POSTPARTUM DEPRESSION AMONG WOMEN ATTENDING POSTNATAL CLINIC AT MOI TEACHING AND REFERRAL HOSPITAL, ELDORET, KENYA

BY

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MOI UNIVERSITY

DECLARATION

I Jackline M. Muyekho do declare that this research thesis is my own original work. It has not been presented to any other university for the purpose of obtaining a degree or diploma.

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LIST OF ABBREVIATIONS.

BPDS	Bromley Postnatal Depression Scale
CES-D	Centre of Epidemiologic studies-Depression
DALYS	Disability Adjusted Life Years
DSM-IV	Diagnostic and Statistical Manual for Mental Disorder
EPDS	Edinburg Postnatal Depression Scale
HIV	Human Immunodeficiency Virus.
HPA	Hypothalamopituitary Adrenal.
ICD-10	International Classification of Disease Number 10.
MINI	Mini International Neuropsychiatric Interview**.**
MTRH	Moi Teaching and Referral Hospital.
PDSS	Postpartum Depression Screening Scale.
PMTCT	Prevention of Mother to Child Transmission.
PPD	Postpartum Depression
WHO	World Health Organization
YLD	Years Lost due to Disability.

KEY DEFINITIONS.

Depression -It is a distinct disease category in DSM V. A specifier of major depression of peripartum onset is applied if symptoms occur during pregnancy or in the four weeks following delivery.

Major Depressive episode is diagnosed if symptoms of depressed mood and loss of pleasure are present during the same week and represent a change from previous functioning. These symptoms should be accompanied by 5 or more of the following:

- Significant weight loss or weight gain. A change of 5% of body weight within one month.
- Insomnia or hypersomnia nearly every day.
- Psychomotor retardation or agitation.
- Fatigue or loss of energy.
- Feeling of worthlessness or excessive guilt
- Diminished ability to concentrate.
- Recurrent thoughts of death.

The symptoms should be profound enough to impair social, occupational or other important areas of functioning.

Postpartum –The period following birth of a child. Divided into three phases:-

- Initial /acute period-includes the first 6-12 hours
- Sub-acute postpartum includes 2-6 weeks after delivery
- Delayed postpartum –lasts up to 6 months

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ABSTRACT

Background: Major depression is the most common mental disorder affecting women in the postpartum period and is associated with poor maternal and child outcomes. The disorder is covertly suffered and often missed. Knowing the prevalence and associated factors is the first step towards identifying those at risk. The findings are the first in our setting and will provide a baseline in providing mental health services to depressed women in the postnatal period.

Objective: To determine the sociodemographic and clinical factors associated with depression among women attending the postnatal and immunization clinics within six weeks of postpartum.

Methods: The study was a descriptive cross-sectional one in which the Edinburg Postnatal Depression Scale (EPDS) was used for screening for the presence of depression. A researcher designed questionnaire was administered to determine sociodemographic and clinical factors associated with depression. A score of 13 or more on the EPDS was considered significant for depression. The setting for the study was at the Postnatal and Child immunization Clinics of MTRH where 707 consenting women were systematically sampled from July 2016 to June 2017. Data was analyzed with STATA version 14. Descriptive statistics were used to explore the data while Chi-square test, Fishers exact test Kruskal Wallis test and logistic regression were used to assess associations. At all analyses, a 'p' value of < 0.05 was considered statistically significant.

Results: The median age for the respondents was 26 years (IQR 22,30). Most of the respondents were married (589) 83.3%. The prevalence of Depression within 6 weeks was (158) 22.3%. This was associated with postpartum blues (OR,3.63, 95% CI,2.11-6.23,p<0.001),presence of marital conflicts(OR,3.41,95%CI,2.06-5.68,p<0.001) and Multiparity(OR,2.23, 95%CI 1.11-4.48, p=0.024).The single /separated were less likely to express depressive symptoms within six weeks of postpartum. (OR,0.30, 95% CI 0.17-0.53, p<0.001).

Conclusion: Presence of marital conflicts, having two or more children and the presence of postpartum blues were associated with postpartum depression.

Recommendations: I recommend for the routine screening of depression among those married women with marital conflicts, those women with two or more children and those with history of postpartum blues. This should be followed with prompt referral for management.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Childbirth is a complex event accompanied by joy and happiness. The complexity stems from the numerous bio psychosocial alterations that occur in the first few days and months following delivery. The bio psychosocial alterations may trigger psychiatric disorders such as Major depression: bringing the happiness and joy to an end in vulnerable women. Depression that occurs in puerperium is characterized by low mood, loss of interest in pleasurable activities and specific features such as preoccupation of the mother with her child caring ability. In extreme cases, the clinical course of depression may be characterized by psychosis and infanticide

Depressive symptoms may begin in pregnancy, early postpartum period and extend beyond six months.(Stowe, Hostetter et al. 2005, Association 2013, Kettunen, Koistinen et al. 2014). The DSM V sets four weeks after childbirth as the delimiter for diagnosing depression of peripartum onset. International classification of Diseases -10 classifies mental disorders as associated with puerperium if they commence within 6 weeks after delivery(Organization 1992). An international panel formulated the Santra Bruk classification in Sweden in 1992 from which 3 months were recommended for defining the Postpartum onset(Wisner, Chambers et al. 2006).Therefore the onset and duration of depression has not been fully defined.

Globally, Major depression was ranked second in contributing to years lost due to disability(YLD) (Becker and Kleinman 2013, Vos, Flaxman et al. 2013) .

In 2000, WHO ranked depression as the fourth cause of disease burden and this contributed 4.4% of the total Disability adjusted years. Worldwide, it accounted for 12% of total years lived with disability.(Üstün, Ayuso-Mateos et al. 2004) .

Postpartum depression was initially considered a western- culture related disorder, but recent transcultural reports have attested to the universality of the experience with an estimated global prevalence of 10% - 15% (Goldbort 2006).The prevalence range is wide in specific countries because of the different research methods and the differences in cross-cultural variables.

The prevalence of postpartum depression in developed countries is between 1.9%-82% and for developing countries is between 5.2%-74%(Norhayati, Hazlina et al. 2015). A systematic review done for low and lower middle income countries (based on World bank categorization), estimated the prevalence of postpartum depression at 19.8% (Fisher, Mello et al. 2012)A more recent systematic review of postpartum depression in low income and middle income countries reported a pooled prevalence of 19.0%(Gelaye, Rondon et al. 2016)These values indicate that one in five women is affected by depression in the postpartum period. Additionally the figures could be a true estimate given the similar socioeconomic variables among these countries.

Postpartum depression has poor maternal, child and family outcomes. A depressed mother will not execute the role of childrearing well. Childhood outcomes including poor physical and psychological development have been demonstrated to result from maternal depression.(Nasreen, Kabir et al. 2013, de Castro, Place et al. 2017). The

inability to nurture the baby may compromise physical development, given that depressed mothers are unlikely to breastfeed and attend to the needs of the baby.(Adewuya, Ola et al. 2008, Field 2010). There is a positive correlation between paternal depression and maternal depression.(Paulson, Bazemore et al. 2016). Children of depressed mothers are at an increased risk of developing depression.(Burke 2003).Therefore depression in the postpartum period affects the whole family.

The cause of postpartum depression has not been fully defined. However, an interaction of several biological, psychological and social causes has been cited. Hormonal dysregulation, genetic vulnerability and inflammatory processes are strong biological predictors of postnatal depression(Yim, Stapleton et al. 2015). Recently, research has linked the changes in the gonadal steroids levels rather than their withdrawal to the mood symptoms(Bloch, Schmidt et al. 2000, Miller 2002) (O'hara and McCabe 2013). The rapid change in gonadal steroids occur in most women but a small percentage of the vulnerable ones develop maternal depression(Hendrick, Altshuler et al. 1998, Bloch, Daly et al. 2003, Schiller, Meltzer-Brody et al. 2015) Estradiol and progesterone modulate neuronal function through the neurotransmitters such as serotonin and dopamine.

Major depression in the postpartum period should be differentiated from postpartum blues. Almost 50% of women experience postpartum blues a few days after childbirth. The disorder is characterized by mild mood symptoms including tearfulness, irritability and resolves spontaneously. Postpartum blues is as a result of abrupt change in reproductive hormones.(Buttner, O'Hara et al. 2012)

Psychosocial factors that are associated with postpartum depression are: severe life events chronic strain quality of relationship and family support.(Yim, Tanner Stapleton et al. 2015) Low socioeconomic status enlisting low education, low income, being unmarried and unemployed has additionally been associated with postpartum depression.(Goyal, Gay et al. 2010, O'hara and McCabe 2013).

Screening for maternal depression in outpatient settings improves the detection of depression as compared to clinical evaluation(35.4% and 6.3%, p= 0.001)(Evins, Theofrastous et al. 2000).Randomized clinical trials have demonstrated the role of screening in reducing morbidity from depression (Leung, Leung et al. 2010). Despite the multiple contacts with health care providers those with PPD remain unrecognized and untreated. Symptoms of postpartum depression may be confused with normal symptoms experienced by women after delivery. About 50- 80% of postpartum depression are missed. (Boyd, Le et al. 2005, Boyd, Le et al. 2005, Hübner-Liebermann, Hausner et al. 2012). Onset of depressive symptoms is often during pregnancy and within the few weeks after delivery, hence the optimal time of screening would be within this time frame. The perinatal period is a good time when women are more motivated to improve their own heath as well as that of their newborn.(Guide 2015).

There are three self-report tools that are frequently used in the screening for depression in the peripartum period: The Postnatal Depression Scale, Bromley Depression Scale and the Edinburg Postnatal Depression Scale (EPDS). The EPDS is a 10- item tool used in many clinical settings. At validation, it had a sensitivity of 86% and a specificity of 78%.It was accepted by most women , is easy to administer

and is completed in 5 minutes(Cox, Holden et al. 1987) (Buist, Condon et al. 2006, Brealey, Hewitt et al. 2010).

Moi Teaching and Referral Hospital serves the western part of Kenya as well as being a teaching Hospital. It has an antenatal, postnatal and a maternity ward that caters for reproductive health services. At the Postnatal clinics and Well baby clinics, screening for postpartum depression does not take place and therefore the prevalence and associated factors have not been established.

Psychiatrists are often consulted in extreme cases of depression marked by psychotic features in the inpatient settings at the Riley mother and Baby Hospital. Medical records of the period 2013 to 2014 show that an average of two psychiatric requests were made each week. Because of the differences in cross-cultural variables, identification of correlates in the context of postpartum depression, may lead to interventions designed to treat and prevent depression in vulnerable women in our population. These findings are the first in this setting.

1.2 Problem Statement.

Postpartum depression is a worldwide problem and it can be managed once a diagnosis has been made. (Hübner-Liebermann, Hausner et al. 2012)

The prevalence of postpartum depression is between 1.9-74% in developing countries and if left untreated, may result in serious consequences to the mother and the whole family(Hübner-Liebermann, Hausner et al. 2012)

The mental well-being of the mother after childbirth is important in ensuring good development of the child. A depressed mother will not execute the role of childrearing well. Poor childhood outcomes have been demonstrated to result from maternal depression.(Nasreen, Kabir et al. 2013, de Castro, Place et al. 2017).

Despite the high prevalence and the serious consequences, 80% of depressed mothers are unrecognized.

Routine screening for depression in the postpartum period is not done at Moi Teaching and Referral Hospital, and as such interventions may be delayed. Clinicians working with postnatal women have not been trained on identification of postpartum depression. Therefore, less attention is paid on the associated factors and the prevalence could be high.

1.3 Study Justification.

Postpartum depression is the most common psychiatric disorder after childbirth.(Hübner-Liebermann, Hausner et al. 2012)

Child birth and postpartum period is a time of change in a woman's life, increasing the vulnerability to mood disorders(Stowe and Nemeroff 1995)

Postpartum depression affects the quality of mother infant interaction. Depressed mothers are less sensitive and have a reduced capacity to nurture their babies. This creates an environment for emotional dysregulation which may affect the psychological development of their children (Hiltunen 2003, Væver, Krogh et al. 2015). The inability to nurture the baby may compromise physical development, given that depressed mothers are unlikely to breastfeed and attend to the needs of the baby.(Adewuya, Ola et al. 2008, Field 2010).

The effects of depression are felt by the whole family. Men become depressed when their spouses are depressed (Goodman 2004, Paulson and Bazemore 2010).There is a positive correlation between paternal depression and maternal depression(Paulson, Bazemore et al. 2016). Children of depressed mothers are at an increased risk of developing depression.(Burke 2003).Postnatal depression therefore impacts the wider

community and public: justifying an urgent solution (Upadhyay, Chowdhury et al. 2017)

Despite the multiple contacts with health care providers during the postnatal period, those with PPD remain unrecognized and untreated. About 50- 80% of postpartum cases are not detected in clinical settings. (Boyd, Le et al. 2005, Boyd, Le et al. 2005, Hübner-Liebermann, Hausner et al. 2012).

The symptoms are non-specific and may be associated with other disorders. Therefore, the problem of detecting depression lies in screening.

The findings will be invaluable in providing holistic care to mothers attending postnatal clinics and those attending Well baby clinics.

In the Post-2015 agenda for development goals, WHO is adopting Universal Health Coverage with more emphasis on mental health conditions in the delivery of integrated services for maternal health as a strategy of closing the treatment gap in low and middle income countries.(Sørensen, Bæk et al. 2017, Eaton, Gureje et al. 2018)

1.4 Research Questions

1) What is the prevalence of depression among women attending postnatal clinic and those bringing their babies for immunization at MTRH?
2) What are the factors that are associated with postpartum depression among women attending postnatal clinics and those bringing their babies for immunization at MTRH?

1.5 Research Objectives.

1.5.1Broad Objective

To determine the prevalence and factors associated with postpartum depression among women attending postnatal clinic and those bringing their babies for immunization at– MTRH.

1.5.2 Specific Objectives

1. To determine the prevalence of postpartum depression among women attending postnatal clinic and those bringing their babies for immunization at MTRH.
2. To assess factors associated with postpartum depression among women attending postnatal clinic and those bringing their babies for immunization MTRH.

CHAPTER TWO.

LITERATURE REVIEW.

2.1 Prevalence of postpartum depression.

The prevalence of postpartum depression using self-reported questionnaire varies widely, with ranges of (1.9-82%) in developing countries and 5.2%-74% in developed countries (Norhayati, Hazlina et al. 2015).. The prevalence varies widely depending on the geographical differences, the methodology of the different studies as well as abnormal versus normal expressions in the peripartum period(Halbreich and Karkun 2006)

A systematic review done for low and lower middle income countries (based on World bank categorization), estimated the prevalence of postpartum depression at 19.8% (Fisher, Mello et al. 2012).The author searched major databases, systematically for English language publications on the prevalence of non-psychotic mental disorders in pregnancy and in puerperium. Thirty-four research publications from 17 countries, provided findings for non-psychotic disorders in women in the postnatal period. The prevalence is higher than that from high income countries. In a study of 17 states in the in the United states, the prevalence of self-reported depressive symptoms was 11.7% for Maine and 20.4% for New Mexico.(Control and Prevention 2008)

In Australia, in sample of 12361 postnatal women at 6- 8 weeks ,recruited from 43 health care centres,7.5% met the threshold of major depression.(Buist, Austin et al. 2008)

Studies in Europe have reported varied prevalence for postpartum depression. A study in Italy, recruited women in their pregnancy, and assessed for predictors of depression

in postpartum. In the study, postpartum depression predictors were assessed with Postpartum depression predictors inventory revised form(PDPI-r).A double test strategy using EPDS and the 12 item General health questionnaire(GHQ-12) was administered at 6-8 weeks, reporting the prevalence of postpartum depression at 13 %.(Grussu and Quatraro 2009)

The prevalence of postpartum depression is higher in low income countries as compared to developed countries. This can be attributed to factors such as poverty, HIV/AIDS, intimate partner violence and the occurrence of epidemics.(Stringer, Meltzer-Brody et al. 2014, Sowa, Cholera et al. 2015).

Literature search conducted using electronic databases in Asia between 1998 and 2008, reported a prevalence rate of 3.5-63.3%(Klainin and Arthur 2009).The higher rates were found in Pakistan and the rates were lowest in Malaysia. A study in Vietnam to examine depressive symptomatology among 506 mothers of infants of 6 weeks attending well baby clinics, 33% scored positively for depression(Fisher, Morrow et al. 2004).

A systematic review of 35 studies in Africa, with 10880 participants, reported a weighted mean prevalence of postpartum depression at 18.3%.(Sawyer, Ayers et al. 2010) The value is higher than the global prevalence postpartum depression. However, the prevalence in specific countries vary just like in the other continents. Majority of African countries have prevalence that is higher than high income countries (Parsons, Young et al. 2012). In a study in Nigeria with 876 women recruited at 6 weeks of postpartum from immunization clinic and screened with EPDS,14.6% had depression .(Adewuya, Fatoye et al. 2005).

Studies done in South Africa, have reported the prevalence of postpartum depression to be higher than the global prevalence. The point prevalence at 8 weeks among 147 women from a peri- urban population was 34.1%(Cooper, Tomlinson et al. 1999) .In another study conducted by community health workers among 249 women in their 12 weeks of puerperium, the estimated prevalence was 31.7%.(Hung, Tomlinson et al. 2014).Further research in a hospital set up conducted in early puerperium with a small sample of 57 women, estimated that 45.6% had probable depression using the EPDS(Pingo, van den Heuvel et al. 2017).The high prevalence of Postnatal depression in South Africa are comparable to that in Zimbabwe. In a random sample of 210 postpartum women attending their 6^{th} week postnatal clinic, 33% had depression on the Shona version of the EPDS.(Chibanda, Mangezi et al. 2010)

The rates of maternal depression have been variable in North Africa. Egypt reported a prevalence of 73.7%. In this study, 57 postnatal women were recruited from public and private hospitals and the Arabic version of the EPDS administered. The high rate could have been due to the transition from the Egyptian revolution.(Masmoudi, Charfeddine et al. 2014, Mohamed, Spencer et al. 2014) In Tunisia, a cross sectional study of 150 parturient women, interviewed at one week and at the sixth week reported a prevalence of 14.7% and 19.8% respectively.(Cherif, Feki et al. 2017).A prospective study in which 302 Tunisian parturient were screened with the EPDS at one week then reviewed between the sixth and tenth week, reported prevalence's of 19.2% and 12.9%.More than 50% of the participants were lost to follow up.(Masmoudi, Charfeddine et al. 2014).In a Moroccan sample of 144 mothers, the prevalence of depressive disorder at 6 weeks was 11.8%.The depressive disorder was significantly associated with pregnancy complications, stressful life events and baby's health problems(Agoub, Moussaoui et al. 2005).

Studies done in East Africa have reported varied rates of postpartum depression. A cross sectional study of 544 women in Uganda, using the 25 item Self reporting questionnaire and MINI, reported a point prevalence of 6.1% at the sixth week. This was significantly associated with young age, being single, unplanned pregnancy, unwanted sex of the baby and a current physical illness of the mother and baby.(Nakku, Nakasi et al. 2006). In another study conducted in a rural district in Uganda with 202 participants using the EPDS, 43% had depressive symptoms.(Kakyo, Muliira et al. 2012).

In Kenya, two studies have reported different rates of postpartum depression. According to a study conducted in Kariobangi, the rate was 13% at the sixth to the 14^{th} week of puerperium using the EPDS.(Madeghe, Kimani et al. 2016).In another study that sampled HIV infected women attending PMTCT clinic in Kenyatta National Hospital, the prevalence of depressive symptomology was 48% at the sixth week using the EPDS .Lack of family support was associated with elevated depressive symptoms(Yator, Mathai et al. 2016).

2.2 The onset and the duration of postpartum depression.

The onset of depressive symptoms has been a contentious issue among many researchers conducting research in clinical and community settings. Guidelines for the period of screening for maternal depression are inconsistent.

Many studies have reported increased vulnerability for major depression in the first few weeks following childbirth. In a study to compare depression among 232 women at 6 months post-delivery compared with a control group who had not delivered, there was a three-fold higher rate of depression onset within five weeks after childbirth.(Cox, Murray et al. 1993).Consistent with these findings are reports from

200 participants screened prenatally and postnatally in which 66.5% had depressive symptoms onset in the early postpartum period. The duration of depressive symptoms extended beyond the six months.(Stowe, Hostetter et al. 2005).

Yonkers and e.t al, studied maternal depression in 802 women at 3-5 weeks from an inner City Maternal clinic system in the United States and reported that 50% of depressed women endorsed the onset of symptoms following childbirth. The duration of the depressive symptoms was associated with the presence of other young children at home.(Yonkers, Ramin et al. 2001).

In a study to determine the timing of depressive symptomatology, 40.1% of the 826 participants reported that the onset was within 4 weeks of delivery(Wisner, Sit et al. 2013).Another study reported that the onset of maternal depression was within 6 weeks following childbirth in 84% of the participants.(Kettunen, Koistinen et al. 2014).

In the third version of the Diagnostic Statistical manual for Mental Disorders, the term postpartum depression never existed. The term was coined in the fourth edition of the DSM IV as, “Major depression with postpartum onset”. The time criterion is 4 weeks of childbirth(Association 2000).

According to the fifth edition of the DSM, 50 % of the depressive symptoms have their onset in the antepartum period, qualifying the term “peripartum”. (Association 2013).

2.3 Screening for postpartum depression.

Universal screening for maternal depression has become a policy in some states in the United States such as Illinois, Minnesota New jersey and Austria (Farr, Denk et al. 2014, Guide 2015).Universal screening during the postpartum period has been recommended by many researchers as a strategy of improving maternal mental health.(Georgiopoulos, Bryan et al. 2001, Field 2010, O'hara and McCabe 2013).

Despite evidence on the feasibility of screening for maternal depression, the practice is inconsistent among many health care professionals. Barriers to the implementation of screening include, time constrains, lack of training and lack of knowledge on the diagnostic criteria (Chaudron, Szilagyi et al. 2004, Seehusen, Baldwin et al. 2005, Leddy, Haaga et al. 2011)

Screening for maternal depression in outpatient settings improves the detection of depression as compared to clinical evaluation(35.4% and 6.3%, p= 0.001)(Evins, Theofrastous et al. 2000).In a randomized clinical trial with 462 Chinese mothers, the control group underwent clinical evaluation and the intervention group were screened with EPDS. Both groups were referred for treatment .Participants in the interventional group had better maternal mental outcome as assessed by the EPDS at 6 months (Risk ratio:0.59 95 CI 0.39- 0.89)(Leung, Leung et al. 2010)

Onset of depressive symptoms is within the first one month, hence the optimal time of screening would be within this time frame. The perinatal period is a good time when women are more motivated to improve their own heath as well as that of their newborn.(Guide 2015) Opportunities for screening include, postnatal office visits and during infants and well child visits., women are likely to be found in these clinical areas (Munk-Olsen, Laursen et al. 2006, Gjerdingen and Yawn 2007, Guide 2015).

Self-report measures yields higher values for depression than interview methods.(Eberhard- Gran, Eskild et al. 2001).To date, there are 8 self-report tools that are designed to screen for depression. They do not provide a diagnosis, but are crucial in identifying women who may benefit from further evaluation.(Eberhard-Gran, Eskild et al. 2001). Of the 8 self-report tools only three have been tailored to screen for depression in the postpartum period.

a) **Postpartum Depression Screening Scale**. (PDSS)

Has 35 items assigned to 7 dimensions drawn from the DSM. The PDSS is a good screening tool although its psychometric properties have only been assessed by the authors. (Beck and Gable 2000).

b) Bromley postnatal depression scale (BPDS)

Was designed by Stein and Vanden Akker in 1992.The tool has 10 items that are used to report presence of symptoms for depression. It can assess for both present and previous depression(Stein and Van den Akker 1992). It lacks a recommended cut-off and therefore the need for professional training for interpretation.

c) **Edinburg postnatal depression scale**

The tool was designed by Cox et al in 1987 and is widely used for the screening of depression in the peripartum period. It has 10 items that self-report the emotional and cognitive symptoms of an individual,(Eberhard- Gran, Eskild et al. 2001).The 10 items are numbered 0 to 3 giving it a score range of 0 to 30. Women are asked to rate how they have felt for the last seven days. Completion of the tool takes about 5 minutes(Gibson, McKenzie- McHarg et al. 2009).

Empirically determined cut off scores are applied when reporting. The optimum cut-off for major depression is 13 or more and using 9/10 (10 or more) as the cut off for minor depression. When screening for minor and major depression a cut off of 12/13 (13 or more) is recommended.(Gibson, McKenzie- McHarg et al. 2009).

It is imperative that the validated cut offs are used when administering the EPDS. With a cut off of 13 or more at 6 weeks the EPDS has a sensitivity of 68-95% and a specificity of 78-96% when compared to a diagnosis made through a psychiatric interview. Validation by the Research Diagnostic Interview, reported a sensitivity of 86% and a specificity of 78% with a cut off score of more than 13,(O'hara and Swain 1996).

The EPDS was designed to screen for maternal depression in a clinical setting(Cox and Holden 2003).

EPDS is a valuable and an efficient tool in detecting women at risk of depression. In a study to determine the efficacy of EPDS against clinical evaluation, 35 women underwent clinical evaluation and 37 women had the EPDS administered to them. Women in the EPDS group were more likely to be identified as being at risk of depression than in the clinical evaluation group(30 versus 0)(Fergerson, Jamieson et al. 2002).The use of EPDS increases the detection rates of maternal depression in women who bring their babies at the well-baby clinics(Bågedahl- Strindlund and Börjesson 1998)

EPDS can still be used in implementing community postnatal care as a tool for screening depression. In study to review the records of 342 women at 6 weeks who had been screened with EPDS, 20% received a diagnosis of postpartum depression.

The diagnosis of depression was associated with a high score on EPDS.(Georgiopoulos, Bryan et al. 2001).

When compared with a psychiatric diagnostic interview, Beck Depression Inventory and Postnatal Depression Screening Scale, the EPDS is equally accurate in identifying depression in postnatal women. The EPDS compares well with the a psychiatric diagnostic interview which is the standard method of diagnosing depression.(Chaudron, Szilagyi et al. 2010).The concordance of the EPDS and the Public Health Questionnaire- 9 (PHQ-9) is high as tools used in screening for maternal depression. The concordance was present at 83%(399) of the 500 women who completed both tools, 326 had normal scores on both tools and 73 (15.2%) had elevated scores on both(Yawn, Pace et al. 2009).

The EPDS is acceptable by both the health care professionals and the postnatal women. In a study with 860 postnatal women and 916 health professionals, over 90% of the women found the EPDS easy to complete and a majority of the professionals found the tool useful.(Buist, Condon et al. 2006). Results of a qualitative study indicate that EPDS is generally acceptable by women and health workers. Better results are achieved with prior communication .(Brealey, Hewitt et al. 2010)

There are two cut offs for the EPDS; 10 or more and 13 or more. The cut off of 13 is applied when concluding probable depression in postnatal English-speaking women. This cut off is also recommended for resource limited settings where no further evaluation of depressive symptoms may happen (Cox, Holden et al. 1987, Matthey, Henshaw et al. 2006, Wisner, Sit et al. 2013). Lowering the cut off of the EPDS increases the sensitivity to 100% but lowers the specificity to 82%(Cox, Holden et al. 1987).Once screening is conducted by a trained health professional, scoring should be

done and referral made where necessary. The referral site should be proximal to the site of screening to increase good outcomes in treatment(O'hara and McCabe 2013, Guide 2015).

2.4 Factors associated with postpartum depression.

2.4.1 The role of hormones

It was hypothesized that the rise and fall of reproductive hormones in pregnancy and later after childbirth accounted for the mood changes that are seen in postpartum depression. Mood changes were attributed to the sudden withdrawal of estrogen.(O'hara and Swain 1996).

However recent reports have linked the changes in the gonadal steroids levels rather than their withdrawal to the mood symptoms(Bloch, Schmidt et al. 2000, Miller 2002) (O'hara and McCabe 2013) The rapid change in gonadal steroids occur in most women but a small percentage of the vulnerable ones develop maternal depression(Hendrick, Altshuler et al. 1998, Bloch, Daly et al. 2003, Schiller, Meltzer-Brody et al. 2015) Estradiol and progesterone modulate neuronal function through the neurotransmitters. Some of the neurotransmitters involved in mood changes are serotonin and dopamine. Reduced serotonergic activities are associated with major depression(O'hara and McCabe 2013) Genetic vulnerability may explain why some women develop depression in the peripartum period and others do not.(Yim, Stapleton et al. 2015).There could be a subgroup of women who are more sensitive to the changes in gonadal steroids. In this regard, the genetic hypersensitivity alters the adaptation to the environment. (O'hara and McCabe 2013, Yim, Stapleton et al. 2015)

Low levels of prolactin are associated with depression(Hiltunen 2003). Higher basal levels may be protective against postpartum depression. (Yim, Stapleton et al.

2015).Breastfeeding and postpartum depression interact in an equivocal pathway; however women who initiated exclusive breastfeeding are at a low risk of developing postpartum depression. In a prospective study, the EPDS was administered to 145 women in the 1st trimester, 2nd trimester 3rd trimester, neonatal and 3rd month of infancy. Depressive symptoms reduced from childbirth to the 3rd month for women who chose to exclusively breastfeed their infants(Figueiredo, Canário et al. 2014)

There is a temporary dysregulation of the thyroid in 5-7% of women in the postpartum period and symptoms of postpartum depression are frequent in patients with postpartum thyroiditis.(Kennedy, Malabu et al. 2010, Yim, Stapleton et al. 2015)

2.4.2 The role of genes

A systematic review to study polymorphism in genes among 1804 mothers reported probable mutation of genes that modulate the hypothalamus –pituitary adrenal axis, sex hormones and the effects of stress on the prefrontal cortex(Yim, Tanner Stapleton et al. 2015).Such mutations can result in dysregulation of the hypothalamus-pituitary Adrenal axis resulting in maternal depression(Glynn, Davis et al. 2013).

An approximate 22-38% of postpartum depression are accounted for by common genetic variants. Genetic variants associated with gonadal hormones could contribute to maternal depression.(Smeeth, Palmos et al. 2017)

2.4.3The role of sociodemographic factors.

Low socioeconomic status enlisting low education, low income, being unmarried and unemployment is associated with vulnerability to postpartum depression.(Goyal, Gay et al. 2010, O'hara and McCabe 2013).Single parenthood was cited as a risk factor for the development of postpartum depression (Bågedahl- Strindlund and Börjesson 1998). (O'hara and McCabe 2013)

Financial poverty as indicated by income predicts postpartum depression. The prevalence of postpartum depression was four times more in women earning less than $10000 as compared to those earning $70000(Segre, O'Hara et al. 2007).The increased prevalence is accounted for by the social stress model that financially poor women are exposed to increased stress and decreased coping mechanism in the face of reduced resources(Segre, O'Hara et al. 2007).(Katon, Russo et al. 2014).

Social support has been shown to confer protection against maternal depression by the mediation of self-efficacy. Parental support lowers depressive symptoms by promoting maternal self-efficacy.(Cutrona and Troutman 1986, Haslam, Pakenham et al. 2006)

Poor social support and poor quality of marital relationship is associated with the development of maternal depression.(O'Hara 2009, Akincigil, Munch et al. 2010, Patel, Rodrigues et al. 2014, de Castro, Place et al. 2015, Lara, Navarrete et al. 2016)The type of support and the source of support vary. Compared with the antenatal period, women need more support during the postpartum period(Milgrom, Gemmill et al. 2008, Xie, He et al. 2009) The support extended to postpartum women may be emotional or/and instrumental in nature. The social support is usually derived from the spouse or/and the woman immediate family and friends. Availability of friends and family was associated with 13.6 point lower mean score on the Centre of Epidemiological Studies (CES-D)(Surkan, Peterson et al. 2006).Family and friends have been reported to promote the mental wellbeing of first time mothers in the postpartum period(Leahy- Warren, McCarthy et al. 2012). The quality of support and the level of satisfaction with communication, affection and decision making are important predictors of maternal depression. Unsatisfactory social support and marital dissatisfaction was associated with postpartum depression in study of 425 women at

the 6th week 12th week, 18th week and the 24th week of postpartum (Boyce and Hickey 2005) Lack of partner support however has been reported consistently as a predictor of maternal depression.(O'hara and Swain 1996, Cooper, Tomlinson et al. 1999, Beck 2001).A literature search of 203 studies conducted between 2005 and 2014 identified poor social support and poor marital relationship as contributors of postpartum depression(Norhayati, Hazlina et al. 2015).Good social support may influence the extent to which events are evaluated as stressful and thus protecting against postpartum depression.(Logsdon and Usui 2001).

Presence of a poor marital relationship has been associated with depressive symptomatology in puerperium. A study in Israel using the validated Arabic version of EPDS on 564 women visiting maternal and child health clinics, reported significant association between marital conflict and maternal depression, OR2.6(Alfayumi-Zeadna, Kaufman- Shriqui et al. 2015)

In a prospective study in Kenya, 188 participants were recruited in the third trimester and assessed at baseline for the presence of a depressive disorder. A second assessment at 6th -10th week identified marital conflict to be among the strongest predictors of postpartum depression.(Ongeri, Otieno et al. 2016).

Contrasting findings were reported in another study of 128 women at the 6th week of postpartum .Depressive symptomatology by the CES-D were increased in women who were receiving more support from family and friends.(Logsdon, Birkimer et al. 2005)

Depression is high among adolescent mothers when dissatisfied with the level of partner support(Fagan and Lee 2010).

Stress that is evaluated as involving and beyond coping mechanism is predictive of postpartum depression.(Yim, Stapleton et al. 2015, Yim, Tanner Stapleton et al. 2015).Among the sources of stress is childcare, daily hassles and chronic strain. Adjusting to the parental role may be difficult especially in first time mothers who are transiting to parenthood(Milgrom, Gemmill et al. 2008, Gao, Chan et al. 2009). First time mothers described their experience of attending to their infant and the experience of the six weeks as "feeling drained."(Gao, Chan et al. 2010). Coupled with other factors such as caring for an infant with temperament, maternal depression may be worse among adolescent mothers.(Britton 2011, Venkatesh, Phipps et al. 2014, Venkatesh, Zlotnick et al. 2014, Yim, Stapleton et al. 2015, Yim, Tanner Stapleton et al. 2015)

With a young maternal age, PPD rates can reach 50%, given that this is the time when these mothers are maturing. Caring for an infant may be very frustrating.(Rich-Edwards, Kleinman et al. 2006, Loretta Secco, Profit et al. 2007)

Specific parenting stressors in the cases of inconsolable infants and colic have a strong association with maternal depression(Howell, Mora et al. 2009, Radesky, Zuckerman et al. 2013).

Stress is also evident among women who report back to their jobs within a short duration. Short leave and a high workload reduces the resting time hence affecting their mental health adversely (McGovern, Dagher et al. 2011).Depressive symptoms are high among women with short maternity leaves. Longer leaves after childbirth is beneficial for the mental well-being of the mother as well as protecting against depression(Chatterji and Markowitz 2012).In the first postpartum year the relationship between leave duration and depressive symptoms varies inversely with 12 weeks

being considered insufficient(Dagher, McGovern et al. 2014).With regard to the type of employment, women with clerical, sales and service production are at a higher risk of PPD as compared to those with professional jobs(Miyake, Tanaka et al. 2011).

The association of marital status and maternal depression is of conflicting results. Rogers et.al 2013 cited marriage as a risk factor for maternal depression among mothers who had their babies admitted to the new born unit.(Rogers, Kidokoro et al. 2013) Some authors have reported a protective role of marriage citing that the single/separated women were more likely than their married counterparts to have postpartum depression (Adewuya, Fatoye et al. 2005, McCoy, Beal et al. 2006, Nakku, Nakasi et al. 2006) A meta-analysis of 84 studies by Beck in 2001 found that marital status had a small significance in predicting perinatal depression.(Beck 2001)..After controlling for marital status, good quality of the marital relationship rather than the status has been associated with major depression in the postnatal period. (Akincigil, Munch et al. 2010).Marital conflicts characterized by physical, sexual and psychological abuse compromise the quality of the relationship. Marital conflicts were among the predictors of perinatal depression in a sample of high risk Brazilian mothers assessed in pregnancy and at 4 months postpartum.(Defelipe, de Resende et al. 2017).In the African context, Parsons, et.al (2012) observed that marital and family conflicts were associated with postpartum depression (Parsons, Young et al. 2012).This observation has been made by other authors in the African continent(Agoub, Moussaoui et al. 2005, Owoeye, Aina et al. 2006, Kakyo, Muliira et al. 2012, Masmoudi, Charfeddine et al. 2014).

Marital conflicts may be characterized by violence. Exposure to intimate partner violence increases the odds of maternal depression .(Beydoun, Beydoun et al.

2012).The association is significant for physical and psychological abuse in pregnancy.(Islam, Broidy et al. 2017).

Some cultural practices such as confinement may have components that protect women from developing PPD symptoms.(Wong and Fisher 2009).Culture shapes communication between the mother and the baby. This may either protect or predispose mothers to depression. A literature search on Asian culture reported no protection from PPD despite the cultural practice of "doing the month". This entails postpartum rituals by which postpartum women are confined to their homes and assisted in executing tasks for one month. This is meant to promote healing of the perineal injuries, contraction of the uterus and promotion of breastfeeding. "(Klainin and Arthur 2009).In most urban dwelling, confinement is almost impractical.

2.5 Obstetric and Neonatal factors.

Primiparous women had higher scores on the EPDS than multiparous women, in a Norwegian study to investigate the association between parity, age and maternal depression (Glavin, Smith et al. 2009). This was partly explained by the adjustment to the parental role. Multiparity has also been associated with postpartum depression (Faisal-Cury, Tedesco et al. 2004, DØRHEIM HO- YEN, Tschudi Bondevik et al. 2007, Mayberry, Horowitz et al. 2007, Ryu, Kim et al. 2010) A study in Argentina with 86 participants conducted at the 6th week, with an EPDS cut off score of 10, Multiparity was significantly associated with maternal depression (OR 3.58 95CI p=0.03)(Mathisen, Glavin et al. 2013). Chibanda et.al (2010), recruited puerperal women at the 6th week of postpartum from two urban primary health centers. Depressive symptomatology was associated with Multiparity (OR2.5 95%CI 1.00-6.24) (Chibanda, Mangezi et al. 2010)

Neonatal sex may determine the level of social support a woman receives from the husband and the entire family. In some settings, a male infant is preferred over the female infant(Xie, He et al. 2009). (Adewuya, Fatoye et al. 2005, Nakku, Nakasi et al. 2006).Hence women who have delivered female infants may receive inadequate social support.

Caesarian section was significantly associated with maternal depression in the 1980es.Since mothers have accepted that it is a mode of delivery like the vaginal delivery, the association is equivocal. Adewuya et.al (2005) had reported that childbirth by Caesarian section was associated with maternal depression.(Adewuya, Fatoye et al. 2005). Another study at 3 months postpartum, found evidence of increased depressive symptomatology in women who had undergone emergency caesarian section association between mode of delivery and perinatal depression(Sword, Kurtz Landy et al. 2011).

Postpartum blues have been regarded as benign and resolve spontaneously. Studies have linked the severity of the blues to subsequent perinatal depression. In an Irish study with 370 mothers assessed at 3 days and later six weeks with EPDS, a score of more than 13 on the EPDS at 6 weeks, was predicted by maternal mood at day 3(Lane, Keville et al. 1997). A prospective cohort study, in which 206 first time mothers were followed for six months with the EPDS concluded that having blues tripled the risk of perinatal depression(Henshaw, Foreman et al. 2004).In a community sample of 853 postpartum women, there was a significant association between maternity blues and depression(O.R 3.8)(Reck, Stehle et al. 2009)

The etiology of postpartum blues is not clear. The maternal hypothalamic pituitary - adrenal axis undergoes changes during pregnancy to enable the production of

placental corticotrophin releasing hormone. With childbirth, the placental role of hormonal production is terminated. The re equilibration of the HPA axis after delivery has been thought to cause postpartum blues (O'Keane, Lightman et al. 2011). Based on serum levels of pro inflammatory mediators after delivery, Maes and colleagues concluded that inflammation is involved in the pathophysiology of postpartum blues.(Maes, Lin et al. 2000)

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Study Design

This study is a descriptive cross- sectional study.

3.2 Study Area

The study was carried out at Moi –Teaching and Referral Hospital (MTRH), Postnatal and immunization clinics. Moi Teaching Referral Hospital is the second largest hospital in Kenya. It is located in Eldoret town, Uasin-Gishu County in the Western part of Kenya, serving as referral hospital for the North Rift, Nyanza and western regions of the country. The Hospital is also utilized by patients from the neighboring countries such as Uganda and South Sudan. It serves a catchment population of about 18 million with a vast cultural and religious diversity. The immunization clinic runs for five days in a week with an average of 500 mothers bringing their babies for immunization every month.

Moi Teaching and Referral Hospital has an outpatient wing with 3 rooms reserved for antenatal and postnatal care. The postnatal outpatient clinic runs every Friday. Moi teaching and Referral Hospital has an impatient unit, the-Riley Mother and Baby Hospital with a bed capacity of 125 beds. On average 32 deliveries are conducted every day. Mothers who deliver at the maternity unit through caesarean section are booked to be reviewed within two weeks by an obstetrician/gynecologist. Those women who deliver by spontaneous vertex delivery from MTRH as well as neighboring facilities bring their babies for immunization at the Child welfare clinic. The earliest opportunity of contact with health worker is between two to six weeks depending on the type of vaccine that the child is to receive.

Women presenting with signs and symptoms of mental illness within six weeks of delivery are admitted in the postnatal ward for evaluation and a psychiatrist may be consulted.

3.3 Study Population

The study population included all women aged 18- 49 years attending the postnatal clinic and those bringing their babies for immunization between July 2016 and June 2017.

On average, 500 mothers seek care at the postnatal and child immunization clinics every month. About 240 of these women are neither attending their first postnatal clinic nor bringing their babies within six weeks for immunization. Therefore the 240 women are likely to be revisits.

3.4 Sample size determination

Sample size determination was calculated using the following formula.(Peduzzi, Concato et al. 1996, Wurtz 2008)

$$n = \frac{10 \times k}{p}$$

n = sample size

10 = Constant

k = Number of variables

14 independent variables represented in the researcher designed questionnaire.

This included Sociodemographic and clinical factors.

P = Prevalence of **19.8,** given that these were the results of the meta-analysis on postpartum depression in developing countries(Fisher, Mello et al. 2012)

$$n = \left\lceil \frac{10 \times 14}{0.198} \right\rceil$$

$$= \mathbf{707}$$

3.5 Sampling

3.5.1 Sampling procedures.

Sampling technique.

All women bringing their babies for immunization were first seen at the records office and directed to the immunization room. Those attending their obstetric reviews were directed to the postnatal clinic. The research assistant helped in identifying those mothers bringing their babies for immunization within 6 weeks as well as those attending postnatal reviews within 6 weeks since delivery. Upon which every fourth client was recruited for the study. On consenting, the mother was taken to a separate room for an interview. After responding to questions in the sociodemographic questionnaire, the Edinburg Postnatal Depression Scale was given to her to fill. The study participants were reminded to respond to the questions on the EPDS in as far as the past seven days were concerned. The completed tool was examined by the principal investigator for completeness.

A total of 707 women were interviewed for a period of one year. (July 2016 to June 2017). Based on hospital records of the period 2012/ 2013, average of 2840 women attended the postnatal and Child welfare clinics.

N=2840.

"n" =707.

$\frac{N}{n}$ = k

Kth factor =2840/707.

=**4.016.**

Therefore, every fourth client was recruited for the study on each day from Monday to Friday in the immunization clinic and on Friday from the postnatal clinic.

Delivered within 6 weeks.

3.5.2 Exclusion criteria

1. Less than thirteen days since delivery- To avoid recruiting those women who were experiencing postpartum blues.

3.6 Study Instruments

1. Researcher designed questionnaire.
2. The Edinburg postnatal depression scale

3.7 Implementing of the Study

The principal investigator trained two research assistants. Each from the postnatal clinic and the immunization clinics respectively. They helped in identifying legible subjects for the study. Participants were deemed fit for the study if the time since delivery was at least 14 days (2 weeks). This was necessary to control for the possibility of recruiting those with postpartum blues. Those who were revisits and had been interviewed were excluded.

Collection of data on sociodemographic and clinical variables was done by the principal investigator using the researcher designed questionnaire.

The choice of the variables indicated on the researcher designed questionnaire was based on the principal investigator's interest as well as those cited in literature.

The Edinburg Postnatal Depression Scale was then administered to the mothers whose sociodemographic and clinical information had been collected. Literate subjects completed the tool in English.

Seven participants who didn't comprehend the questions in English were interviewed using the Kiswahili version of the sociodemographic questionnaire and had the EPDS read to them in Kiswahili by the principal investigator.

A total of 720 participants were recruited for the study. Of these 10 women had inconclusive questionnaires because they chose more than one option for a single

question on the EPDS. While 3 other women cited fear of unknown and withdrew from the interview midway.

Those who had scores of 13 and more on the EPDS were advised to seek for further psychiatric evaluation. The 10th item on the EPDS received more attention as it screens for suicidality. Participants who endorsed suicidal ideas were advised to seek for help in the outpatient mental health room.

3.8 SCORING AND ANALYSIS OF SCORES FROM EPDS

QUESTIONS 1, 2, & 4

Are scored 0, 1, 2 or 3 with top box scored as 0 and the bottom box scored as 3.

QUESTIONS 3, 5 -10

Are reverse scored, with the top box scored as a 3 and the bottom box scored as 0.

Maximum score: 30

Possible Depression: 13 or greater

Always look at item 10 (suicidal thoughts)

Instructions for using the Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling in the previous 7 days.
2. All the items must be completed.
3. Care should be taken to avoid the possibility of the mother discussing her answers with others. (Answers come from the mother or pregnant woman.)
4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.(Cox, Holden et al. 1987).

3.9 Data Management.

Data collection

An interviewer administered questionnaire was used to collect data from the participants. The principal investigator asked questions contained in the researcher designed sociodemographic questionnaire and noted the responses. The participants who had completed the interview were given the EPDS to respond to the 10 questions after being guided through the instruction by the principal investigator.

Data entry.

All the responses in the researcher designed questionnaire and the EPDS scores for each participant was coded and entered in an excel s data sheet for analysis.

Data analysis and presentation.

Data was analyzed using STATA Version 14. Descriptive statistics such as measures of central tendency and measures of spread were used for continuous data while frequency listings were used for categorical data. Proportions and associated 95% confidence interval were used to determine prevalence of postpartum depression. To assess factors associated with postpartum depression, Chi square test and Fishers' exact test were used where applicable for categorical predictors. While Kruskal Wallis test was used for continuous predictors. Logistic regression model was used in the multivariate analysis, variables significant at 20% in the bivariate analysis were included in the model. In all the analysis a p-value less than 0.05 was considered statistically significant

Data dissemination

This thesis will be submitted to reputable journals for publishing. The results will also be presented at seminars and conferences. A copy will be availed to the management

of MTRH to help inform the management on the prevalence of postpartum depression and possibly initiate screening.

3.10 Ethical Consideration

Approval to conduct the study was sought from the Institutional Research and Ethics Committee (IREC), FAN: IREC1537. Permission was also sought from the Chief Executive Officer, Moi Teaching and Referral Hospital. The informed consent forms used in this study are provided in appendix 1. Participants with high scores of 13 or more were referred for further evaluation and management in the Accident and Emergency department- Room 5 .All participants received appropriate services in the immunization and Postnatal clinics regardless of their willingness to participate in the study. Data forms with unique patient identifiers were kept in lockable cabinets. Access to data forms was restricted to the investigators only.

3.11 Study Recruitment Schema

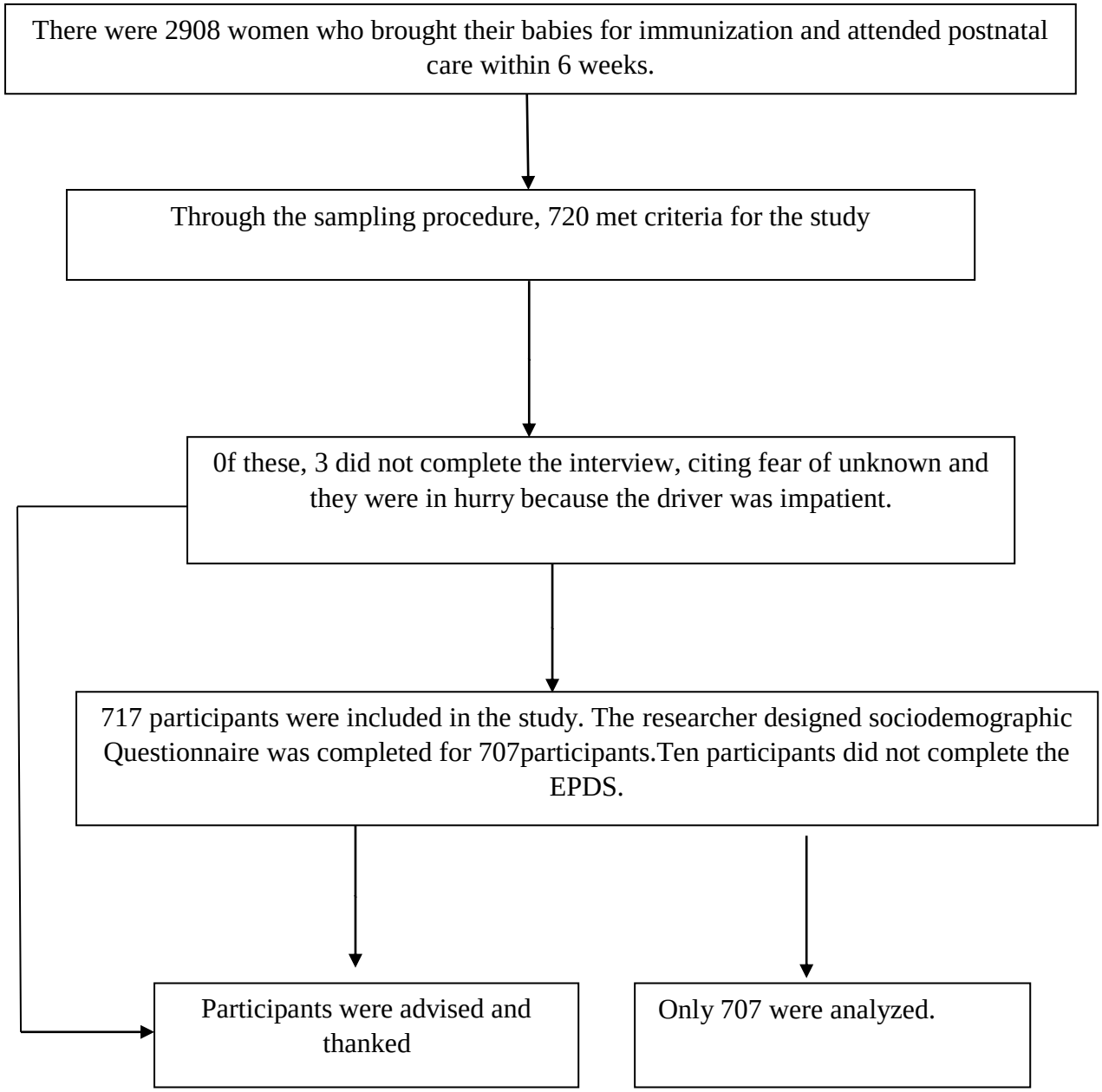

Figure 1: Recruitment Schema

CHAPTER FOUR.

RESULTS.

This chapter provides results for a total of **707** participants. The results are outlined as sociodemographic characteristics, clinical characteristics and factors associated with postpartum depression.

4.1 Socio demographic characteristics.

The median age of the participants was 26 years, IQR (22, 30). The highest level of education attained by majority of participants was secondary education at 44%. Concerning the marital status, 83.3% were married with a majority experiencing some type of conflicts in their marital relationships. Most of the participants resided in the environs of Eldoret town 78.2% (553). Over half of the respondents had some form of employment with 33% earning between Kshs.10000- 50000.

Only 5.09% had ever been diagnosed with depression in their lifetime and 45.8% were being helped by a family member from the extended family in taking care of the newborn.

Table 1: Socio Demographic characteristics

Variable	Frequency (%) /Median
Age	26 (22,30)
Highest level of education attained.	
Primary	119 (16.8)
Secondary	311 (44)
College/University	277 (39.2)
Marital Status	
Married	589 (83.3)
Single / Separated	118 (16.7)
Residence	
Urban	553 (78.2)
Rural	154 (21.8)
Employment	
Formal	177 (25.6)
Informal	26 (3.8)
Self-employed	228 (33)
Housewife	260 (37.6)
Income in Kshs	
<10000	120 (28.6)
10000-50000	264 (63)
>50000	35 (8.4)
Ever suffered depression	36 (5.09)
Who helps you to take care of the baby	
Family member from extended family	320 (45.8)
House girl	225 (32.2)
None	154 (22.0)
	0

4.2 Clinical characteristics.

Table 2 shows the clinical characteristic of the respondents. Majority of the participants delivered in a health facility (96.5%) Over half had normal deliveries (71.4%) and 48.09% had just delivered for the first time. Most of participants had delivered a baby boy and up to 91.2% were happy with the gender of their babies.

Regarding the mode of feeding their newborn, majority of the participants were practicing exclusive breastfeeding- 96.4%. Only 13.5% of the participants were having difficulties in soothing their babies to sleep or feed. One hundred and one participants (15.7%) had experienced mood symptoms in the first few days after delivery.

Table 2: Clinical Characteristics

Variable	Frequency(%)
Place of delivery	
Facility	682 (96.5)
Home	25 (3.5)
Mode of delivery	
CS	202 (28.6)
Normal	504 (71.4)
Parity	
1	340 (48.09)
2	246 (34.79)
>=3	121 (17.11)
Outcome	
Female baby	296 (42.0)
Male baby	402 (57.0)
Still birth	7 (1.0)
Happy with outcome	642 (91.2)
Mode of feeding	
Breastfeeding	673 (96.4)
Bottle feeding	12 (1.7)
Both	13 (1.9)
find it hard to Soothe baby	94 (13.5)
Presence of postpartum blues	111 (15.7)

4.3 Prevalence of depression in the postpartum period.

The prevalence of depression at 2-6 weeks among women attending postnatal clinics and bringing their babies for immunization at MTRH was **22.3%.** This is the proportion of women who had scores of **13** or more on the EPDS. The 10^{th} item of the EPDS assesses suicidality. Fifty eight participants, representing **8.2%** endorsed suicidality.

4.4 Factors associated with postpartum depression.

Table 3 shows sociodemographic and clinical factors associated with depression at 2-6 weeks. The sociodemographic and clinical characteristics were subjected to bivariate analysis to test for association with postpartum depression. Factors that showed association at bivariate analysis were; being married, presence of marital conflicts, being unhappy with the gender of the baby, suffering from mood symptoms

after delivery, previous history of depression, difficulty with soothing the baby and being helped by a family member in caring for the baby.

Table 3: Factors Associated with PPD: Bivariate Analysis

	PPD		
Variable	**No**	**Yes**	**P-value**
Age	26 (22,30)	25 (21,30)	0.210[2]
Education			
Primary	86 (72.3)	33 (27.7)	0.119[1]
Secondary	238 (76.5)	73 (23.5)	
College/University	225 (81.2)	52 (18.8)	
Residence			
Rural	120 (77.9)	34 (22.1)	0.928[1]
Town	429 (77.6)	124 (22.4)	
Marital			
Single/separated	75 (63.6)	43 (36.4)	0.000[1]
Married	474 (80.5)	115 (19.5)	
Conflict			
No	480 (81.5)	109 (18.5)	0.000[1]
Yes	69 (58.5)	49 (41.5)	
Employment			
Formal	148 (83.6)	29 (16.4)	0.012[1]
Informal	17 (65.4)	9 (34.6)	
Self-employed	183 (80.3)	45 (19.7)	
Housewife	188 (72.3)	72 (27.7)	
Income			
<10000	90 (75)	30 (25)	0.225[1]
10000-50000	218 (82.6)	46 (17.4)	
>50000	28 (80)	7 (20)	
Mode of Delivery			
CS	151 (74.8)	51 (25.2)	0.223[1]
Normal	398 (79)	106 (21)	
Parity			
1	263 (77.4)	77 (22.6)	0.149[1]
2	199 (80.9)	47 (19.1)	
>=3	87 (71.9)	34 (28.1)	
Happy with gender of baby			
No	39 (62.9)	23 (37.1)	0.003[1]
Yes	510 (79.4)	132 (20.6)	
Mode of feeding			
Both	10 (76.9)	3 (23.1)	0.957[3]
Bottle-feeding	9 (75)	3 (25)	
Breastfeeding	527 (78.3)	146 (21.7)	

	PPD		
Variable	**No**	**Yes**	**P-value**
Soothing			
No	492 (81.5)	112 (18.5)	0.000[1]
Yes	54 (57.4)	40 (42.6)	
Presence of post-partum blues			
No	498 (83.6)	98 (16.4)	0.000[1]
Yes	51 (45.9)	60 (54.1)	
Ever suffered Depression			
No	531 (79.1)	140 (20.9)	0.000[1]
Yes	18 (50)	18 (50)	
Who helps take care of baby			
Family member	238 (74.4)	82 (25.6)	0.000[1]
House girl	196 (87.1)	29 (12.9)	
None	112 (72.7)	42 (27.3)	

[1] Chi Square [2] Kruskal wallis [3] Fishers' exact

4.5 Results of multivariate analysis.

The clinical and sociodemographic factors that showed an association at bivariate analysis of more than 20% were further subjected to multivariate analysis while applying the logistic regression model to test for independent association.

Being single/separated, reduced the odds of postpartum depression at 2-6 weeks compared with the married counterparts (OR 0.291 95% CI 0.180-0.530), p<0.001. Being in a marriage described by any form of conflicts (verbal, emotional or physical) tripled the odds of scoring more than 13 on the EPDS (OR 3.413 95% CI2.060-5.680),p<0.001.

Parturients with more than two children were twice likely to experience depression at 2-6 weeks of postpartum compared to having one child (OR 2.230 95%CI 1.110-4.448),p=0.024.

The odds of postpartum depression were three times higher among women who had experienced postpartum blues as compared to those with no postpartum blues after delivery (OR 3.633 95%CI 2.116-6.230, p<0.001).

House girls helping respondents in childcare resulted in reduced odds of depressive symptomatology among the respondents as compared to those receiving childcare help from relatives. However, this was not statistically significant (OR 0.524 95%CI 0.290-0.947, p-0.032).

Age, level of education, employment status, satisfaction with the gender of the child, difficulties in soothing the baby and previous history of depression were not associated with postpartum depression.

Table 4: Factors Associated With PPD: Multivariate Analysis

Variable	Odds Ratio	P-value	[95% Conf. Interval]	
Age in years	0.987	0.583	0.940	1.035
Education Primary vs College	0.630	0.178	0.321	1.234
Secondary vs College	0.849	0.546	0.498	1.446
Parity Para 2 vs Primi	1.372	0.255	0.796	2.362
Multiparous vs Primi	2.230	**0.024**	1.110	4.448
Marital Status Single/ Separated vs Married	0.291	**0.000**	0.180	0.530
Marital Conflict Conflict vs No Conflict	3.413	**0.000**	2.060	5.680
Not married vs Married Conflict	0.985	0.964	0.502	1.932
Occupation Housewife vs Formal	1.421	0.325	0.706	2.864
Informal vs Formal	1.269	0.664	0.433	3.719
Self-employed vs Formal	0.942	0.861	0.484	1.836
Happy with Gender of baby Yes vs No)	0.641	0.206	0.322	1.276
Difficulty soothing Yes vs No)	1.515	0.151	0.859	2.671
postpartum blues (Yes vs No)	3.633	**0.000**	2.116	6.230
Ever suffered depression(Yes vs No)	2.258	0.056	0.980	5.199
Who helps with baby Family member vs None	1.073	0.786	0.645	1.787
House girl vs None	0.563	0.097	0.286	1.110

CHAPTER FIVE

DISCUSSION

5.1 Prevalence of postpartum depression

The prevalence of depression at 2- 6 weeks of postpartum was 22.3%, confirming the finding that the prevalence of maternal depression is higher in developing countries as compared to developed countries(Parsons, Young et al. 2012).A prevalence in the same range-23.4% was reported in a study in Cameroon, with 214 participants at 4-6 week using the EPDS. The slight difference can be accounted for by a lower EPDS cut off of 12 in ascertaining depression.(Adama, Foumane et al. 2015). Higher rates have been reported by studies in Egypt (73%) Zimbabwe (33%), Uganda (43%) and one Kenyan study (48%) (Chibanda, Mangezi et al. 2010, Kakyo, Muliira et al. 2012, Mohamed, Spencer et al. 2014)The rate is lower than what Yator, Mathai et al (2016) reported in another study in Kenya. The Kenyan study sampled postnatal women who were attending a PMTCT clinic in Kenyatta National Hospital. The prevalence of depressive symptomology was 48% at the sixth week using the EPDS(Yator, Mathai et al. 2016).Therefore HIV status was a variable in their analysis and this could have contributed to the high prevalence compared to our study. Another study conducted in Kariobangi- Kenya reported a prevalence of 13% at the sixth to the 14th week of puerperium using the EPDS.(Madeghe, Kimani et al. 2016) This is lower than our prevalence. The postpartum period was extended to 14 weeks. The Kiswahili version of the EPDS was read to the study participants. The explanation for high rate of depression in low and middle-income countries is not clear. However, socioeconomic determinants such as unemployment, poverty, infection by the HIV virus and intimate partner violence have been suggested.(Stringer, Meltzer-Brody et al. 2014) The sociocultural context also dictates that the role of childrearing is primarily maternal. Therefore, the daily hassles

of childcare might have increased the depressive symptomology among the study participants.

There are many theories explaining the presence depressive symptomatology at 2 -6 weeks from the biological, psychological and social contexts. The biological theory of hormonal dysregulation still holds. Hormonal dysregulation involving the gonadal steroids- estrogen, progesterone occurs in over 50% of women after delivery. The observation that only 22.3% of the 707 participants manifested scores of more than 13 on the EPDS underscores the possibility of other factors not studied/investigated such as hormonal dysregulation. The subgroup that had high scores on the EPDS could have had increased genetic vulnerability. Psychoneuroimmunology studies have provided new concepts in understanding the inflammatory mechanism that underlie maternal depression. Depression and inflammation have a bidirectional relationship (Kendall-Tackett 2007) Whether inflammation, hormonal dysregulation or increased genetic vulnerability were involved is beyond the scope of this thesis.

Considering the psychological domain, childbirth is a period of change in a woman's life. The change involved is the adjustment to the parenting role which can be stressful in some women. Stress that is evaluated as involving and beyond coping mechanism is predictive of postpartum depression.(Yim, Stapleton et al. 2015, Yim, Tanner Stapleton et al. 2015).Among the sources of stress is childcare, daily hassles and chronic strain. Adjusting to the parental role may be difficult especially in first time mothers who are transiting to parenthood(Milgrom, Gemmill et al. 2008, Gao, Chan et al. 2009). First time mothers described their experience of attending to their infants and the experience of the six weeks as "feeling drained."(Gao, Chan et al. 2010).

5.2 Factors associated with postpartum depression.

5.2.1 Presence of Marital Conflicts.

Being married is associated with maternal depression at 2- 6th week at the bivariate analysis. Marriage reduced the odds of maternal depression within six weeks. However, marriage characterized by conflicts was strongly associated with maternal depression after multivariate analysis by Logistic regression. Similar findings have been reported in which unmarried women were more likely than their counterparts to have postpartum depression (Adewuya, Fatoye et al. 2005, Nakku, Nakasi et al. 2006). A meta-analysis of 84 studies by Beck in 2001 found that marital status had a small significance in predicting perinatal depression (Beck 2001).After controlling for marital status, quality of the marital relationship rather than the status has been associated with postpartum depression. (Akincigil, Munch et al. 2010).Marital conflicts characterized by physical, sexual and psychological abuse compromise the quality of the relationship. Marital conflict was among the predictors of perinatal depression in a sample of high risk Brazilian mothers assessed in pregnancy and at 4 months postpartum.(Defelipe, de Resende et al. 2017).In a study in Cameroon, recent conflict with the partner doubled the odds of maternal depression(Adama, Foumane et al. 2015).Other studies from the African setting have similar findings: Parsons, et.al (2012) observed that marital and family conflicts were associated with peripartum depression (Parsons, Young et al. 2012).This observation has been made by other authors in the continent(Agoub, Moussaoui et al. 2005, Owoeye, Aina et al. 2006, Kakyo, Muliira et al. 2012, Masmoudi, Charfeddine et al. 2014).

Many aspects of the African culture have been known to demean women. More often women have been concealing their suffering. However, verbally admitting to abuse in the hands of their intimate partners is a step in the right direction. Domestic violence

coupled with culture that demean women may precede PPD. Lack of women empowerment denies them a right in decision making in reproductive issues(Ali, Ali et al. 2009).Marital conflicts may mediate maternal depression through a breakdown of communication and unavailability of spouse support. Lack of partner support is a consistent predictor of postpartum depression (O'hara and Swain 1996, Cooper, Tomlinson et al. 1999, Beck 2001)

5.2.1. Presence of Postpartum Blues

The study also showed that those with depressive symptoms were likely to have experienced severe mood symptoms after delivery- postpartum blues/baby blues. Similar findings were reported in a study in Cameroon in which postpartum depression was observed among the participants that had experienced baby blues(OR,3.52 95%CI 1.48-8.44) $p<0.001$ (Adama, Foumane et al. 2015)Studies have linked the severity of the blues to subsequent perinatal depression. In an Irish study of 370 mothers assessed at 3 days and later six weeks with EPDS, a score of more than 13 on the EPDS at 6 weeks, was predicted by maternal mood at day 3(Lane, Keville et al. 1997). A prospective cohort study, in which 206 first time mothers were followed for six months with the EPDS concluded that having blues tripled the risk of perinatal depression(Henshaw, Foreman et al. 2004).The exact cause of postpartum blues is not known. However, biological mechanisms that underlie childbirth have been postulated.

O'keane et.al 2011 observed that maternal adrenocortitropin hormone concentrations declined in late pregnancy to day three post-delivery, and thereafter peaked on day 6. The score of postpartum blues positively correlated with ACTH concentration. Hence the possible etiology of postpartum blues as caused by adjustment of the HPA axis post-delivery.(O'Keane, Lightman et al. 2011).Puerperal women are especially

vulnerable to inflammation because the levels of proinflammatory cytokines increase in the third trimester. Based on serum levels of pro inflammatory mediators after delivery, Maes and colleagues concluded that inflammation is involved in the pathophysiology of postpartum blues.(Maes, Lin et al. 2000).

The severity of the postpartum blues was not established during this study.

5.2.3 Multiparity and postpartum Depression.

Having more than two children was significantly associated with postpartum depression at 2- 6 weeks. A study in Argentina had similar findings. In this study, 86 participants were recruited at the sixth week from private health centers and completed the EPDS and a tool for obstetric and demographic data. Women with more children were more likely to present with maternal depression as compared to those with one child,(OR 3.58, p=0.03) (Mathisen, Glavin et al. 2013) In another study in Nepal in which 426 study participants were drawn from both rural and urban districts, Multiparity was significantly associated with postpartum depression at the 5^{th} to the 10^{th} week of postpartum(Dørheim Ho-Yen, Tschudi Bondevik et al. 2007). Using the Shona version of the EPDS at 6^{th} week of postpartum, Chibanda et al.(2010) reported that Multiparity was significantly associated with maternal depression,(OR 2.5)(Chibanda, Mangezi et al. 2010) .The explanation for this association has been postulated by Beck et al, that mothers with many children could be experiencing the stresses of caring for the other children .He also proposes that multiparous women may find it easier than primiparous to know and compare the difference in their feelings (Beck 2001) .

Contrasting findings have been reported by some authors who observed that primiparous women are more likely than multiparous to experience postpartum depression(Glavin, Smith et al. 2009). This can be explained by the adjustment of the first time mothers to the parental role and maternal self-efficacy. Maternal self-efficacy is a perception by the mothers of their abilities in organizing and execution of tasks related with parenting (Zheng, Morrell et al. 2018)

5.2 Strength and Limitations of the Study.

The sample was sociodemographically diverse, having been drawn from a population at a teaching and referral hospital from the Western part of the country. This enhances generalizability of the study findings.

The scope of the study did not capture the effects of physical illness and problematic pregnancy as possible factors that may contribute to postpartum depression. The health of the baby was also not captured and its association with postpartum depression.

The cross sectional nature of the study limits the ascertainment of causality and association as compared to a cohort or a case control study.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The prevalence of 22.3% is high at 2-6 weeks compared to the global prevalence of postpartum depression. Marital conflicts, Multiparity, presence of postpartum blues were associated with postpartum depression.

6.2 Recommendations.

1. In view of the high prevalence of postpartum depression at 2-6 weeks, screening should be initiated at the postnatal clinic using self-report tools such as the EPDS.
2. Those with high scores should receive further evaluation and referral. Women who display postpartum blues, the multiparous and those who endorse marital conflicts should be booked for further psychiatric evaluation.
3. Longitudinal study to establish the temporality of the dependent and independent variables.

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APPENDICES

Appendix 1: Informed Consent Form

Patient Number

My name is Dr. Jackline Mmochi. I am a qualified doctor, registered by Kenya Medical Practitioners and Dentist Board. I am pursuing a Master's degree in Psychiatry at Moi University – School of Medicine. Under the guidance of my supervisors, Prof Gakinya and Dr. Kinyanjui I am carrying out a study on the factors associated with postpartum depression at the postnatal clinic at MTRH. I would like to recruit you to my research.

The study with be done by answering a set of questions with the guidance of my research assistants. You will also fill a tool that will help to determine if you are depressed. This will take about 15-20 minutes. You will not be exposed to any risk. You will be informed of the results of the interview. You are free to withdraw from the study at any time during the interview. The result of the interview will be kept confidential.

In case of need for further clarification or complaints, please contact the institutional research and ethics committee (IREC) address provided

The chairman IREC

Moi Teaching and Referral Hospital

P.O. Box 3

ELDORET

Tel: 33471/2/3

My cell phone number: 0727537986

YOUR CONSENT

I have been adequately informed that I am being recruited into the study to describe factors associated with postpartum depression. The investigator also informed me that my participation in this study is voluntary and will not exclude me from routine care even if I don't participate. I have been explained to that the study is useful in providing contributions to care of mothers during postpartum. I have been informed that I will not incur any extra costs as a result of the study. I have been assured that the results of the study will remain confidential. I agree to participate in this study.

Patient's signature:.....

Witness signature:.....

Date:

Appendix 2: Questionnaire
QUESTIONNAIRE

1. Identification Number .....
2. Age in years.....
3. Level of education

    A. Primary

    B. Secondary

    C. College/university

    D. No formal education

4. Residence

    A. Town

    B. Rural

5. Marital status

    A. Married

    B. Single/never married

    C. Divorced

    D. Separated

    E. Widowed

(ii) If married, how is your spouse supporting you

(iii) Are there marital conflicts in your relationships

    A. Yes

    B. No

(iv) If yes, how would you describe/term the conflict?

    A. Physical abuse

    B. Verbal abuse

    C. Sexual abuse

    D. Any other

6. Employment

    A. Self employed

    B. Housewife

    C. Formal employment

    D. Informal employment

(i) If employed, how long was your maternity leave?

(ii) How much money do you make in a month

    A. Kshs < 10,000

    B. Kshs. 10,000 – 50,000

    C. Above Kshs. 50,000

Obstetric and Child Factors

7. How many pregnancies have you had in the past? ……

    .....

8. Where was the place of delivery

    A. Home

    B. Hospital

(i) If in hospital, was it normal delivery or caesarian section?

9. What was the outcome of delivery?

    A. Male baby

    B. Female baby

    C. Still birth

10. Are you happy with the gender of your baby?

    A. Yes

    B. No

11. Please explain your answer in question 10 above .....

.....

12. Which feeding method are you practicing?

    A. Breast feeding

    B. Bottle feeding

13. Do you find it hard to soothe your baby?

    A. Yes

    B. No

14. Did you suffer from severe mood changes after delivery?

    A. Yes

    B. No

15. If yes to question 14 please explain what was done it?

    A. Treated with medication

    B. Counseling

    C. Nothing

Other factors

16. Have you ever suffered from depression?

    A. Yes

    B. No

17. Who helps you to take care of the baby

    A. House girl

    B. Family members

    C. No one

18. In the first few months after delivery, what is expected of a woman?

.....

.....

.....

Appendix 3: Edinburgh Postnatal Depression Scale 1 (Epds)

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- Yes, all the time

Ɵ Yes, most of the time. This would mean: "I have felt happy most of the time" during the past week.

- No, not very often
- No, not at all

Please complete the other questions in the same way.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - As much as I always could
   - Not quite so much now
   - Definitely not so much now
   - Not at all

2. I have looked forward with enjoyment to things
   - As much as I ever did
   - Rather less than I used to
   - Definitely less than I used to
   - Hardly at all

3. I have blamed myself unnecessarily when things went wrong
   - Yes, most of the time
   - Yes, sometimes
   - Not very often
   - No, never

4. I have been anxious or worried for no good reason
    - No, not at all
    - Hardly ever
    - Yes, sometimes
    - Yes, very often

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

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

7. I have been so unhappy that I have had difficulty sleeping
    - Yes, most of the time
    - Yes, sometime
    - Not very often
    - No, not at all

8. I have felt sad or miserable
    - Yes, most of the time
    - Yes, quite often
    - Only occasionally
    - No, never

9. I have been so unhappy that I have been crying
    - Yes, most of the time
    - Yes, quite often
    - Only occasionally

- No, never

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

Administered/Reviewed by_____ Date _____

Appendix 4: Translated Consent
VIAMBATISHO

Kiambatisho cha 1

Fomu ya ridhaa/ kukubali ya kujulishwa

Nambari ya mgonjwa……

Jina langu ni Jackline Mmochi. Mimi ni daktari aliyehitimu ambaye amesajiliwa na Bodi ya Halmashauri ya Madaktari. Ninasomea digrii ya uzamili (Masters) katika somo la taaluma ya tiba ya magonjwa ya akili katika Chuo Kikuu cha Moi, kitivo cha Udaktari.

Chini ya uongozi wa wasimamizi wangu, Prof. Gakinya na Dkt. Kinyanjui ninafanya utafiti kuhusu mambo yanayohusiana na mfadhaiko wa baada ya kujifunguakatika Hospitali ya Mafunzo na Rufaa ya Moi).Ninaomba nikushirikishe kama mtafitiwa katika utafiti wangu.

Utafiti utaendeshwa kwa kumhitaji mtafitiwa kujibu seti ya maswali kwa kuongozwa na wasaidizi wangu wa utafiti. Utajaza pia fomu ya kifaa kitakachosadia kuthibitisha ikiwa umefadhaika baada ya kujifungua. Shughuli hii itachukua takriban dakika 15 hadi 20. Hutahatarishwa kwa njia yoyote. Utajulishwa kuhusu matokeo ya utafiti. Unaruhusiwa kujiondoa kwa utafiti wakati wowote utafiti ukiendeshwa. Matokeo ya hojaji yatasetiriwa kama siri. Ikiwa utakuwa na haja ya ufafanuzi zaidi au malalamiko yoyote, unaombwa uwasiliane na kamati ya utafiti na maadili ya taasisi ,ambayo anwani yake imetolewa:

Mwenyekiti,

Hospitali ya Mafunzo na Rufaa ya Moi

S. L. P. 3,

ELDORET

Namba ya simu 33471/1/2/3

Namba yangu ya rununu 0727537986

Nambari ya mgonjwa ----------

KIAMBATISHO CHA 2

Nimejulishwa barabara kwamba ninashirikishwa katika utafiti kueleza mambo yanayohusiana na mfadhaiko wa baada ya kujifungua (postpartum depression), Mtafiti amenijulisha pia kwamba kushiriki kwangu katika utafiti huu ni kwa hiari yangu na hatanibagua katika kunishughulikia katika utaratibu wa kawaida hata kama sitashiriki katika utafiti. Nimeelezwa kwamba utalii huu ni muhimu katika kutoa mchango kwa utunzaji wa kina mama baada ya wao kujifungua (postpartum). Nimefahamishwa kuwa sitagharamika kwa fedha zaidi kwa kushiriki katika utalii huu. Nimehakikishiwa kuwa matokeo ya utafiti yatahifadhiwa kwa siri na hayatafichuliwa kwa mtu yeyote yule. Ninakubali kushiriki katika utafiti.

Sahihi ya mgonjwa ----------

Sahihi ya shahidi ----------

Tarehe ----------

Appendix 5: Translated Researcher Designed Questionnaire
Kiambatisho cha 3: Hojaji ya takwimu za kijamii iliyobuniwa na mtafiti

1. Namba ya utambulisho.....
2. Umri (katika miaka) .....
3. Kiwango cha Elimu
    E. Shule ya msingi
    F. Shule ya upili/ sekondari
    G. Chuo
    H. Sina Elimu ya kisomo
4. Makazi
    C. Mjini
    D. Mashambani
5. Kuolewa
    F. Nimeolewa
    G. Sijaolewa/Sijawahi kuolewa
    H. Nimetalikiwa/ Nimetaliki
    I. Tumeachana

(v) Ikiwa umeolewa, je, mumeo anakukimu vipi ----------

(vi) Je, kuna mgogoro wowote katika mahusiano ya ndoa yenu? ----------

---

C. Ndio

D. La

(vii) Ikiwa ndio, je ungeeleza vipi mgogoro huo?

E. Kupigwa

F. Kutusiwa

G. Kunyanyaswa kinyumba

H. Nyingine yoyote

6. Ajira

E. Nimejiajiri mwenyewe

F. Mimi ni mke afanyaye kazi za nyumbani

G. Nimeajiriwa rasmi

H. Nimeajiriwa sio rasmi/ kibarua

(iii) Ikiwa umeajiriwa, je, livu yako ya uzazi/kujifungua ilidumu muda gani?

(iv) Je unapata kiasi gani cha pesa kila mwezi?

D. Kshs < 10,000

E. Kshs. 10,000 – 50,000

F. Zaidi ya Kshs. 50,000

Mambo yanayohusu Ukunga na Uzazi

7. Je, umepata ujauzito mara ngapi siku zilizopita? ……

.....

8. Je, ulijifungulia wapi?

C. Nyumbani

D. Hospitalini

(i) Ikiwa hospitalini, je kulikuwa kujifungua kwa kawaida au kupitia kwa upasuaji?

9. Je, matokeo ya kujifungua yalikuwa nini?

D. Mtoto wa kiume

E. Mtoto wa kike

F. Mtoto asiye riziki

10. Je, unaridhika na jinsia ya mtoto wako?

C. Ndio

D. La

11. Naomba ufafanue jibu lako katika swali la 10 hapo juu .....

.....

.....

12. Je, unatumia mbinu gani ya kunyonyesha?

    C. Kunyonyesha kwa matiti

    D. Kunyonyesha kwa chupa

13. Je, unapata ugumu wowote katika / kuwa ni vigumu kumtuliza mtoto wako?

    C. Ndio

    D. La

14. Je, ulisumbuliwa na usununu baada ya kujifungua?

    C. Ndio

    D. La

15. Ikiwa ndio kwa swali la 14, unaombwa ueleze kilichofanyika kukabiliana na hali hii

    D. Nilitibiwa

    E. Nilipewa ushauri

    F. Sikufanyiwa chochote / Hakuna

Mambo mengine

16. Je, umewahi kuugua mfadhaiko

    C. Ndio

    D. La

17. Nani hukusaidia kumtunza mtoto?

    D. Msaidizi wa nyumbani

    E. Wanafamilia

    F. Hakuna yeyote

18. Je, katika miezi michache ya kwanza baada ya kujifungua, ni nini kinatarajiwa kwa mwanamke?

.....

.....

.....

Appendix 6: IREC Approval

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2015/177
Approval Number: 0001540

14th January, 2016

Dr. Jackline Mmochi Muyekho,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
14 JAN 2016
APPROVED
P. O. Box 4606-30100 ELDORET

Dear Dr. Muyekho,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled:-

"Factors Associated with Postpartum Depression at Moi Teaching and Referral Hospital, Eldoret, Kenya".

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 1537*** on 14th January, 2016. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 13th January, 2017. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc	Director	-	MTRH	Dean	-	SOP	Dean	- SOM
	Principal	-	CHS	Dean	-	SON	Dean	- SOD

Appendix 7: MTRH Approval

MOI TEACHING AND REFERRAL HOSPITAL

Telephone: 2033471/2/3/4
Fax: 61749
Email: director@mtrh.or.ke
P. O. Box 3
ELDORET

Ref: ELD/MTRH/R.6/VOL.II/2008

14th January, 2016

Dr. Jackline Mmochi Muyekho,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

RE: APPROVAL TO CONDUCT RESEARCH AT MTRH

Upon obtaining approval from the Institutional Research and Ethics Committee (IREC) to conduct your research proposal titled:-

"Factors Associated with Postpartum Depression at Moi Teaching and Referral Hospital, Eldoret, Kenya".

You are hereby permitted to commence your investigation at Moi Teaching and Referral Hospital.

14/01/2016
DR. WILSON ARUASA
AG. DIRECTOR
MOI TEACHING AND REFERRAL HOSPITAL

CC - Deputy Director (CS)
- Chief Nurse
- HOD, HRISM