6. (a) What are the challenges women living with HIV face during postpartum periods that could affect their mental health?
(b) For each challenge:
 - Can you tell me more about it?
 - Why do you think is causing it?
 - How does this affect the women's daily lives?
 - How do they try to fix or get help for this problem? (Explore the negative coping strategies, e.g., alcoholism, smoking, suicide contemplation, etc.)

Section C: Support Systems and interventions

7. What are the sources of mental health support available for women living with HIV during their prenatal and postpartum periods?
 - Explore government and NGOs support
 - Explore informal support (e.g., family, friends, churches, etc.)

Section D: Knowledge and health professionals' perceptions of prenatal and postpartum depression

8. How do health professionals perceive prenatal and postpartum depression
9. What are your personal attitudes about prenatal and postpartum depression in women living with HIV? Why?
 - *Probe if prenatal and postpartum depression in women living with HIV is a concern (Why or Why not?)*
 - *Probe for the risks and long-term outcomes of prenatal and postpartum depression in women living with HIV*
 - *Probe for factors that influence prenatal and postpartum depression among women living with HIV*
10. What influences your attitude towards prenatal and postpartum depression in women living with HIV? Explain how and why?
11. What are the factors that enable health practitioners to recognize, diagnose, and treat symptoms related with prenatal and postpartum depression in HIV-positive women?
12. What are the factors that hinder health professionals from recognizing, diagnosing, and treating symptoms related with prenatal and postpartum depression in HIV-positive women?
13. What factors assist you in managing the symptoms of pregnancy and postpartum depression in HIV-positive women? Please elaborate.
14. What factors hinder you in managing the symptoms of prenatal and postpartum depression HIV-positive women? (*Probe for cultural influence*)
15. What could be done to help you in easily managing the symptoms of pregnancy and postpartum depression in HIV-positive women?
16. What circumstances might make it difficult for you to gain more knowledge about prenatal and postpartum depression in HIV-positive women?
17. What can be done to assist you in gaining more knowledge about prenatal and postpartum depression in HIV-positive women?
18. How do you help reproductive-aged women living with HIV gain appropriate knowledge about the risks and long-term outcomes of prenatal and postpartum depression?
19. How do you help women living with HIV to reduce the risks and long-term outcomes of prenatal and postpartum depression? Please describe them.
20. When women living with HIV are diagnosed with prenatal and postpartum depression, how do you help them to get the help they need?

Ending questions

As a reminder, I am interested in learning about the experiences, the changes in thoughts, emotions, and body that occur in women living with HIV during and after pregnancy. Is there anything else you believe is important for me to know before wrapping up our interview?

Thank you for spending the time talking to me.



Research instrument D8: Informed consent for mothers



INFORMED CONSENT FORM FOR MOTHERS

Name of the Researcher: Clare Kyomuhendo

Name of the Institution: University of Ghana

Title of Study: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda.

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

PART 1: Information Sheet

Participant identification number (PID):	
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Introduction

I am Clare Kyomuhendo, currently studying a Doctoral Degree at the University of Ghana, at the Regional Institute for Population Studies. You are invited to take part in this study which seeks to understand the Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala, Uganda. This study seeks to gather information about the topic, which could assist the government under the ministry of health, Non-Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. This document is aimed at giving you all the necessary information you will need in deciding whether or not to participate in the study. In case you find any word that is unknown to you, do not be afraid to ask for the meaning because the researcher gladly takes the time to clarify everything to you. You are also welcome to ask any questions you have regarding the interview that are unclear to you at any moment. This is a study which is purely academic rather than provision of clinical care. The interview is expected to run between one hour and one hour thirty minutes, depending on how long you take to answer the interview questions.

Purpose of the Research Project

The purpose of this study is to understand the burden of prenatal and postpartum depression among Women Living with HIV in Kampala, Uganda. The researcher hopes to establish the level of depression in pregnant women living with HIV and those who have given birth, what you know about prenatal and postpartum depression, the factors that contribute to depression, and your prenatal or postpartum experiences. The aim of this is to obtain information so that the mental wellbeing of mothers living with HIV is understood as well as providing an expanded knowledge about the unique and common vulnerabilities women living with HIV face during prenatal and postpartum periods from their own perspectives. This will guide psychosocial interventions that meet the mental health needs of this peculiar population.

Type of Research Intervention

This research involves a structured questionnaire, and in-depth interview carried out on a one-on-one basis.

Participant's Selection (why you are being asked to participate)

You have been requested to participate in the study because you have traits like knowledge and experience in the topic matter being researched, that can help the researcher get the most accurate information.

Voluntary Participation

The participation in this research is completely voluntary. Your choice to participate in the study or not will be respected by everybody. Even if you decide not to participate in the study, you will continue to receive all of the services you normally receive at any health facility, and no one will treat you differently there. If you decide to participate, you can change your mind and withdraw from the study at any moment without affecting the services you get or are entitled to.

Procedures

The research will involve two stages of data collection. In the first stage, the research assistant(s) will help participants respond to the structured questionnaire using the Computer Assisted Personal Interview (CAPI) with tablets. Participants who will be selected for the second stage will have an interview guide administered to them to solicit information through one-on-one interview at a convenient place and time. This means that, a few questions will be asked to you and you will narrate your experiences. The interview will be audio-recorded, and complemented with notes taking. This is to enable us to remember what you said during this meeting, but details of this discussion will not be shared with anyone else; and the recording will be deleted when the study is completed. Also, your names will be kept confidential. This requires your permission to record the interview.

Duration

The interview is expected to run between one hour and one hour thirty minutes, depending on how long you take to answer the interview questions.

Risks

During this study, the researcher does not anticipate any physical or emotional risk. Nonetheless, being a participant in this type of study may cause minor discomforts and other emotional experiences that can occur in everyday life, such as being upset. Efforts will, however, be made to reduce these risks by providing counselling services through a professional counsellor or referral to the appropriate centers for redress.

Benefits

Participating in this study has no direct benefits involved. However, the information gathered could better help provide an understanding of the unique and common vulnerabilities women living with HIV are confronted with during their pregnancy and

postpartum periods. This could be used by Uganda's policy makers and stakeholders to provide psychosocial interventions that are culturally sensitive and cost-effective to meet the mental health needs of Ugandan women living with HIV.

Reimbursements/Compensation

The participants will receive 10,000 Uganda shillings as transport refund at the end of the interview.

Confidentiality

Data will be kept out of reach of public domain by storing them on a password-protected computer. Your privacy will be respected during the interview. Any personal data you provide will be kept private, and only the researcher and other collaborators will have access to any identifiable data which shall not be linked to individual personalities who participate in the study as respondents. The principle of anonymity shall be rigorously upheld through data collection and analysis. Furthermore, in reporting the findings, the researcher will not publish names or any other information that could identify participants. All data will be safeguarded from public access by storing them on a password-protected computer.

Sharing the Results

Depending on the situation, the researcher hopes to communicate the study findings with the participants one-on-one or in groups. The information will be shared at a meeting, and participants will be taught how to enhance their mental health. The researcher will also distribute copies of the research books to TASO-Mulago, Mildmay Uganda, and Mulago Hospital, where participants will be recruited, as well as other important stakeholders to inform them of the results.

This will motivate them to examine their programs and, if necessary, make changes, as well as collaborate to meet the mental health needs of HIV-positive women during pregnancy and after delivery. The researcher will further disseminate the findings by presenting them at conferences and publishing them as scholarly articles in journals so that people all around the world can read them and be educated.

Right to Refuse or Withdraw

Participation in this study is entirely voluntary. You have the right to decline or withdraw from it at any moment, without incurring any penalties.

Contact Information for Questions or Concerns

Participants who may have any questions or want to seek clarification about the study can contact the researcher, Clare Kyomuhendo on +233208202268/ +256784811056 or via email at clare.kyomuhendo@gmail.com.

You can also contact my main supervisor Prof. Stephen Owusu Kwankye via telephone number +233277602486 or email: skwankye@ug.edu.gh if you have any further questions or clarifications on the study. For questions regarding your rights or any other ethical issues, you may contact the Chairperson Mildmay Uganda Research Ethics Committee (MUREC): Ms. Susan Nakubulwa at 0392174236, Email: murec@mildmay.org.ug

Permission for audio recording

Do I have your permission to record the interview? Yes No

Part II: Consent and signature

"I have read or have had someone read all of the above, asked questions, received answers regarding my child's participation in this study, and am willing to give consent for me, my child/ward to participate in this study. I will not have waived any of my rights by signing this consent form. Upon signing this consent form, I will receive a copy for my personal records."

Name of Participant

Signature or mark of Participant

Date

If participant cannot read and or understand the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Name of Participant
(To be written by a witness)

Date

Name of witness

Signature of witness / Mark

Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Name of Person who Obtained Consent

Signature of Person Who Obtained Consent

Date



Research instrument D9: Informed consent for key informants



INFORMED CONSENT FORM FOR KEY INFORMANTS

Name of the Researcher: Clare Kyomuhendo

Name of the Institution: University of Ghana

Title of Study: The Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda.

Protocol version and version date: University of Ghana-UG, V.2, July 27, 2022

PART 1: Information Sheet

Participant identification number (PID):	
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Introduction

I am Clare Kyomuhendo, currently studying a Doctoral Degree at the University of Ghana, at the Regional institute for Population Studies. You are invited to take part in this study which seeks to understand the Burden of Prenatal and Postpartum Depression among Women Living with HIV in Kampala and Wakiso, Uganda. This study seeks to gather information about the topic, which could assist the government under the ministry of health, None Governmental Organizations, and other partners to develop policies and intervention strategies that can be useful to support women living with HIV in dealing with depression during their prenatal and postpartum periods. This document is aimed at giving you all the necessary information you will need in deciding whether or not to participate in the study. In case you find any word that is unknown to you, do not be afraid to ask for the meaning because the researcher gladly take the time to clarify everything to you. You are also welcome to ask any questions you have regarding the interview that are unclear to you at any moment. This is a study which is purely academic rather than provision of clinical care. The study involves research which will include asking you a few questions which will capture your views about the elderly, as caregivers for persons with HIV/AIDS. The interview is expected to last for about forty five (45) minutes to one (1) hour.

Purpose of the Research Project

The qualitative aspect of this study involves thirty (30) participants, including: Eighteen (18) HIV- positive pregnant women and those who have given birth (eight from TASO-Mulago and ten from Mildmay); six HIV negative pregnant women and those who have given birth from Mulago hospital; and six KIIs from TASO-Mulago, Mildmay, and Mulago hospital (3 each respectively). The purpose of this study is to understand the burden of prenatal and postpartum depression among Women Living with HIV in Kampala, Uganda. This will involve in-depth interviews on your views about prenatal and postpartum depression in HIV negative and HIV positive, what you know about prenatal and postpartum depression, the factors that contribute to maternal depression, the challenges you think pregnant mothers and those who have given birth face and how they deal with them, and the intervention/support services available for assisting them.

Type of Research Intervention

The qualitative aspect of this research involves an in-depth interview carried out on a one-on-one basis.

Participant's Selection (why you are being asked to participate)

You have been requested to participate in the study because you have traits like knowledge and experience in the topic matter being researched, that can help the researcher get the most accurate information.

Voluntary Participation

The participation in this research is completely voluntary. Your choice to participate in the study or not will be respected by everybody. Even if you decide not to participate in the study, you will continue to receive all of the services you normally receive at any health facility, and no one will treat you differently there. If you decide to participate, you can change your mind and withdraw from the study at any moment without affecting the services you get or are entitled to.

Procedures

An interview guide will be used to solicit information through one-on-one interview at a place and time convenient to you. This means that, I will ask you a few questions and you will tell me your views about the elderly, as caregivers for persons with HIV/AIDS in your own words. The interview will be audio-recorded, and complemented with taking notes. This is for analysis purposes, but at no point in the transcription will the information be linked by your name. This calls for your consent for the interview to be audio recorded. Also, the questions will be both opened and closed ended during the interviews. This is to help in getting enough and meaningful information required for the study.

Duration

The interview is expected to run between about forty five (45) minutes to one (1) hour, depending on how long you take to answer the interview questions.

Risks

The researcher does not expect any harm or risk during this research

Benefits

Participating in this study has no direct benefits involved. However, the information gathered could better help provide an understanding of the unique and common vulnerabilities women living with HIV are confronted with during their pregnancy and postpartum periods. This could be used by Uganda's policy makers and stakeholders to provide psychosocial interventions that are culturally sensitive and cost-effective to meet the mental health needs of Ugandan women living with HIV.

Reimbursements/Compensation

The participants will not receive any payment for participating in the study.

Confidentiality

Data will be kept out of reach of public domain by storing them on a password-protected computer. Your privacy will be respected during the interview. Any personal data you provide will be kept private, and only the researcher and other collaborators will have access to any identifiable data which shall not be linked to individual personalities who participate in the study as respondents. The principle of anonymity shall be rigorously upheld through data collection and analysis. Furthermore, in reporting the findings, the researcher will not publish names or any other information that could identify participants. All data will be safeguarded from public access by storing them on a password-protected computer.

Sharing the Results

Depending on the situation, the researcher hopes to communicate the study findings with the participants one-on-one or in groups. The information will be shared at a meeting, and participants will be taught how to enhance their mental health. The researcher will also distribute copies of the research books to TASO-Mulago, Mildmay Uganda, and Mulago Hospital, where participants will be recruited, as well as other important stakeholders to inform them of the results.

This will motivate them to examine their programs and, if necessary, make changes, as well as collaborate to meet the mental health needs of HIV-positive women during pregnancy and after delivery. The researcher will further disseminate the findings by presenting them at conferences and publishing them as scholarly articles in journals so that people all around the world can read them and be educated.

Right to Refuse or Withdraw

Participation in this study is entirely voluntary. You have the right to decline or withdraw from it at any moment, without incurring any penalties.

Contact Information for Questions or Concerns

Participants who may have any questions or want to seek clarification about the study can contact the researcher, Clare Kyomuhendo on +233208202268/ +256784811056 or via email at clare.kyomuhendo@gmail.com.

You can also contact my main supervisor Prof. Stephen Owusu Kwankye via telephone number +233277602486 or email: skwankye@ug.edu.gh if you have any further questions or clarifications on the study. For questions regarding your rights or any other ethical issues, you may contact the Chairperson Mildmay Uganda Research Ethics Committee (MUREC): Ms. Susan Nakubulwa at 0392174236, Email: murec@mildmay.org.ug

Permission for audio recording

Do I have your permission to record the interview? Yes No

Part II: Consent and signature

"I have read or have had someone read all of the above, asked questions, received answers regarding my child's participation in this study, and am willing to give consent for me, my child/ward to participate in this study. I will not have waived any of my rights by signing this consent form. Upon signing this consent form, I will receive a copy for my personal records."

Name of Participant

Signature or mark of Participant

Date

If participant cannot read and or understand the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Name of Participant

Date

(To be written by a witness)

Name of witness

Signature of witness / Mark

Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Name of Person who Obtained Consent

Signature of Person Who Obtained
Consent

Date

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