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*Keywords - Postpartum depression, Prevalence, Associated factors, Uganda*

## **DECLARATION**

I, Akampwera Phionah, hereby declare that the contents of this research thesis titled “*Prevalence and Factors Associated with Postpartum Depression among Mothers at Nyakayojo HCIII Katojo ward, Mbarara City Southwest Uganda*” is my own original work and have never been presented at any University or any other institution.

Signature..... Date.....

**APPROVAL**

This is to certify that this work titled “*Prevalence and Factors Associated with Postpartum Depression among Mothers at Nyakayojo HCIII Katojo ward, Mbarara City Southwest Uganda*” has been done under my supervision and is now ready for submission with my approval.

Signature.....Date.....

Jordan Amanyire

MPH

Signature.....Date.....

Wasswa Bright Laban

MSTA

## **DEDICATION**

I dedicate this research to God Almighty, who has always been there for me through thick and thin, my dear parents, my cherished children, and my most loving Husband Tumuhimbise Manasseh.

## **ACKNOWLEDGEMENTS**

I am eternally grateful to God Almighty for his unending mercy and love towards me throughout my time at BSU. My heartfelt gratitude goes to my dearest husband for being the wind beneath my wings; may God bless you always.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

BSU – Bishop Stuart University

EPDS – Edinburg Postnatal Depression Scale

MoH – Ministry Of Health

PPD – Postpartum depression

SDG – Sustainable Development Goal

UBOS – Uganda Bureau of statistics

WHO – World Health Organization

HCIII – Health center three

GHQ- General Health Questionnaire

BDI-Beck Depression Inventory

REC- Research Ethical Committee

## **OPERATIONAL DEFINITIONS**

Depression - A score of 13 or more on the Edinburg postnatal Depression Scale

## **ABSTRACT**

It is estimated that 13 % of women that have just given birth experience mental disorders. Unfortunately, health care delivery focuses more on the physical aspect of the mothers leaving mental issues neglected. The objective of this study was to find out prevalence and factors associated with postpartum depression among mothers at Nyakayojo HCIII, Katojo ward Mbarara City South West Uganda.

**Methods:** This was a cross sectional study. Eligible women attending immunization for their children were enrolled via systematic sampling. Those who consented to participate in the study had questionnaires completed on sections of biodata and factors that could potentially be associated with postpartum depression. Edinburgh Postnatal Depression Scale was used to assess for postpartum depression among the mothers. To determine the associated factors bivariate and multivariate analysis were done.

**Results:** A total of 124 mothers were enrolled into the study in which the prevalence of depression was 33.06%. Factors which were strongly associated with postpartum depression at multi variate analysis included; baby crying excessively all the time (p-value 0.003), tertiary level of education (0.018) and fair state of marital relationship (0.049).

**Conclusion:** This study has shown that depressive symptoms are common among mothers during the postpartum period. Predictors for depression included baby crying excessively all the time, tertiary level of education and fair state of marital relationship. This study therefore supports the need for integration of mental health and postnatal care for mothers at Nyakayojo HCIII.

## **CHAPTER ONE: Introduction**

This chapter covers the background of the study, the statement of the problem, the purpose of the study, the objectives of the study, significance and justification of the study, the scope of the study and the conceptual frame work.

### **1.1 Background to the study**

Postpartum depression is a non-psychotic depressive mood disorder that occurs to a mother within the first year following child birth (Nylen et al., 2006). Postpartum depression (PPD) is a significant cause of maternal morbidity and mortality (Cantwell et al., 2011). PPD manifests severe consequences on the physical and social well-being of mothers, new-born babies, communities as well as families (Atuhaire et al., 2020). PPD reduces the mother's response to the child's needs and in severe cases, mothers subjected to PPD carry a risk of postpartum psychosis, suicide as well as infanticide (Asaye et al., 2020), and individuals that develop postpartum depression are at greater risk of developing major depression later on in life. Poor maternal functioning due to mental related issues can affect a child's later behavioral and cognitive development, poor physical growth as well as poor social engagement. (Gelaye et al., 2016).

It is therefore important to promptly and effectively establish and manage the burden of postpartum depression amongst mothers by health workers since it is one of the most common complication of postpartum period affecting both the mother and the baby (Atuhaire et al., 2020). The mothers who are single, in a poor relationship, of low socio-economic status, or those who have a number of life stressors are at a higher risk of developing postpartum depression (Malus et al., 2016). Generally, PPD is associated with socio demographic, psychosocial, obstetric factors and entirely influenced by culture in low income countries. (Galaye et al., 2016).

PPD is characterized by severe mood swings, loss of appetite for food, loss of interest, sleep disturbances, feelings of sadness, excessive crying, fatigability, and thoughts of self-harm and to the baby. (Sulyman et al., 2016). Once the risks are earlier detected, it can be treatable and preventable using less risky non – pharmacological methods (Yonemoto et al., 2014), however, once un treated the condition may last for months or even longer.

Worldwide about 10 -20% of mothers who have just given birth experience depressive disorders that may include anxiety, organic psychosis among many others (WHO, 2016). However, the prevalence rate in developing countries is estimated to be higher than that of developed countries, due to higher prevalence reported in developing countries than developed countries (Fisher et al., 2012). PPD

prevalence of 39.4 % has been reported in Dhaka - Bangladesh (Azad R *et al.*, 2019), and 28 - 63% in Pakistan (Gulamani *et al.*, 2013).

In Africa, available sources report varying prevalence of PPD from 6.9 to 39.6 % and this differs in accordance to the regions as most of these studies used screening tools to identify PPD rather than reliable diagnostic criteria (Atuhaire *et al.*, 2020). In Tanzania, a cohort study conducted reported a postpartum depression prevalence of 12.2% (Holm – Larsen *et al.*, 2019). Similar studies done In Ethiopia in 2015 and Ghana in 2014 showed the prevalence of postpartum depression at 24.9% and 9.9% respectively. (Biratu *et al.*, 2015).

In Uganda, there is limited data regarding the prevalence of PPD. A PPD prevalence of 6.1% was reported in a peri-urban setting and in a study that utilized the Self Reporting Questionnaire (SRQ-20) tool (Nakku *et al.*, 2006). Another study using the Edinburgh Postnatal Depression Scale (EPDS) reported a prevalence of 43% in rural Uganda (Kakyo *et al.*, 2012). In other words, there is no documented Ugandan study that screened and clinically confirmed PPD. To date, understanding PPD is important for stakeholders in creating strategies for handling it to reduce its diverse effects a reason to why the study to establish the prevalence and factors associated with PPD will be conducted at Nyakayojo HCIII Katojo Ward, Mbarara city where such study has never been conducted. This study will also equip mothers with necessary knowledge and understanding of how to cope with such kind of situation once encountered. (Ref: significance of the study).

### **1.2 Statement of the problem.**

Mothers suffer from a quite number of complications after child birth ranging from restlessness, anxiety, suicidal thoughts and lack of appetite for food (Sulyman *et al.*, 2016). In most of the countries especially developing ones like Uganda, health care delivery focuses more on the physical aspect of the mothers leaving mental issues completely neglected (Andrade *et al.*, 2014). This has placed postpartum depression such a significant cause of maternal morbidity and mortality (Cantwell R *et al.*, 2011), carrying severe consequences on the wellbeing of the mothers, newborns, families as well as communities (Atuhaire *et al.*, 2020).

Poor maternal functioning due to mental related issues can affect a child's later behavioral and cognitive development, poor physical growth as well as poor social engagement (Gelaye *et al.*, 2016). Children born to depressed mothers are likely to be underweight with stunted growth and may experience more episodes of diarrhea and other infectious diseases (Feldman *et al.*, 2009). The prevalence of PPD amongst mothers in Uganda is not known due to limited screening, diagnosis and under – reporting by postpartum care providers (Atuhaire *et al.*, 2020). Due to this, PPD has led to

mental disorders becoming a relatively bigger challenge in developing countries with an estimated prevalence of 15.6% during pregnancy and 19.8% after child birth (Pajulo et al., 2001). This has placed postpartum depression rank among the top five public health issues with respect to global burden of disease (Pajulo et al., 2001). It should be noted that postpartum depression has captured the attention of researchers globally, clinicians as well as public as a whole, however comparatively little is known about postpartum among mothers.

Due to increased morbidity and mortality of mothers together with the babies as it stands that PPD is one of the most leading cause of maternal and infant mortality rates (Cantwell et al., 2011), Uganda's effort to attain / meet the SDG (3) and the national targets may be interrupted by the presence of postpartum depression as it causes poor mental health effects on the productivity of the affected women as well as their households. (MoH 2012). Having seen PPD'S diverse effects on mothers, this calls for an intervention of conducting a research study at Nyakayojo HCIII Katojo Ward, Mbarara city. The reports generated will inform the relevant policy makers and stake holders to make some attempts to have it addressed. Thus, this study sought to establish prevalence and the associated factors of postpartum depression among mothers at Nyakayojo HCIII, Katojo Ward Mbarara city Western Uganda

### **1.3 Objectives of the study**

The study was guided by the following research objectives

#### **1.4 General objective**

To find out prevalence and factors associated with postpartum depression among mothers at Nyakayojo HCIII, Katojo ward

#### **1.5 Specific objectives**

1. To determine the prevalence of postpartum depression among mothers at Nyakayojo HCIII, Katojo ward.
2. To examine the socio-demographic factors associated with postpartum depression among mothers at Nyakayojo HCIII, Katojo ward.
3. To find out the psychosocial factors associated with postpartum depression among mothers at Nyakayojo HCIII Katojo ward
4. To examine obstetric factors associated with postpartum depression among mothers at Nyakayojo HCIII, Katojo ward.

#### **1.6 Study hypothesis**

The following hypothesis was used for the study:

**Null hypothesis (Ho)** – There is no association between postpartum depression and socio demographic factors.

**Alternative hypothesis (Ha)** – There is an association between postpartum depression and socio demographic factors.

### **1.7 Significance of the study**

The study findings will help in shedding light on postpartum depression among mothers such as causes, and ways of dealing with it effectively. This will serve as a source of data for the development of tools to teach mothers how to deal with similar situations when they arise.

This study results will also help in un vailing the burden of postpartum depression in Katojo ward and this will help as an insight to the current and future policy makers to formulate a guideline on maternal mental issues and come up with a screening tool for depressive characteristics. This will act as a holistic tool to improve the overall maternal mental health as well as health care delivery.

The study findings will be part of the promotion of maternal and child health in line with SDG 3 which seeks to provide good health and wellbeing for all, and may reflect favorably on maternal outcomes and better conditions of the new born babies.

This research will also count toward one of the requirements for my BSU Master of Public Health degree.

### **1.8 Justification of the study**

Several studies regarding maternal mental health have been carried out focusing on ante partum depression (during pregnancy) and little has been done on postpartum depression. However, it has been discovered through the contemporary epidemiological studies that there is a significant burden of postpartum depression. Currently, the burden of postpartum depression amongst mothers at Nyakayojo HCIII Katojo Ward, Mbarara city Western Uganda is not yet known. The study findings will be part of the promotion of maternal and child health in line with SDG 3 which seeks to provide good health and wellbeing for all, and may reflect favorably on maternal outcomes and better conditions of the new born babies.

### **1.9 Scope of the study**

This section represents the geographical content and time scope of the study which is so important to bring out the dimensions to which the study was confined.

### **1.10 Geographical scope**

This study was based on the selected healthy facility that is Nyakayojo HC III in Katojo ward Mbarara City South West Uganda with an estimation of 270 kms from Kampala the capital city of Uganda. This health facility was selected reason being it is the only health facility at HC III level in the area serving approximately 433,200 people that is 21,400 males and 21800 females residing in the neighboring villages of Bugashe, kitooma, kibirizi, Nyakashambya and many others. As a result, the study gave an insight/impression of the prevalence and factors associated with PPD among mothers at Nyakayojo HC III, Katojo ward Mbarara City SouthWest Uganda.

### **1.11 Content scope**

The study covered postpartum depression focusing on the concepts such as prevalence and factors associated with PPD among mothers at Nyakayojo HC III Katojo ward Mbarara city, South west Uganda.

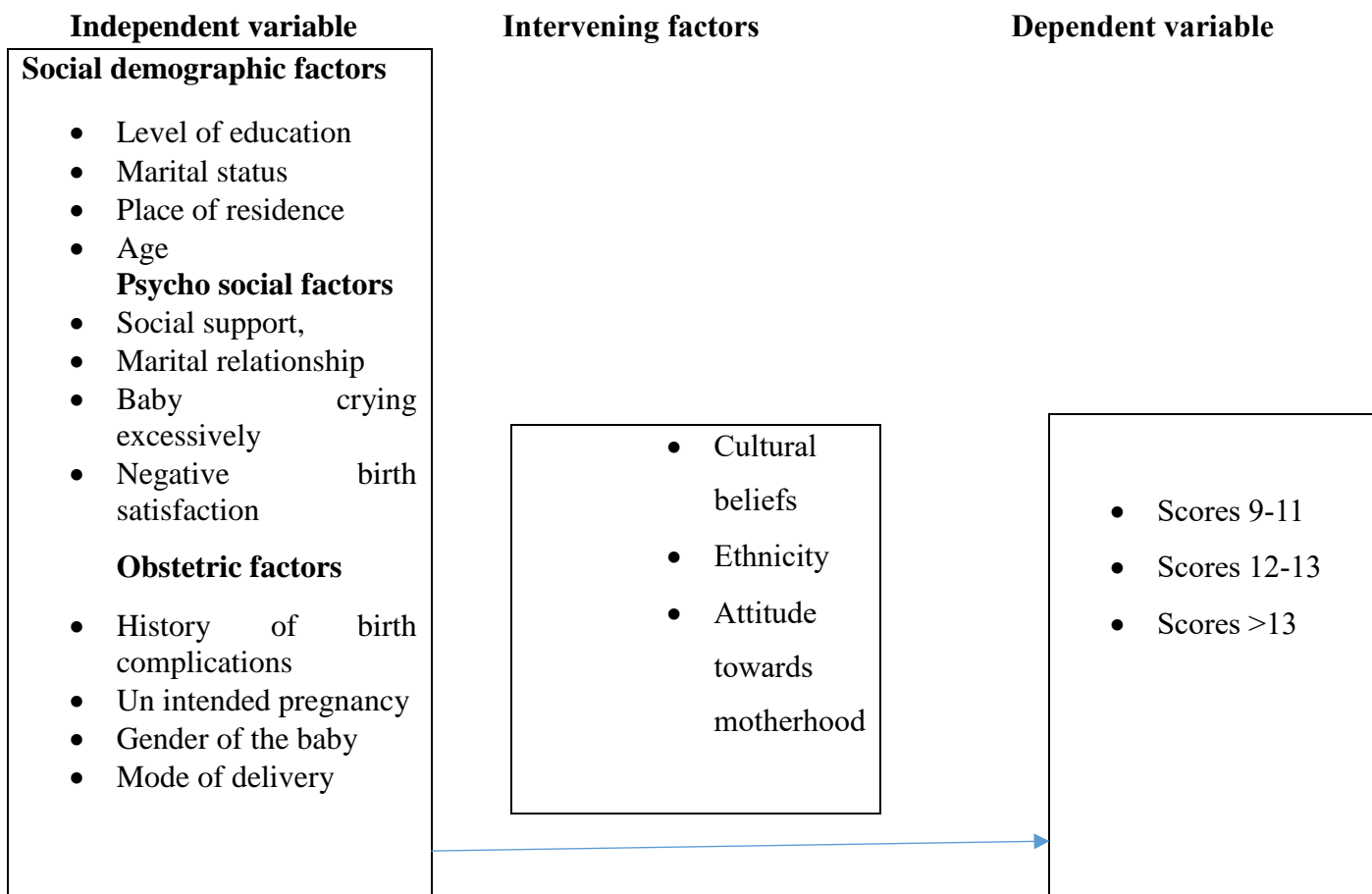
### **1.12 Time scope**

The study focused on prevalence and factors associated with PPD among mothers at Nyakayojo HC III Katojo ward Mbarara City South West Uganda for a period of one year. The period ranged from November 2022 to October 2023.

### **1.13 Conceptual Framework**

The conceptual framework reflects the study variables which explains the problem. The framework below provides a description and the relationship between the independent variable situated in the left box which influences the dependent variable in the right box. The functioning process of the independent variable operates through the intervening factors such as cultural beliefs, period after birth, attitude towards motherhood and ethnicity to bring the dependent variable into observance such as scores ranging between 9-11, 12-13 and > 13 in accordance to the description by the Edinburg Postnatal Depression Scale. With this information, the current and the future policy makers will be informed about the factors associated with postpartum depression among mothers.





**Figure 1: Conceptual framework; Adopted from the stress vulnerability model by Zubin and Spring (1977)**

## **CHAPTER TWO:**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter entirely looks at and reviews the various literatures in connection with the area under study. Literature on the variables under study will be reviewed while pointing out the research gaps on which this study entirely focuses on.

#### **2.1 Prevalence of Postpartum depression**

Depression is the most leading cause of disease burden as well as disability worldwide, affecting millions of people women in particular that is, 10 to 15% women globally. (Fisher et al., 2012) Women have got a higher risk of experiencing depression with an estimated lifetime risk of 10–25% (Kessler et al., 2003, Shenal et al., 2003). This kind of increased vulnerability to depression begins during puberty and continues through menopause (Nolen – Hoeksema et al., 2006). Worldwide, it is estimated that 13% of women who have just given birth and 10% of pregnant women experience mental disorder (Pajulo et al., 2001). In high income countries, the burden of PPD ranges from 7 % to 15% (Rahman A *et al.*, 2006) and ranges between 19% to 25% in low income countries (Gavin et al., 2005). It should be noted that, PPD prevalence of 29 %, 25%, 20.2 % has been reported in Bangladesh (Nasreen et al., 2011), Pakistan (Rahman et al., 2006) and Brazil (Faisal – Curry et al., 2009) respectively. PPD prevalence of 27.37 % was reported in China (Deng et al., 2014) and is increasing yearly (Mu et al., 2019). Other studies conducted in Asian countries using the Edinburg Postpartum Depression scale have reported a PPD prevalence of 63.3 % (Norhayati et al., 2015).

A study done in rural South Africa in 2011 on postpartum depression showed that 47% of women recruited met the criteria for major depressive episode (Spirato et al., 1992), prevalence of postpartum depression in Ethiopia is at 24.94 % (Biratu et al., 2015), Ghana 9.9 % (Weobong et al., 2014), 39 % in South Africa, Cape Town (Hartley M *et al.*, 2011), 38.5 % in South Africa KwaZulu-Natal (Mannikam et al., 2012) and 39.5 %, in Tanzania (Kaaya et al., 2010). In low-income countries Uganda in particular, actual determination of PPD remains a very big challenge as a result of limited screening, diagnosis and under reporting by postpartum care providers. Although studies on PPD in Africa are limited, available studies report varying prevalence from 6.9% to 39.6% (Gelaye et al., 2016, Norhayati M *et al.*, 2015). Most of these studies have always used screening tools to identify PPD rather than reliable diagnostic criteria (Atuhaire et al., 2020).

In Uganda, there is scarcity of data regarding the prevalence of PPD. A PPD prevalence of 6.1% was reported in a peri-urban setting and in a study that utilized the Self Reporting Questionnaire (SRQ-20) tool (Nakku et al., 2006)]. Another study using the Edinburgh Postnatal Depression Scale (EPDS) reported a prevalence of 43% in rural Uganda (Kakyo et al., 2012). For this matter, there happens to be no documented Ugandan study that screened and clinically confirmed PPD.

## **2.2 Socio – demographic factors associated with PPD**

Socio – demographic factors such as age and others are believed to be associated with development of PPD among mothers, a study conducted in Norway among Pakistan women showed that age was associated with PPD where depressive episodes were more prevalent among older women (Vangen, 2009). Another study conducted among mothers in Chitwan showed that age was associated with PPD, where by mothers that were more than 25 years old were 2.56 times more likely to develop PPD than those that were less than 25 years old (Chalise, 2020). Similarly, a study conducted in Canada reported that age of the mother was a significant predictor of PPD where by adult mothers aged 20 years and older were 44% likely to experience PPD.

Level of education is associated with PPD and this may be directly associated with household income which in turn may affect the woman's concerns in regard to the costs of the infant care(Asli et al., 2012). A study conducted among Rajbangsi women in Nepal revealed that there is an association between education level and development of PPD (Sabba, 2013). This was contrary to another study conducted at Bharatpur Hospital in Chitwan that revealed no association between education level and development of PPD among mothers (Chalise, 2020). Similarly, studies conducted in Canada and Lebanon reported that there is a relationship between low level of education and the risk of developing PPD among mothers (Lanes et al., 2012).

Place of residence has been shown as a risk factor to PPD among mothers, studies conducted in the middle income countries like Bangladesh, India, Pakistan and Iran showed that PPD is more prevalent among mothers living in rural areas ( Asli et al., 2012). A study conducted in Uganda reported that mothers that reside in rural areas are two times more likely to experience PPD compared to the ones living in urban areas (Atuhaire et al., 2020). In Uganda, it is reported that women may be more at risk of suffering from PPD because they mostly depend on subsistence agriculture characterized by low standards of living and are commonly poorer than women in urban settings (Mukwaya et al., 2012). On the hand, in high income countries such as Canada, and Australia higher rates of PPD are reported among mothers in urban settings than those in rural areas (Azad et al., 2019). This is due to the fact more frequently in high income countries, urban settings may be associated with dense population,

higher rates of inter – personal violence, poor health and low social support as compared to rural settings (Vigod et al., 2013). In this context, this study sets out to clarify the drivers of PPD in the peri – urban setting in S.W Uganda.

The family's income levels are associated with a greater incidence of PPD among mothers (Clark et al., 2008). Studies have reported that professionally active mothers expressed a greater interest and are at the same time always attentive towards their off springs (Cohn et al., 1990). Previous studies have indicated that the status of the family's economic income was positively associated with PPD among mothers (Yu 2020). Similar studies reported that the incidence of PPD among women that were worried about family economic status was 3.162 times higher than among those that were never worried (Yu et al., 2020). A study conducted in Turkey indicated that there was a significant relationship between monthly income and development of depression (Oztora et al., 2019). Contrary to this, a cross sectional study conducted among Canadian women reported no increase of PPD among women living in low income families (Lanes et al., 2011). Thus, this study intends to unveil the relationship between the family's income levels and the onset of PPD.

### **2.3 Psycho social factors associated with PPD.**

Limited social support from the partners/ husbands, family and friends is so much linked to PPD since it acts as a protective factor for women during and after child birth. (Stellenberg et al., 2015). The types of social support range from babysitting, financial support, nutritional support and counselling (Atuhaire C et al., 2020). Ideally, during the post-partum period mothers are expected to be recovering from the stress related to pregnancy, birth and physiological adaptation after childbirth (Atuhaire et al., 2020). It is assumed that to reduce this postpartum related stress, mothers are advised to receive social support from their husbands, family as well as friends. It is believed that social support can also serve as a preventive measure to PPD and its consequent effects, thus optimizing mothers' positive self-images and enhancing quality of life (Harandi et al., 2017). A study conducted in Italy showed that women that received limited social support from their families and friends were at a higher risk of developing PPD (Palumbo et al., 2017). Another study in rural South Africa indicated a rate of 60.9% of mothers without social support suffered severe depression in comparison to 28.2% that had moderate depression (Stellenberg et al., 2015). Several more studies done In Ethiopia, Cameroon and Pakistan identified lack of social support as one of the risk factors for PPD (e Couto et al., 2015).

Marital relationships are associated with development of PPD, closeness and intimacy in relationship were associated with better mood and greater ability to cope with the difficulties of labor as well as

carrying for the newborn (Malus et al., 2016). A study conducted among Chinese women indicated that relationship between husband and wife is so much attributed to development of PPD among mothers, the quality of the husband and wife relationship was mainly reflected in the quality of the husband's care for the wife (Zhang et al., 2008). Similarly, women that are less satisfied with their husbands care are more likely to be depressed (Zhang et al., 2008).

Baby crying excessively is associated with PPD, a cross sectional study conducted among Canadian teen mothers showed that if a baby cries excessively the mother may be deprived of sleep leading to the onset of PPD (Kim et al., 2014). Similarly, babies that cry excessively may not be breastfed as required causing anxiety to the mothers thus potentially contributing to development of PPD. (Leureng et al., 2005). A study conducted among mothers in South West Uganda reported that due to baby crying excessively irritability is caused thus difficulty in soothing and consoling the baby (Atuhaire et al., 2020). In the similar study, it was showed that participants that reported their babies crying excessively were 2.2 times more likely to experience PPD.

Negative birth satisfaction is also significantly associated with PPD (Bell et al., 2016). Birth satisfaction is influenced by women's expectations before child birth but is also comprised of various factors such as safety, support, respect, privacy as well as involvement in decision making (Hildingson, 2015). A prospective study reported that post-traumatic stress disorder contributes towards PPD which negatively influences child satisfaction in a couple's relationship (Garthus – Niegel et al., 2018).

#### **2.4 Obstetric factors associated with PPD.**

Studies show that un-intended pregnancy is associated with PPD (Upadhyay et al., 2019). Cross sectional studies conducted in Dhaka - Bangladesh using Edinburg Postnatal Depression Scale showed that mothers with un intended pregnancies were more likely to develop PPD (Rashidul et al., 2019). Unintended pregnancy may trigger stressful motherhood including depressive episodes. (Chalise et al., 2019). A prospective study done in South Korea showed that unintended pregnancy contributed to PPD as well as parenting stress among mothers through marital conflict and limited father's participation in child care (Bahk et al., 2015). The impact of unintended pregnancy on postpartum depression was highest at four weeks postpartum but the impact of parenting stress continued up to two years, thus suggesting long term influences on maternal and child health (Bahk et al., 2015). A study done in Lao People's democratic Republic, a land locked country in South East Asia showed that 27.8 % of women that presented with PPD had had unintended pregnancies and the findings showed that there was no

significant difference between women who had only one child from the last pregnancy and those that has two or more children. (Inthaphatha et al., 2020).

Place of delivery is associated with PPD among mothers, a study conducted in Asia reported that five women all of whom had child birth from other places other than health facilities were satisfied with their child birth ( Inthaphatha et al., 2020). A qualitative study done in Lao, South Eastern Asia reported that women in rural areas preferred child birth at home because of the support they receive from their family members and a preference for child birth practices (Sychareum et al., 2012).

History of birth complications especially in the most recent pregnancy is associated with PPD. A study conducted in Dhulikheli Hospital in Nepal reported that birth related problems were among factors significantly associated with PPD (Kunwar, 2015). A study conducted in Uganda showed that mothers with a history of any birth complications in the most recent pregnancy were two times more likely to suffer from PPD as compared to those without complications (Atuhaire et al., 2020). A study conducted in Sweden reported a direct and positive influence between anemia at discharge from hospital and self-reported bad birth experiences (Eckerdal et al., 2016). Anemia is as a result of excessive vaginal bleeding or postpartum hemorrhage and mothers are likely to present with emotional disturbances, reduced cognitive abilities and PPD consequently (Gausia et al., 2012).

The gender of the baby is associated with development of PPD among mothers as the baby's gender importance changes from culture to culture (Asli et al., 2012). A cohort study conducted among Chinese women reported a significant prevalence of PPD among mothers especially where female babies are born (Xiea et al., 2007). A study conducted in Eastern Turkey indicated that even the number of daughters in a home escalated the levels of PPD among mothers (Asli et al., 2012). However, some studies have reported no association between the baby's gender and the risk of PPD especially six weeks or even more after delivery. Similarly, a study conducted in Turkey reported no association of infant gender and development of PPD among mothers where by 98.4% of the participants were contented with their babies' gender (Asli et al., 2012), and these results were fully comparable to other studies conducted from Western societies (Robertson et al., 2004).

## **Chapter summary**

The review of literature has revealed that postpartum depression is the leading cause of disease burden and disability. Due to this, various studies have been attempted to establish the prevalence and factors associated with postpartum depression.

In Uganda, there is scarcity of data regarding the prevalence of postpartum depression. Reports have been made using tools like self-reporting questionnaire tool (SQR-20) as well as Edinburg postnatal depression scale however, there happens there not to be documented Ugandan study that has screened and clinically confirmed postpartum depression. Therefore, this study intends to bridge this gap through finding out the association between the variables under this study.

## **CHAPTER THREE: METHODOLOGY**

### **3.0 Introduction**

This chapter covers the research design and the approach to the study, the targeted study population, sample size determination and the techniques used to arrive at the sample. It highlights the source from which data was collected, the instruments that were used to collect it as well as the methods which were used to collect it. Lastly, it also covered both reliability and validity measures that were used to ensure that the data collected is relevant to the study.

### **3.1 Study design**

The researcher used a cross sectional study design given the time constraint. This type of research design is used because it allows collection of the required data in the shortest time possible and it is cheaper compared to longitudinal design (Saunders, 2017). Quantitative research approach was used and data was collected quantitatively to answer objectives 1-4. Thus, the information gathered provided an overall and up to date conclusion on the prevalence and factors associated with postpartum depression among mothers at Nyakayojo HCIII Katojo ward, Mbarara City South West Uganda.

### **3.2 Area of study**

This was a facility based study carried out at Nyakayojo HC III Katojo ward, Mbarara City South West Uganda with an estimation of 270 kms from Kampala, the capital city of Uganda. It is the only health facility at HCIII level in the area serving approximately 433,200 people that is 21,400 males and 21800 females residing in the surrounding villages of Bugashe, Kitooma, Kibirizi, Nyakashambya and many others UBOS (2015). The facility conducts around five births on a daily basis and also attracts approximately fifty mothers coming for Immunization program for their children twice a week that is, every Wednesday and Friday of every week from 8:00 am up to 1:00 PM.

### **3.3 Study population**

Population refers to an entire group of individuals, events or objects having a common observable characteristic (Mugenda and Mugenda, 2003). In other words, population is the aggregate of all that conforms to a given specification. The study targeted 113 mothers aged 18 – 49 years and had given birth within a period of less than twelve months. Mothers in this age category were selected due to the fact that, in accordance to the Ugandan law one is considered an adult when she has clocked 18 years of age and 49 years is the stage at which a woman gets to menopause. This population was expected to have firsthand information in regard to prevalence, demographic, psychosocial and obstetric factors



associated with PPD among mothers. In regard to the prior visit made by the researcher to the health facility, Nyakayojo HCIII attracts a total of 40 mothers that turn up for the immunization of their children on a weekly basis and these formed a unit of analysis.

### 3.4 Sample size determination

The sample size was arrived at using Krejcie and Morgan (1970) as shown in the table below.

This formula was used because it enables the researcher not to make the study on each and every sample in the study.

Category	Population	Sample size
Mothers aged 18 - 49 years and have given birth in less than 12 months	160	113
10% (incomplete response)		$(10/100)*113=11$
<b>Total study sample size</b>		<b>113+11= 124</b>

Source: Field data, 2023

### 3.5 Sampling technique

Systematic sampling was used since it exhibits low risk of data manipulation. In addition, it is cheaper and a more straight forward method of data collection. During the study, study participants were selected at a regular interval. The first participant was randomly selected from the list in accordance to the immunization registration book, and subsequently every 5<sup>th</sup> mother that met the inclusion criteria was recruited to be part of the study. It is from this point that the research assistants together with the researcher comprehensively explained to the selected participants the purpose of the study, benefits, and risks and thereafter requested them for their participation. The eligible participants that had agreed to participate in the study were provided with consent forms to sign by writing their names and signature. Generally, the study lasted for at least one month.

### 3.6 Study variables

The dependent variable was prevalence of postpartum depression among mothers. This was entirely looked at as the range of the Edinburg postnatal depression scale scores that is, scores <8 indicated no presence of depressive symptoms, 9-11 indicated presence of some depressive symptoms, 12-13 indicated presence of symptoms of distress and 13+ indicated presence of high symptoms distress and required further assessment and appropriate management

The independent variables were factors associated with depression which included socio demographic, psycho social and obstetric factors.

### **3.7 Inclusion criteria**

Mothers that were 18 – 49 years of age.

Mothers that had given birth in a period of less than twelve months.

### **3.8 Exclusion criteria**

Mothers who refused to participate in the study.

Mothers that were too ill to participate in the study.

Mothers that had given birth in a period of more than twelve months

### **3.9 Data collection methods and instruments**

Data collection instruments are the tools used to collect information in research. The choice of the research methods to use is influenced by the nature of the problem and by the availability of time and financial resources.

Since data to be collected was quantitative in nature, the methods used included surveys. Similarly the Instruments used included questionnaires and Edinburg Postnatal Depression Scale. Questionnaires were administered to mothers that had turned up at the health facility for the immunization of their children to collect primary data. Questionnaires were comprised of different sections which included bio – data and demographic sections. They were also comprised of multiple choices of answers where by the respondents were expected to choose the most appropriate answers in relation to the questions posed. This was done by circling or even filling the appropriate answers and this was done with the assistance of the researcher together with the research assistants since not all the mothers knew how to read and write.

### **3.10 Data analysis and presentation**

Data from the field was encoded, double entered into Epi data 3.1, edited and cleaned. The process of cleaning included missing value analysis and testing for out liers. The data was later analyzed using STATA version 13.

The prevalence of depressive disorders was calculated by the number of mothers that had disorders divided by the total number of mothers recruited into the study. To assess factors associated with depressive disorders after birth, bivariate analysis was performed to compute odds ratios at the 95% level of significance. To assess independent association of these risk factors, regression analysis was performed, where all independent variables with a p-value of less than 0.2 at bivariate analysis were considered for multivariate logistic (binary) regression. Associations with p-value less than 0.05 were considered statistically significant and the results of the analysis were presented in tables

### **3.11 Reliability of the Data Collection Instrument**

Reliability is the extent to which data collection techniques or analysis procedures will yield consistent findings after repeated trials (Saunders, et al 2009). With the guidance of the supervisor, a questionnaire was structured in relation to variables to be measured using appropriate words which were simple, direct and familiar to the respondents giving no room for assumption and bias.

According to Mugenda & Mugenda, 2003 reliability is the measure of the degree to which a research instrument yields consistent results after repeated trials. In order to confirm reliability of the instrument, a pilot test was done. A Cronbach coefficient alpha was used to test the reliability of the items in the questionnaire. Items with Cronbach alpha coefficient of 0.7 were considered reliable.

### **3.12 Validity of the Data Collection Instruments**

Validity is used to check whether the questionnaire measures what it is supposed to measure. Validity is the strength of the conclusion, inferences or even propositions in a given study (Kothari, 2004).

The research instrument was tested for validity using the content validity index and the items rated relevant by the judges were divided by the total number of items in the questionnaire and all the items scored above 0.7 implying that the instrument was valid according to (Amin, 2005).

Validity is the ability of an instrument to measure what is designed to measure. It is primarily based on the logical link between the questions and the objectives of the study and how the variables will be measured (Kumar, 2018). It determines whether the research truly measures that which it is intended to measure or how truthful the results are. To ensure validity, the instrument that was used to gather data covered all the dimensions of the variables as explained in the conceptual framework. They were discussed with the experts if their content and structure are consistent and relevant to the research objectives and the study.

The questionnaire was given to the three experts. The questions in the questionnaire were rated either valid or invalid. The validity of the instruments was determined through computation of Content Validity Index (CVI). It was computed by dividing the total number of valid items by the total number of items in the questionnaire. That is  $n/N$  where  $n$  is the total number of valid items and  $N$  is the total number in the questionnaire. The results there from were interpreted using (George & Malley, 2009) rule:  $\geq 0.9$  =Excellent,  $\geq 0.8$ =Good,  $\geq 0.7$ = acceptable,  $\geq 0.6$ = questionable,  $\geq 0.59$  =poor and  $\leq 0.5$ = unacceptable. The CVI was 0.7, implying that it was valid.

### **3.13 Ethical consideration**

The research proposal was written with the guidance from the supervisors, presented to the faculty and submitted to the Research Ethical Committee of the University for Approval (BSU-REC-2023-58). Before any information was obtained, I introduced myself to the participants and informed them of the purpose of my visit and why the research was being carried out. They were informed of what was required of them and how long it would take and that permission was given by the relevant authorities to carry out this research. They were as well informed that participation in the study is voluntary and that everybody was free to participate, decline, or even withdraw at any time without suffering any prejudice or disadvantage. The respondents were required not to disclose their names or identities and then the data collected would be kept confidential and used for academic purposes.

### **3.14 Strengths of the study**

Research assistants were trained prior to commencement of the study hence were familiar with the research tools and anything to do with confidentiality regarding data collection ; this helped to reduce errors during data collection and ensured acquisition of accurate information from study participants. Systematic sampling was used to recruit participants; this helped to eliminate selection bias.

The tool used to determine prevalence of depression of postpartum depression in this study is universally accepted in the field of psychiatric research; EPDS is used worldwide to assess for depression in post-partum period.

### **3.15 Limitations of the study**

The current study adopted a quantitative design.

The current study also adopted a cross sectional approach where a single period data was considered.

The current study particularly concentrated/considered the mothers or women.

Only postpartum depression was put into consideration in this study.

## **CHAPTER FOUR:**

### **RESULTS**

#### **4.0 Introduction**

This chapter presents the findings of the study generated from data analysis and relevant interpretations in relation to the objectives of the study. It includes inferential statistics and regression analysis.

#### **4.1 Response rate.**

The researcher targeted to collect data from 124 respondents and managed to reach out to them all thus making a response rate of 100%. This happened so because the researcher was on site to control responses to the study.

#### **4.2 Demographic characteristics of the respondents**

The demographic characteristics of the respondents were distributed as indicated in Table 4.1

Participants in the age group 18-28 (58.8%) and 29-39 (36.8%) had higher postpartum depression compared to participants in the age group 40-49 (4.4%). This implies that mothers in the lower age groups got higher depressive symptoms because of the responsibilities that come along with child bearing as well as obstetric complications that are associated with such age groups. Similarly, a large number of these people in such age groups may lack child support among other factors that may predispose them to PPD.

Postpartum depression was high among the mothers that were married (91.2%), followed by the widowed ones (5.9%) and the group that presented less episodes of postpartum depression was the separated/divorced (2.9%). This is majorly attributed to the diverse responsibilities married mothers carry on their shoulders which include taking care of their husbands as well as their babies.

Increased PPD was notable among participants who had attained primary level of education (66.2%) followed by their counter parts that had attained secondary level of education (22.1%) unlike those mothers who had not attained any formal education (10.2%) and tertiary level of education (1.5%).

Participants who resided in rural areas had higher postpartum depression (92.6%) compared to those who resided in urban areas (7.4%) This implies that rural residents are more likely to live in poverty compared to the urban residents; poverty is associated with more morbidity thus being at high risk of PPD. Similarly, rural residents are also more likely to suffer PPD compared to the urban peers due to the conditions as well as behavior that challenge and may lead to increased levels of PPD.

Furthermore, there was no difference in median number of children between mothers that had postpartum depression.

**Table 4. 1: Demographic characteristics of the study participants (n = 124)**

Characteristics	n (%)	Status of postpartum depression		Chi-square	P-value
		Not depressed	Depressed		
<b>Age</b>		<b>n (%)</b>	<b>n (%)</b>		
18-28	79 (63.7)	39 (69.6)	40 (58.8)	2.81	0.245
29-39	38 (30.6)	13 (23.2)	25 (36.8)		
40-49	7 (5.7)	4 (7.1)	3 (4.4)		
<b>Marital status</b>					
Married	115(92.7)	53(94.6)	62(91.2)	3.78	0.173
Separated/divorced	5 (4.0)	3 (5.4)	2 (2.9)		
Widowed	4 (3.2)	0 (0.0)	4 (5.9)		
<b>Level of education</b>					
No formal education	8 (6.5)	1 (1.7)	7 (10.2)	11.50	0.008
Primary	76 (61.3)	31 (55.4)	45 (66.2)		
Secondary	31 (25.0)	16 (28.6)	15 (22.1)		
Tertiary	9 (7.3)	8 (14.3)	1 (1.5)		
<b>Place of residence</b>					
Rural	112 (90.3)	49 (87.5)	63 (92.6)	0.93	0.335
Urban	12 (9.7)	7 (12.5)	5 (7.4)		
<b>Number of children</b>	2 (1-3)	2 (1-3)	2 (1-3)	-0.87	0.382

Source: Field 2023

#### 4.3 Prevalence of Postpartum depression among mothers attending immunization

The observed prevalence in the study was 68/124 (54.84%) with a 95% confidence interval of 45.65% to 63.79% a figure that is slightly higher than the estimated prevalence of 17 % in Africa. According to Edinburg Postnatal depression scale, 56/124(45.16%) of the respondents had no depression, 18/124(14.52%) of the respondents had mild depression, 9/124(7.26%) of the respondents had medium depression and 41/124(33.06%) of the respondents had high depression.

This implies that some of the study participants were doing well in their relationships, their babies not crying excessively and this could not predispose them to episodes of crying, anxiety or even suicidal thoughts a reason to why they presented no depression according to the Edinburg postnatal depression scale.

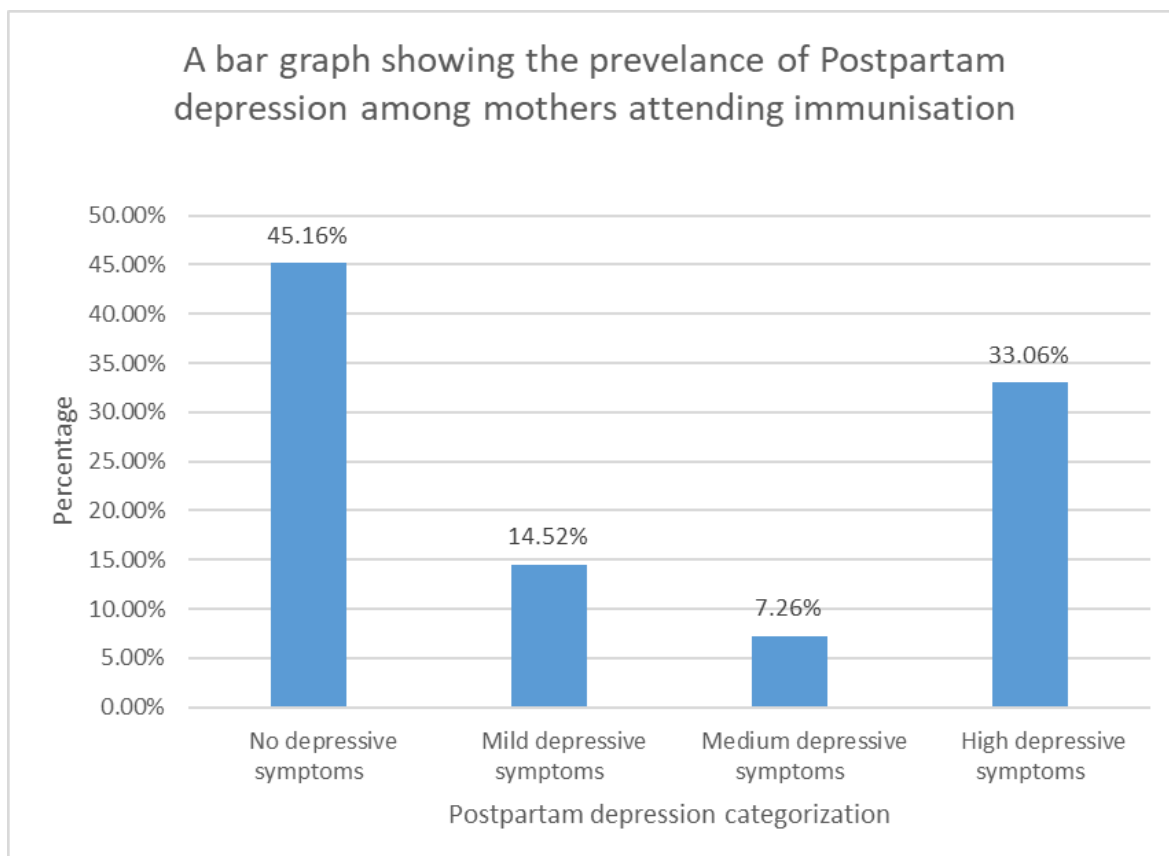
On the other hand, participants that presented mild, medium and high depressive symptoms might have been exposed to the episodes of victimization and others thus subjecting them to anxiety, and suicidal thoughts thus presenting with depression.

**Table 4.2 Prevalence of postpartum depression among mothers**

Variable	n(%)	No depression n (%)	Depression n (%)	95% CI
<b>Depression status</b>		56 (45.16)	68(54.84)	45.65-63.79
Mild depression	18 (14.52)			
Medium depression	9 (7.26)			
High depression	41 (33.06)			

Source: Field 2023

**Graph 4.2 Prevalence of postpartum depression among mothers**



#### **4.4: Socio-demographic factors associated with postpartum depression.**

The odds of Postpartum depression are higher among mothers in the age group 29-39 compared to mothers aged 18-28 (OR=1.875, 95CI: 0.841-4.183) and there is a notable reduction in the odds of postpartum depression among mothers in the age group 40-49 (OR=0.731, 95%CI: 0.154-3.482). This means that mothers in the age group 29-39 are 1.8 times more likely to be exposed to PPD than those in other age groups.

There is a reduced odds of postpartum depression among mothers who were employed compared to mothers who were unemployed (OR= 0.76, 95% CI: 0.369-1.565). This simply means that mothers who were employed were 0.76 times more likely not to be exposed to PPD compared to their peers that were not employed.

Mothers of Primary, secondary and tertiary levels of education had reduced odds of postpartum depression compared to mothers who had no formal education. This implies that mothers that had acquired primary, secondary and tertiary levels of education were 0.207, 0.134 and 0.018 respectively less likely to be exposed to postpartum depression unlike their peers that had no formal education.

Furthermore, mothers who were separated/divorced had less odds of experiencing postpartum depression compared to the married ones (OR=0.070, 95%CI: 0.092-3.539). Thus, separated mothers were 0.070 times less likely to develop postpartum depression compared to the married mothers.

Mothers who lived in urban setting had reduced odds of being exposed to postpartum depression (OR=0.556, 95%CI: 0.166-1.857) unlike their peers that resided in rural areas. This would be attributed to the high poverty levels associated with residing in rural areas.

At multi-variable analysis tertiary level of education was significantly associated with postpartum depression among mothers (0.018). Other factors were not statistically significant as shown in the 4.3

**Table 4.3: Bivariate and Multi variable analysis for socio-demographic factors associated with postpartum depression**



<b>Social demographic and economic</b>	<b>UOR(95%CI)</b>	<b>p-value</b>	<b>AOR(95%CI)</b>	<b>p-value</b>
<b>Participant Age</b>				
18-28	1		1	1
29-39	1.875(0.841-4.183)	0.125	1.847(0.773-4.412)	0.167
40-49	0.731(0.154-3.482)	0.694	0.188(0.017-2.069)	0.172
<b>Employment status</b>				
No	1		1	1
Yes	0.76(0.369-1.565)	0.457	0.991(0.447-2.198)	0.983
<b>Level of educ</b>				
No formal educ	1	1	1	1
Primary	0.207(0.243-1.771)	0.151	0.243(0.0181-3.271)	0.286
Secondary	0.134(0.015-1.221)	0.075	0.138(0.010-2.009)	0.147
Tertiary	0.018(0.001-0.342)	<b>0.008</b>	0.016(0.001-0.490)	<b>0.018</b>
<b>Marital status</b>				
Married	1	1	1	1
Separated/divorced	0.570(0.092-3.539)	0.546	0.392(0.029-5.322)	0.481
<b>Place of Residence</b>				
Rural	1	1	1	1
Urban	0.556(0.166-1.857)	0.340	1.587(0.331-7.615)	0.564

#### 4.5 Psycho social factors associated with postpartum depression

Support received by the mother from relatives whether sometimes (OR= 0.583, 95%CI: 0.136-2.494) or all the time (OR= 0.343, 95%CI: 0.084-1.406) had reduced odds of suffering from postpartum depression compared to mothers who received no support. This implies that mothers that never receive support from their family after child birth are subjected to episodes of trauma attaching the situation to social neglect thus suffering from PPD.

Mothers whose marital relationship was fair (OR= 5.5, 95%CI: 1.342-22.532) had increased risk of being exposed to PPD, these were followed by those whose marital relationship was not good (OR= 5.25, 95%CI: 0.874-31-553). These were followed by those who were in a good marital relationship (OR=1.993 95%CI 0.558-11.85). Mothers whose marital relationship was very good had reduced odds of being exposed to the risk of postpartum depression. This means that mothers whose marital relationship was fair or not good and good were 5.5, 5.25 and 1.9 times respectively more likely to be exposed to PPD compared to mothers whose marital relationship was very good. This might be as a result of the low income levels that bring up conflicts in families among many other factors.

Baby crying all the time excessively (OR= 5.4, 95%CI: 2.132-13.680) was strongly associated with postpartum depression compared to when the baby was crying sometimes and not at all. The baby birth

satisfaction, any form of victimization and baby gender had increased odds of postpartum depression. This is an indicator that a child's excessive crying episodes subjects a mother to stressful situations thus predisposing them to PPD.

At multivariate analysis, fair state of marital relationship (0.049) and baby crying excessively all the time (0.003) were strongly associated with postpartum depression. Other factors were not associated with postpartum depression as illustrated in the table above

**Table 4.4 Bivariate and multi variable analysis for psycho social factors associated with PPD**

Variable	UOR (95%CI)	p-value	AOR(95% CI)	p-value
<b>Support received</b>				
No	1	1	1	1
Sometimes	0.583 (0.136-2.494)	0.467	1.344(0.244-7.401)	0.734
All the time	0.343 (0.084-1.406)	0.137	0.690(0.131-3.637)	0.662
<b>State of marital relationship</b>				
Very good	1	1	1	1
Good	1.993(0.558-7.11.85)	0.288	2.422(0.604-9.717)	0.212
Fair	5.5(1.342-22.532)	<b>0.018</b>	4.721(1.009-22.10)	<b>0.049</b>
Not good	5.25(0.874-31.553)	0.070	3.628(0.460-28.60)	0.221
<b>Baby crying excessively</b>				
No	1	1	1	1
Yes, all the time	5.4(2.132-13.680)	<b>0.000</b>	5.035(1.731-14.65)	<b>0.003</b>
Sometimes	2(0.816-4.902)	0.130	2.205(0.827-5.881)	0.114
<b>Baby birth satisfaction</b>				
No	1	1	1	1
Yes	1.36(0.419-4.417)	0.609	1.116(0.292-4.271)	0.872
<b>Victimization</b>				
Physical assault	1	1	1	1
Verbal assault	1.339(0.261-6.961)	0.726	1.928(0.333-11.17)	0.464
All of the above	2.250(0.345-14.694)	0.397	2.491(0.323-19.21)	0.381
None of the above	0.579(0.119-2.806)	0.497	1.573(0.268-9.232)	0.616
<b>Satisfaction with baby gender</b>				
No	1	1	1	1
Yes	1.255(0.462-3.413)	0.656	1.182(0.349-4.001)	0.789

#### 4.6 Obstetric factors associated with postpartum depression among mothers

Mothers with a history of birth complications had increased odds of being exposed to postpartum depression compared to those that never had any history of birth complications (OR=1.396, 95% CI: 0.679-2.872). This observation calls for the mothers' mass sensitization and education by the health care providers to seek for postnatal care since it is evident that mothers encounter stressful episodes during child birth that end up predisposing them to PPD.

Caesarean section (OR=1.026, 95%CI: 0.463-2.269) and assisted vaginal mode of deliveries (OR=2.160, 95%CI: 0.396-11.775) had increased risk of postpartum depression compared to vaginal delivery. This might be associated with the painful experience associated with these modes of delivery and thus mothers that undergo such require maximum attention, care and support after delivery.

Home place of delivery (OR=1.232, 95%CI: 0.464-3.270) had increased risk of postpartum depression compared to health facility delivery. This observation calls for sensitization of the communities about the dangers associated with home delivery and be encouraged to always rush to the health facility whenever one is due to deliver a baby.

A notable reduction of odds of postpartum depression was observed among mothers that had planned to have the baby (OR= 0.587, 95%CI: 0.253-1.360) and baby's female gender (OR: 1.793, 95%CI: 0.8773-3.665) had an increased risk of postpartum depression.

At multivariable analysis, no obstetric factors were significantly associated with postpartum depression as indicated in Table 4.5.

**Table 4.5 Bivariate and Multi variable analysis for obstetric factors associated with PPD**

<b>Variable</b>	<b>COR (95%CI)</b>	<b>p-value</b>	<b>AOR (95% CI)</b>	<b>P-value</b>
<b>History of birth complications</b>				
No	1	1	1	1
Yes	1.396 (0.679-2.872)	0.364	1.251(0.591-2.650)	0.558
<b>Mode of delivery</b>				
Caesarean section	1.026(0.463-2.269)	0.950	1.238(0.518-2.961)	0.631
Assisted vaginal delivery	2.160(0.396-11.775)	0.374	2.247(0.392-12.875)	0.363
<b>Place of delivery</b>				
Health facility	1	1	1	1
Home	1.232(0.464-3.270)	0.675	1.239(0.424-3.622)	0.695
<b>Plan to have a baby</b>				
No	1	1	1	1
Yes	0.587(0.253-1.360)	0.214	0.527(0.212-1.310)	0.527
<b>Baby's gender</b>				
Male	1	1	1	1
Female	1.793(0.8773-3.665)	0.109	1.906(0.904-4.019)	0.090

## **CHAPTER FIVE:**

### **DISCUSSION, RECOMMENDATION AND CONCLUSION**

#### **5.0 Introduction**

This study was conducted to determine the prevalence and factors associated with PPD among mothers at Nyakayojo HCIII Mbarara city South West Uganda. As shown by scores on EPDS 41/124 (33.06%) had severe depressive symptoms. Eighteen participants (14.52%) had mild depressive symptoms, followed by their counter parts nine in total (7.26%) that presented medium depressive symptoms. Rural residence of the mother as well as baby crying excessively all the time, fair state of marital relationship and tertiary level of education were strongly associated with postpartum depression.

#### **5.1 Prevalence of postpartum depression among mothers.**

The prevalence of postpartum depression among mothers at Nyakayojo HCIII was 33.06 % a figure that is in line with the estimated prevalence of 6.9 % to 39.6% in Africa (Atuhaire et al., 2020). A study conducted in Tanzania in 2010 showed a prevalence of 39.6%; a figure slightly higher than the prevalence found in this study (Kaaya et al., 2010). A similar study done in Ethiopia in 2015 also showed a slightly lower prevalence of 24.94% (Biratu et al., 2015), and in South Africa KwaZulu Natal in 2012 38.5% (Manikkam et al., 2012). These studies from the neighboring countries were done among rural populations; which is similar to this very study that was done in a rural setting as well. This could explain their relativeness in regard to the prevalence rates of postpartum depression. Rural residents are more likely to be exposed to higher episodes of postpartum depression due to experience circumstances, conditions and behavior that challenge health and may increase the prevalence of depression. Rural residents are also more likely to live in poverty, and since poverty is associated with more morbidity thus they are at a higher risk of getting postpartum depression (Probst et al., 2006).

On the contrary, a disparity between prevalence of PPD among mothers at Nyakayojo HCIII and some of the rest of the countries globally is observed. For example, a study done in Iran showed a prevalence of 6.9% (Abdollahi et al., 2016) a figure that is lower and approximately 4.8 times the prevalence showed in this study. This could be in part be explained by the methodological differences among the studies as well as tools used across these countries. For example, a study done in Iran used a longitudinal cohort study design which was contrary to this study where a cross sectional study design was used. Similarly, another study done at the University of Oulu central Finland showed a prevalence of 22.2 % (Hiltunen, 2003). This was a prospective longitudinal follow up and included the Beck Depression Inventory (BDI) and General Health Questionnaire (GHQ) which was contrary to this study which used a cross sectional study design and Edinburg Postnatal depression scale. Given such

different tools as well as study designs, this manifests a lower prevalence in other studies compared to this study that had a relatively higher prevalence of postpartum depression.

Further, different studies used different cut offs on EPDS to assess for depression that is a number of studies use a lower cut off of 10. For example, a study done in Thailand in 2001 which showed a prevalence of 20.5% for postpartum depression used a score of 10 and above on EPDS to diagnose postpartum depression among mothers (Limlomwongse et al., 2006). Another study by Larsson in 2004 also used the same cut off to diagnose for postpartum depression and gave a prevalence of 15% (Larsson et al., 2004). In this study depression was defined and described by a score of 13+ on EPDS, this could also possibly explain the relatively higher prevalence of 33.06%.

## **5.2 The socio demographic factors associated with PPD among mothers**

In this study, the socio demographic factors that had statistical significant association with postpartum depression among mothers at Nyakayojo HCIII at multi variable level was tertiary level of education. This finding was in line with some previous studies for example; a study done among Japanese women a statistical significance of postpartum depression was reported among participants that had acquired tertiary level of education ((Matsumura et al., 2019). It should be noted that education level of a woman is frequently used to assess her socio-economic status indirectly thus, individuals with lower socio-economic have a higher risk of developing postpartum depression. However, results of this study are contrary of what other studies have found out for example; in Pakistan, it was reported that PPD was more prevalent among women with no formal education (Yadav et al., 2020). According to another study conducted in Peshawar at Fauji foundation hospital, a significant number of women with no formal education presented high depressive disorders compared to those that had attained higher levels of formal education (Khan et al., 2015)

The socio demographic factors that had no statistical significant association with post postpartum depression among mothers but with high odds of PPD in this study were; mothers' employment status, age of the mother and place of residence as indicated in table 4.3.

## **5.3 Psychosocial factors associated with postpartum depression among mothers**

At multi variable analysis, fair state of marital relationship and baby crying excessively all the time were strongly associated with postpartum depression. It should be noted that mothers in fair and not good marital relationships are more likely to be exposed to PPD. The poor relationship between husbands and wives, as an important factor affecting human physical and mental health, has attracted the close attention of researchers worldwide. According to Zhang et al., 2008, the quality of the husband-wife relationship was mainly reflected in the quality of the husband's care for his wife, and

mothers who were less satisfied with their husband's care and support were more likely to have postpartum depression. Fair husband-wife relationship will not only reduce maternal social support but also become a maternal stressful life event, which brings about an increased risk of developing postpartum depression Qi et al., 2017. Malus et al., 2016 also confirmed the significance of the state of marital relationship in the development of PPD. According to a study by Kruse et al., 2013 stressed that a greater marital relationship satisfaction predicted on set of lower PPD. It should be noted that sense of closeness and intimacy in the relationship are associated with better mood and a greater ability to cope with the difficulties of labor, and caring for a newborn baby by the mother. However, other studies have come to report contrary of this; for example a study done among Jordanian women showed no effect of marital relationship on PPD onset amongst mothers (Mohammad et al., 2011).

In addition, according to this study baby crying excessively was strongly associated with postpartum depression. This finding is consistent with other studies for example; a systematic review from 2018 found strong and consistent evidence for a relationship between maternal depression/anxiety postpartum and baby crying excessively (Petzoldt et al., 2018). According to a study by Barr et al 2014, infant crying excessively may cause or worsen postpartum depression creating a vicious circle, where depressive symptoms and infant crying may reinforce each other. An increasing number of studies have demonstrated that maternal mental health may influence the child's neuro-behavioral functioning and development, including emotional regulations, temperament, and crying, though studies on this subject are still limited (Gustafsson et al., 2018). A one longitudinal study described different challenges associated with infant crying problems that included shaken baby syndrome, child abuse, and psychosocial problems later in childhood (Valla et al., 2021).

Other psycho social factors that were not significantly associated with postpartum depression in this study were; support received, baby birth satisfaction, victimization and satisfaction with baby's gender.

#### **5.4 Obstetric factors associated with PPD among mothers**

At multivariable analysis, no obstetric factor was statistically associated with postpartum depression.

#### **5.5 Recommendations**

The health policy makers and advocates need to review the postnatal package and consider incorporating screening for postpartum depression in postnatal programs for all mothers and providing practical support to mothers during the postpartum period. They could start by screening all mothers whose babies cry excessively all the time, in a fair state of marital relationship as well as those with a tertiary level of education as these three factors had significant association with postpartum depression

in this study. The study indicates the necessity of integrating mental health with existing maternal and child health programs to ensure the health of both mother and baby.

Labour and delivery need to be managed by skilled staff in order to prevent history of birth complications.

Integration of improved policies that involve men in safe motherhood programs in order to support mothers physically, financially and all other aspects of life.

There is also need to do a similar study in an urban setting and compare the outcome with the prevalence obtained in this study which was done in a rural setting.

Studies to be directed towards risk factors and outcomes of depression among postpartum mothers in Uganda are required in order to help in developing effective interventions that are suitable for integration into primary health care in Uganda and other developing countries

## **5.6 Conclusion**

The prevalence of postpartum depression of 33.06% was observed a figure slightly higher than the estimated prevalence of 17% in Africa. Baby crying excessively, fair state of marital relationship and tertiary level of education were significantly associated with postpartum depression. Hence there is need to integrate mental health care with postnatal care for mothers.

## **5.7 Areas for further research**

The study adopted a cross sectional design where data was collected at one point in time and findings from such studies are always limited to the current period only thus future studies should look at longitudinal research design where PPD among mothers is monitored for a long period of time.

The study was restricted to a quantitative approach using a structured questionnaire to elicit information from the respondents meaning that other features that could be observed were not included in the findings and thus future research should incorporate qualitative perspective using for example observation and interview guide

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## **APPENDICES**

### **Appendix I: Research and Ethics Committee Consent Form**

**STUDY TITLE:** *“Prevalence and factors associated with PostPartum depression among mothers at Nyakayojo HCIII Katojo Ward, Mbarara city South West Uganda”*

#### **RESEARCHER: AKAMPWERA PHIONAH (MPH Student)**

Good morning /Good Afternoon Sir /Madam. Your consent is being sought to participate in this study. Please, read the following information carefully before you decide whether or not to consent to participate.

**Purpose of the Research:** This study is intended to study “The prevalence and factors associated with postpartum depression among mothers at Nyakayojo HCIII Katojo ward, Mbarara city South West Uganda” The findings from this study will provide an insight to current and future health policy makers to enable them come up with a comprehensive mental health package that will ensure delivery of comprehensive services in regard to postpartum depression and subsequently improve mental services for you and other patients at Nyakayojo HCIII and Uganda as a whole.

**Respondent selection:** We are selecting a total of 196 respondents among mothers at Nyakayojo HCIII in Katojo ward, Mbarara City South West Uganda.

#### **Procedure to be followed:**

Participation into this study is voluntary. If you agree to take part in this study, you will be asked/requested to answer some questions in relation to your knowledge about prevalence and factors associated with postpartum depression. We would also to have you answer a questionnaire by circling or even writing the most appropriate answer of your choice. These questionnaires will never be shared with any other person without your consent and your names will not be recorded anywhere. You have a right to fill these questionnaires or not. Kindly, provide your opinion about the questions that will be asked. In case you are not sure of what has been asked, you are free to request for clarification. Thank you for accepting to be part of this.

**Discomforts/Risks:** The risks in this study are minimal. Kindly be assured of failure to participate in this study not causing you any harm in regard to your acquisition of any form of health services in your community in the future. Therefore, you can choose not to participate or with draw from the study at any point.

**Incentives/Benefits for participation:** There is no direct benefit to you for choosing to participate in this study. However, the information gathered will help us to improve the mental services for mothers after birth in your community.

**Time duration of participation:** Your participation in the study will not exceed 45 minutes. However, if you wish you can share with me anything of your interest in regard to the study after the interview session.

**Confidentiality:** During the study, individual names will not be mentioned in any way. Similarly, Results of this study will as well be presented in a grouped format during publication and individual participants will not be mentioned.

**Voluntary participation:** Your participation in this research is purely voluntary. You therefore got a right to participate in the study or not and you may also decide to withdraw from the study at any time.

**Who to contact:** In case of any questions or clarifications concerning the study, you are free to ask. If you wish to ask questions after the interview, you may reach out to the following address:

**AKAMPWERA PHIONAH (Researcher)**

**Tel: 0756867004/0773232720**

**Given that I have read fully and understood the content of this consent form, sought clarification, asked questions and answered I voluntarily accept to be part of this study.**

Participants Names.....

Participant's signature & date.....

Interviewer's name & location.....

## **Appendix II: Edinburgh Postnatal Depression Scale**

Date: .....

Study ID.....

Total score.....

Period after birth.....

### **INSTRUCTIONS**

Please tick one of the options for each question that is the closest to how you have felt in the PAST SEVEN DAYS.

#### **1. I have been able to laugh and see the funny side of things**

0 As much as I always could

1 Not quite so much now

2 Definitely not so much now

3 Not at all

#### **2. I have looked forward with enjoyment to things**

0 As much as I ever did

1 Rather less than I used to

2 Definitely less than I used to

3 Hardly at all

#### **3. I have blamed myself unnecessarily when things went wrong.**

3 Yes, most of the time

2 Yes, some of the time

1 Not very often

0 No, never

#### **4. I have been anxious or worried for no good reason**

0 No, not at all

1 Hardly ever

2 Yes, sometimes

3 Yes, very often

**5. I have felt scared or panicky for no very good reason**

3 Yes, quite a lot

2 Yes, sometimes

1 No, not much

0 No, not at all

**6. Things have been getting on top of me**

3 Yes, most of the time I haven't been able to cope

2 Yes, sometimes I haven't been coping as well as usual

1 No, most of the time I have coped quite well

0 No, I have been coping as well as ever

**7. I have been so unhappy that I have had difficulty Sleeping**

3 Yes, most of the time

2 Yes, sometimes

1 Not very often

0 No, not at all

**8. I have felt sad or miserable**

3 Yes, most of the time

2 Yes, quite often

1 Not very often

0 No, not at all

**9. I have been so unhappy that I have been crying**

3 Yes, most of the time

2 Yes, quite often

1 Only occasionally

0 No, never

**10. The thought of harming myself has occurred to me**

3 Yes, quite often

2 Sometimes

1 Hardly ever

0 Never



### **Range of EPDS Scores:**

#### **Scores**

- 1) **< 8:** Scores in this range indicate that depressive symptoms are not present and one may need further support.
- 2) **9 - 11:** Scores in this range may indicate the presence of some symptoms of distress that may be short-lived and are less likely to interfere with day to day ability to function at home or at work. However if these symptoms have persisted more than a week or two further enquiry is warranted.
- 3) **12-13:** Scores within this range indicate presence of symptoms of distress and may be fairly high that may be discomforting. Repeat the EDS in 2 weeks' time and continue monitoring progress and educating regularly
- 4) **13 +:** Scores above 13 require further assessment and appropriate management as the likelihood of depression is high. Referral to a psychiatrist/psychologist and treatment may be necessary.

**NOTE:** Any mother who scores 1, 2 or 3 on item 10 possess suicidality risk and thus requires immediate discussion and referral to the PCP or mental health specialist for further assessment and intervention as appropriate. This should be done to ensure the mothers safety as well as for the baby.

### **Appendix III: Questionnaire for Participants**

#### **Instructions:**

Please provide an honest appropriate answer to all the questions you will be asked below.

Study ID..... Date.....

Village..... Telephone contact.....

Parish.....

**Circle or fill one of the following options as provided.**

#### **Socio-demographic information**

1. How old are you?

1=18-28

2=29-39

3=40-49

2. What is your marital status?

1 =Married

2 =Separated/divorced

3 =Widowed

3. How long have you been married in years? .....

4. What is your level of education?

1=No formal education

2=Primary

3=Secondary

4=Tertiary

5. Are you employed?

1=Yes

2=No

6.If yes to question 5, how much do you earn per month in UGX? .....

1=0-50000/=

2=50001-100000/=

3=100001-200000/=

4=200001-500000/=

5=>50000/=

6.Is your partner employed?

1=Yes

2=No

99=N/A

7. If yes to question 6, how much does your partner earn per month in UGX?

1=0 - 50,000/=

2= 50,001 - 100,000/=

3=100,001 - 200,000/=

4=200,001 - 500,000/=

5=>500,001/=

6=I don't know

99=N/A

**Psycho – social factors' information**

8. Have you received support (e.g. physical, emotional, and financial) from your family and friends after birth?

1=No

2=some times

3=all the time

9. How is the marital relationship with your spouse?

1= Very Good

2=Good

3=Fair

4=Not good

5==N/A

10. Have you ever been a victim of the following?

1=physical assault

2=verbal assault

3=sexual assault

4=All the above

5=None of the above

6=other specify.....

11. Were you satisfied with the birth of your baby?

1= No

2=Yes

12. Has your baby been crying excessively?

1=Yes

2=No

3=Sometimes

13. Is your place of residence rural or urban?

1=Yes (Rural)

2=No (Urban)

**Obstetric factors' information**

14. How many children do you have? .....

15. What is your baby's gender?

1=Male

2=Female

16. Were you satisfied with your baby's gender?

1=Yes

2=NO

17. Where did you deliver your baby from?

1=Health facility

2=Traditional birth attendant

3=Home

18. Had you planned to have this baby?

1=yes, I did

2=No, it just happened

3=No, I was forced

4=No, I was raped

5=others specify.....

19. Have you experienced any of the following complications after the birth of your baby?

1=yes

2=No

20. If yes to question 15, how did you manage it?

1=Medical treatment

2=Herbal medicine

21. What mode of delivery did you?

1=Caesarean section

2=Spontaneous vaginal delivery

3=Assisted vaginal delivery (like Vacuum extraction, Forceps delivery, assisted breech delivery)

23. Do you have any other issue of discussion apart from those asked above? .....

Thank you so much for participating in the study.



## Appendix IV: BSU Rec Approval Letter

# BISHOP STUART UNIVERSITY

P.O.BOX 9, MBARARA

Tel: 0772 512551



Website: [www.bsu.ac.ug](http://www.bsu.ac.ug)

E-mail: [rec@bsu.ac.ug](mailto:rec@bsu.ac.ug)/[info@bsu.ac.ug](mailto:info@bsu.ac.ug)

## RESEARCH ETHICS COMMITTEE

15/03/2023

To: PHIONAH AKAMPWERA

BISHOP STUART  
UNIVERSITY0756867004

**Type:** Initial Review

**Re: BSU-REC-2023-58: PREVALENCE AND FACTORS ASSOCIATED WITH POSTPARTUM DEPRESSION AMONG MOTHERS AT NYAKAYOJO HCIII KATOJO WARD, MBARARA CITYSOUTHWEST UGANDA, English, 2023-02-15**

I am pleased to inform you that at the 7 convened meeting on **08/02/2023**, the Bishop Stuart University (BSU)REC, committee meeting, etc. voted to approve the above referenced application.

Approval of the research is for the period of **15/03/2023** to **15/03/2024**.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **15/03/2024** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. 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 Bishop Stuart University (BSU) REC

	<b>Document Title</b>	<b>Language</b>	<b>Version Number</b>	<b>Version Date</b>
	Recommendation Letter	English	English	2023-02-15
	Compliance report	English	English	2023-02-15
	Protocol	English	English	2023-02-15
	Data collection tools	Runyankole	Runyankole	2023-02-16
	Data collection tools	English	English	2023-02-15
	Informed Consent forms	Runyankole	Runyankole	2023-02-15
	Informed Consent forms	English	English	2023-02-15

Yours Sincerely

A handwritten signature in black ink, appearing to be 'GR', written on a light-colored background.

Godfrey Rukundo  
For: Bishop Stuart University (BSU) REC



**Appendix V: Krejcie and Morgan table for sample size determination**

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970