

**EFFECTS OF POSTPARTUM DEPRESSION ON INFANT
FEEDING PRACTICES IN AN URBAN LOW INCOME
SETTLEMENT NAIROBI-KENYA**

BY

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DECLARATION

I, Beatrice Madeghe, declare that this proposal is my original work and has not been presented for any degree award in any institution or university.

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DEDICATION

To my children Joycatherine, Shammah, Josiah and Ethan for you have been my strength during this study, may this inspire you in life. To my husband John Recha and to my parents Catherine and Augustine Madeghe who always believed in me; To my brother Emmanuel Madeghe who laid the foundation of education.

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LIST OF ABBREVIATION

CDC	: Center for disease control and prevention
CMD	: Common Mental Disorders
DSM-1V	: Diagnostic & Statistical Manual of Mental Disorder 4 th edit
EPDS	: Edinburgh Postpartum Depression Scale.
ERC	: Ethical and Research Committee
FDA	: Food and Drug Administration
IBP	: Infant Breastfeeding Practices
INS	: Infant Nutrition Status
ICD-10	: International Classification of Diseases, 10th edition
IYCF	: Infants and young children feeding
KDHS	: Kenya Demographic Health Surveys
Ksh	: Kenya Shillings
KNH	: Kenyatta National Hospital
LAMIC	: Low and Middle Income Countries
MCH	: Maternal and child health
MDGs	: Millennium Developmental Goals
PDS	: Postpartum Depression Symptoms
PND	: Postnatal Depression
PPD	: Postpartum depression
RDC	: Research diagnostic criteria
SPSS	: Statistical Package for Social Science
SRQ	: Self-Reporting Questions
UNICEF	: United Nation Children Fund

UK	: United Kingdom
UON	: University of Nairobi
US	: United States
USAID	: United State Agency for International Development
WHO	: World Health Organization
WFL/H	: Weight for length/height

DEFINITIONS OF OPERATIONAL TERMS

Postpartum depression:

Postpartum depression based on standardized diagnostic criteria for depression including DSM-IV (American Psychiatric Association, 1994) ICD-10 (World Health Organization, 1993); is defined as a nonpsychotic depressive episode that begins in the postpartum period; Within ICD-10 there is a specifier ‘with postpartum onset’ to identify affective or brief psychotic episodes that occur during the postpartum period: an episode is specified as having a postpartum depression beginning within 6 weeks after delivery (WHO, 1993).

NOTE. Postpartum depression is defined within this report as an episode of non-psychotic depression according to standardized diagnostic criteria with onset within 1 year of childbirth.

Exclusive breastfeeding: Exclusive breastfeeding means that an infant receives only breast milk from his or her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, not even water, with the exception of oral rehydration solution, drops or syrups consisting of vitamins, minerals supplements or medicines (WHO, 2009). The WHO/UNICEF Complementary feeding (6-24 months) guiding principles include; Timing which means introducing complementary foods at six months of age, and continue on demand breastfeeding until two years or beyond.

MALNUTRITION: In this study malnutrition was defined using anthropometric indicators of weight for age (underweight/malnutrition). Mild malnutrition was defined using the cut-off of less than minus 1 Z-Score; moderate malnutrition cut off of less than minus 2 Z- Scores; and severe malnutrition was cut off less than minus 3 Z- Scores.

WEIGHT FOR AGE Z-SCORES: Weight for age compares the weight of a child with the weight of a healthy child of the same age in the reference population; all children in this study with weight for age of minus -1SD and below were considered underweight as mild, moderate and severe. Z-Score is one of the systems that are used to compare a child or a group of children to the reference population.

ABSTRACT

Childbirth represents for women a time of great vulnerability to become mentally unwell, with postpartum mood disorders affecting approximately 10-15% women from diverse cultures; and such represents a considerable public health problem affecting women and their families. Women are particularly prone in the postpartum period because of hormonal changes associated with childbirth and stressors associated with parenting. There are evidences that postpartum depression can lead to child malnutrition, because care giving activities and parenting roles can be compromised by postpartum depression effects.

The objective of this study was to determine the effects of postpartum depression on Infant feeding practices among women in an urban low income settlement in Nairobi-Kenya.

This was a descriptive cross- section study, based in Nairobi County –Kariobangi North- Health centre Maternal and Child Health Clinic (MCH). Kariobangi clinic captures women from Korogocho slums and other surrounding areas. The study targeted 216 mothers visiting the MCH clinics for their infant's immunization at 6week to 14weeks. The study determined postpartum depression using Edinburg postpartum depression scale; Infant feeding practices based on (WHO, 2009) infant and young child feeding guidelines; Nutrition status (weight for age) using infants growth monitoring card (percentiles and z- score).

A total sample of 216 mothers and their infants were recruited in the study but 200 were eligible for analysis. Out of 200 mothers studied 27 (13.5%) were found to have postpartum depressive illness as measured by an EPDS score of ≥ 13 . Marital status was significant associated with postpartum depression ($p < 0.05$) the single women were more likely affected. Income level of less than 10,000 per month ($p < 0.05$) was significant associated with postpartum depression. Feeding practices specifically (exclusive breastfeeding) was assessed and results were 27% of mothers had supplemented their infants particularly with water, cow milk, and soft porridge. Out of 27 depressed mothers 62.9% of them did not exclusively breastfeed their infants. There was significant association between PPD and not exclusively breast feeding. (OR=7.123 95%CI: [2.858-17.75]; $P < 0.001$). Infant's nutrition status was assessed

using weight for age indicator the results were; 34 % of infants were underweight. Out of 27 depressed mothers 66.7% of them had underweight infants. There was significant association between postpartum depression and infants underweight (OR=4.401; 95%CI [1.756-11.028]; (p<0.05).

These finding reveals the prevalence postpartum depression and its effects on infant feeding practices and child under nutrition among women in low income settlement.

The study recommends policy makers to allocate resources to reduce prevalence of PPD among women of reproductive age (15-45). Screening women for depression should be one among services given every day in the maternal and child clinic. It is important to sensitize women and create awareness about the symptoms and characteristics of post partum depression. There is a need for more research on PPD to be done using different study design such as longitudinal community based study to assess factors and prevalence of PPD and its effect on various health conditions.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Based on standardized current diagnostic criteria for depression ICD-10 (International Classification of Diseases, 10th edition) (World Health Organization, 1993) and DSM-IV (Diagnostic and Statistical Manual of Mental Disorders 4th edition) (DSM-IV, 1994); Postpartum depression refers to a non psychotic depressive episode that begins in the postpartum period;

Within ICD-10 there is a specifier ‘with postpartum onset’ to identify affective or brief psychotic episodes that occur during the postpartum period: an episode is specified as having a postpartum depression beginning within 6 weeks after delivery (World Health Organization, 1993); Similarly in DSM-IV-, the episode must be diagnosed within a main diagnostic category with the specifier to indicate the association if onset occurs within the first 4 weeks after delivery (American Psychiatric Association, 1994) and these disorders can continue up to one year post-delivery (Stewart, Robert, Dennis, Grace, and Willington.,2003) (WHO, 1993).

Postpartum affective disorders are typically divided into three categories: postpartum blues, nonpsychotic postpartum depression and puerperal psychosis. The prevalence, onset and duration of the three types of postpartum affective disorders are shown in the table1.1.

Table 1.1: Postpartum affective disorders

Disorder	Prevalence	Onset	Duration	Treatment
Blue's	30-75%	Day3 or 4	Hour to days	No treatment required other than reassurance
Postpartum depression	10-15%	Within 12 month	Weeks- Months	Treatment usually required
Puerperal Psychosis	0.1-0.2%	Within- 2weeks	Weeks- months	Hospitalization usually required Postpartum

Source: (Stewart, et al, 2003).

1.2 Background

1.2.1: Postpartum depression

Postpartum depression (PPD) is a significant public health problem which affects approximately 10-15% of women within a year of childbirth , and as such represents a considerable public health problem affecting women and their families (Stewart et al, 2003). The postpartum period is the period following the birth of a baby extending up to one year after delivery (Seacole, 2010). For the majority of women this marks a relatively healthy period in their lives; However, it is estimated that a significant number of families are affected by postnatal depression (Tomlinson, Cooper, Stein, Swartz, & Molteno, 2006).

The prevalence rate of postpartum depression in Western countries has been found to be between 10% and 15% (Guo et al., 2013); (Tomlinson, et al, 2006). In non-Western countries, the World Health Organization estimates the incidence of depressive symptoms among women at anywhere from 15% to 57% , indicating that populations differ considerably in terms of risk (Surkan, Kennedy, Hurley, and Black, 2011). Childhood growth problems are also common in these countries, and several studies have found a link between growth and maternal depression that, mothers with depressive symptoms were 40% more likely to have underweight or height-stunted children than mothers who were not depressed (Surkan et al., 2011).

1.2.2 Clinical presentation

Postpartum depression usually begins within 1–12 weeks after delivery, in some women, postpartum blues simply continue and become more severe (Logsdon, Wisner, & Pinto-Foltz, 2006). In others, a period of well-being after delivery is followed by a gradual onset of depression (Stewart et al, 2003). According to Stewart; the patterns of symptoms in women with postpartum depression are similar to those in women who have depression unrelated to childbirth, apart from the fact that the content may focus on the delivery or baby, evidence from epidemiological and clinical studies suggests that mood disturbances following childbirth are not significantly different from affective illnesses that occur in women at other times (Stewart et al, 2003).

1.2.3 Signs and symptoms

Postpartum depression is characterized by depressed mood, tearfulness, often accompanied by severe anxiety, markedly diminished interest or pleasure in activities, appetite disturbance, usually loss of appetite with weight loss, sleep disturbance, most often insomnia and fragmented sleep, even when the baby sleeps, physical agitation (most commonly), or retardation, fatigue, decreased energy, feelings of worthlessness or excessive or inappropriate guilt, decreased concentration or ability to make decisions, recurrent thoughts of death or suicidal ideation (Logsdon et al., 2006); (Kakyo et al., 2012).

1.2.4 Diagnosis

There are two main classification systems used within psychiatry: The American Psychiatric Association's Diagnostic & Statistical Manual of Mental Disorders now in its fourth edition (DSM-IV, 1994) and the 10th edition of the International Classification of Diseases, (ICD-10), published by (World Health Organization, 1993) in (Stewart, et al, 2003). Within ICD-10 there is a specifier 'with postpartum onset' to identify affective or brief psychotic episodes that occur during the postpartum period: an episode is specified as having a postpartum beginning within 6 weeks after delivery ((World Health Organization, 1993). Similarly in DSM-IV-, the episode must be diagnosed within a main diagnostic category with the specifier to indicate the association if onset occurs within the first 4 weeks after delivery and can continue up to one year post-delivery (American Psychiatric Association, 1994); (Stewart, et al, 2003).

1.3 Infant feeding practices

The global strategy for infant and young child feeding is based on respect, protection, facilitation and fulfillment of accepted human rights principles (WHO, 2009). According to World Health Organization; nutrition is a crucial, universally recognized component of the child's right to the enjoyment of the highest attainable standard of health as stated in the Convention on the Rights of the Child. Women, in turn, have the right to proper nutrition, to decide how to feed their children, and to full information and appropriate conditions that will enable them to carry out their decisions. Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants (WHO, 2009).

1.3.1 Global strategy for infant and young child feeding

As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health, thereafter to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods, while breastfeeding continues for up to two years of age or beyond (WHO, 2009). Poor feeding practices are a major threat to social and economic development; they are among the most serious obstacles to attaining and maintaining health that face this age group. Improved infant and young child feeding begins with ensuring the health and nutritional status of women, in their own right, throughout all stages of life and continues with women as providers for their children and families (WHO, 2009).

1.3.2 Exclusive breastfeeding

Exclusive breastfeeding means that an infant receives only breast milk from his or her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, not even water, with the exception of oral rehydration solution, drops or syrups consisting of vitamins, minerals supplements or medicines (WHO, 2009). It is recommended, as a critical public health measure, that all infants are breastfed exclusively up until 6 months of age; This recommendation is especially important for low- and middle-income contexts where the protective effects of breastfeeding are more evident than in high-income countries (Parsons et al, 2012). Exclusive breastfeeding from birth is possible except for a few medical conditions, and unrestricted exclusive breastfeeding results in ample milk production; According to WHO, it is estimated that 10% to 15% of under-5 deaths in resource-poor countries could be prevented through achievement of universal coverage with exclusive breastfeeding alone(WHO, 2009).

Infants feeding practices is essential for the growth and survival of children beginning from the time they are born (World Health Organization, 2009). According to World Health Organization, inappropriate feeding practices associated with inadequate feeding practices, may account for approximately one-third of malnutrition, depending on population, place, time and season, and in combination with other causes such as infection and food shortage. In many countries poor breastfeeding and complementary feeding practices are widespread (Seacole, 2010). Complementary foods are often introduced before or after the recommended age of 6 months and are often nutritionally inadequate and unsafe (National Nutrition Action Plan 2012-2017).

1.4 Study problem

Malnutrition has been responsible, directly or indirectly, for 60% of the 10.9 million deaths annually among children under five (World Health Organization, 2009). According to WHO, over two-thirds of these deaths, are often associated with inappropriate feeding practices, which occur during the first year of life; of which PPD affects approximately 10-15% of women within a year of childbirth; no more than 35% of infants worldwide are exclusively breastfed during the first four months of life; complementary feeding frequently begins too early or too late, and foods are often nutritionally inadequate and unsafe; Malnourished children who survive are more frequently sick and suffer the life-long consequences of impaired development. Poor feeding practices are a major threat to social and economic development, they are among the most serious obstacles to attaining and maintaining health that face this age group (WHO., 2009).

In Kenya malnutrition specifically stunting is major public health problem and is an indicator of chronic nutrition problems; According to Kenya Demographic and Health survey (KDHS 2008-2009) under nutrition is still a leading cause of death of young children under the age of five where 35% stunted, 16% underweight and 6% wasting (KDHS, 2009). The high burden of malnutrition in Kenya is not only a threat to achieving millennium developmental goals MDGs and vision 2030, but also a clear indication of inadequate realization of human right (National Nutrition Action Plan 2012-2017).

Depressed mothers may no longer enjoy their interaction with their children; they may be tired, unable to concentrate and preoccupied by feelings of guilt, worthlessness and hopelessness. If mothers are depressed they cannot feed their babies well. Therefore, depression in mothers could adversely impact upon infant nutritional status, because Nurturing and feeding an infant requires, patience and full concentration.

The knowledge gap in literature is that, the process that underlies connection between maternal depression and child malnutrition is not well understood. Few studies done outside Kenya suggested that depressive symptoms might negatively affect a mother's care giving ability, and that mothers who are depressed are less responsive to their children and may have less energy to follow through with their children. This study aims to find out the effects of postpartum depression on infant feeding practices and child malnutrition.

1.5 Study justification

Mothers are the primary caregivers of infants and any factor that impact mothering affect the infant and have public health significance. While postpartum depression is a major health issue for many women from diverse cultures, this condition often remains undiagnosed. The potential adverse effect of postpartum depression upon the mother and child development reinforces the need for early identification and effective treatment; because the first years of an infant's life represent a critical period of development hence reducing levels of malnutrition in Kenya.

Depressive disorders are the most common mental disorder and have the most robust evidence base of an association with child nutritional outcomes (Rahman., et al 2008). Postpartum depression if left untreated has adverse effect to mothers and their infants, for the mother, the episode can be the precursor of chronic recurrent depression; for her children, postpartum depression can contribute to their social, emotional, cognitive and physical development(Logsdon et al., 2006). Mothers make an enormous contribution to their children as well as to society, a warm, engaged, responsive mother who understands and encourages a child's development creates an environment that is conducive to producing healthy, productive children, and citizens; (Logsdon et al., 2006).

The extent to which early experiences are considered formative has also been underlined by the World Health Commission on Social Determinants of Health, which concludes that giving each child the best start in life is the highest priority for reducing health inequality (WHO, 2010). Since growth failure occurs exclusively almost during the intrauterine period and in the first two years of life, there is an urgent need to address maternal pre and postpartum depression (Black et al., 2008). Understanding the early rearing environment of young children is important because it has the potential to have effects on later health and development (Parsons,et al, 2012).

1.6 study questions

1. What is the prevalence of postpartum depression among women who attend Kariobangi maternal and Child Health Clinic?
2. What are the infant feeding practices practiced by these women?
3. What is the nutrition status of their infants?

1.7 Main objective

The main objective of this study was to determine the effects of postpartum depression on infant feeding practices among women in an urban low income settlement-Kariobangi in Nairobi Kenya.

1.8 Specific objectives

1. To determine the prevalence of postpartum depression among women who attend Kariobangi Maternal and Child Health Clinic,
2. To assess infant feeding practices, in these women based on WHO Infant and child feeding guidelines,
3. To assess infants nutrition status weight for age using growth monitoring card.

1.9 Theoretical Model

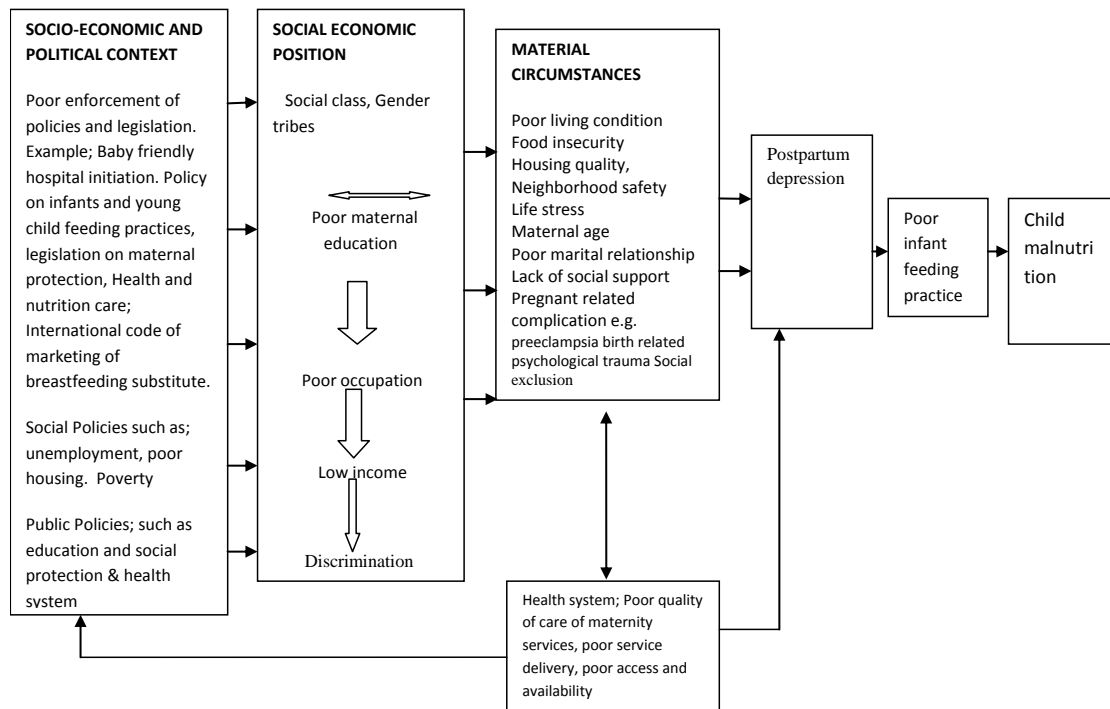


Figure 1.1: Theoretical model

Source: Diderichsen's and Hallqvist's 1998, in (WHO, 2010). A Conceptual

Framework for Action on the Social Determinants of Health. Geneva-Switzerland.

The theoretical model borrows from the model of the social production of disease developed by Diderichsen's and Hallqvist's 1998, from which the Conceptual framework of the social determinants of health (SDH) framework draws significantly.

Didierichsen's work identifies how the following mechanisms that play a role in stratifying health outcomes which operates in the following manner, Social contexts; which includes the structure of society or the social relations in society, create social stratification and assign individuals to different social positions. Social stratification in turn engenders differential exposure to health-damaging conditions and differential

vulnerability, in terms of health conditions and material resource availability. Social stratification likewise determines differential consequences of ill health for more and less advantaged groups.

1.10 Conceptual framework

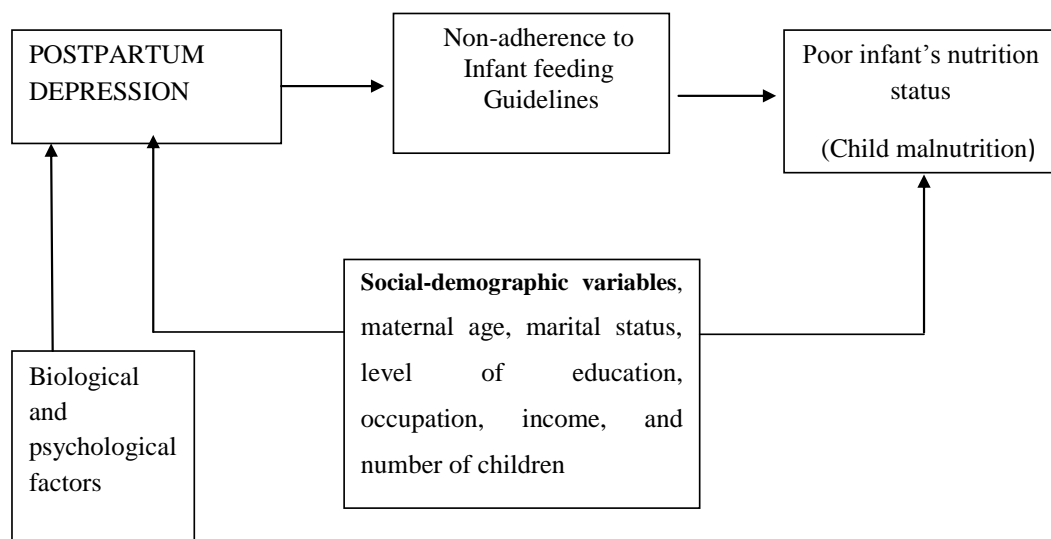


Figure 1.2: Conceptual framework

The conceptual framework was developed by the researcher using the Theoretical model of the social production of disease.

CHAPTER 2: LITERATURE REVIEW

2.1 Postpartum depression

Depression is a common illness worldwide, with an estimated 350 million people affected, it is the leading cause of disability worldwide, and is a major contributor to the global burden of disease (WHO, 2012). More women than men are affected by depression, and the puerperium is a time of particular vulnerability (Guo et al., 2013). Recent epidemiological studies indicate that postpartum depression is not a rare outcome among new mothers, and some studies have suggested that pregnancy related anxiety may be related to maternal depression; as such, pregnancy related anxiety might occur directly and/or indirectly through maternal depression with potential negative consequences for child health (Adedinsewo, Fleming, Steiner, Meaney, & Girard, 2013).

Findings from sub-Saharan Africa prevalence of postpartum depression differed from country to country. In Ghana the prevalence of depression at 3 and 12 months postpartum were 11.8% and 16.1% (Côte d'Ivoire) and 8.9% and 7.2% (Ghana). Perinatal depression was frequent and associated with febrile illness in the offspring (Gou, et al., 2013).

In East Africa, a study done in Uganda peri-urban primary care centre, found the prevalence of major depression at six weeks postpartum was 6.1% (Kakyo, et al, 2012). In Kenya a study that determine the prevalence of postpartum depression among women delivering at Kenyatta National Hospital six Weeks after delivery found prevalence of 10.6% (Mwikali.v, 2013).

Maternal depression has been associated with adverse birth outcomes and reduced postpartum growth, poor cognitive outcome, and psychiatric morbidity in childhood and adolescence; there are several biological and psychosocial mechanisms through which maternal depression may affect children's health, including through direct impact on fetal development and through maternal parenting behavior (Gou, et al., 2013).

2.2 Postpartum depression and maternal child interaction

Maternal-infant interaction is a complex process of mutual regulation, with both mothers and infants playing an active role through daily interactions with their mothers; infants learn about their external environment and acquire both knowledge and skills (Logsdon et al., 2006). Postpartum depression effects on early interactions, parenting, and safety practices, appear to be universal, across different cultures and socioeconomic status groups and, include less sensitivity of the mothers and responsiveness of the infants (Field, 2011).

Postpartum depression can cause functional impairment at a time when the mother is performing tasks vital to her infant's growth and development (Stewart, 2007). Several care giving activities are compromised by postpartum depression effects, on the developing parenting roles including feeding practices, most especially breastfeeding, sleep routines and well-child visits and vaccinations (Field, 2011); (Logsdon et al., 2006). Most studies on parenting practices have reported reduced odds of continuing breastfeeding for mothers who are postpartum depressed (Dennis and McQueen, 2009); (Field, 2011).

Few studies focus on feeding and PPD, considering that feeding is an interactive period of early communication and social integration (Dennis and McQueen, 2009). These studies suggest that PPD may affect compensatory feeding practices of the mother and lead to early termination of breastfeeding (Hatton et al., 2005).

2.3 Postpartum depression and infant feeding

A qualitative systematic review in the United States was conducted to examine the relationship between postpartum depressive symptoms and infant-feeding outcomes. The results from this review suggest that women with depressive symptoms in the early postpartum period may be at increased risk for negative infant-feeding outcomes including decreased breastfeeding duration, increased breastfeeding difficulties, and decreased levels of breastfeeding self-efficacy, there is also beginning evidence suggesting that depressed women may be less likely to initiate breastfeeding and do so exclusively (Dennis and McQueen, 2009).

2.3.1 Breastfeeding initiation

In a UK longitudinal community-based study that involved 434 pregnant women investigated association between postpartum depression and breastfeeding initiation. Women with depressive symptoms antenatal were significantly less likely to initiate breastfeeding compared with those with no depressive symptoms (82% vs. 94%). Mothers with depressive antenatal symptoms and at 8 weeks after delivery perceived breastfeeding more negatively and breastfed for a shorter duration ($P = .04$); A failed breastfeeding attempt was also found to be the factor associated with an EPDS score of >9 among a low-income inner-city sample of 37 US women during their first postpartum visit (RR: 3.78 [95% CI: 1.03–13.89]); In a community-based Danish

study of 528 mothers, those who never established breastfeeding were 2.4 times more likely to experience depressive symptoms 16 weeks after delivery than those who were breastfeeding (Dennis & McQueen, 2009).

2.3.2 Breastfeeding exclusivity

In detecting the relationship between PPD and exclusive breastfeeding; a study in Canada recruited 856 mothers to determine factors associated with full breastfeeding. Depressive symptoms at 1 week were negatively associated with full breastfeeding at 1 week ($P < .05$); similar findings were found at 24 weeks ($P < .05$). These findings suggest that higher levels of depressive symptoms reduce the likelihood of exclusive breastfeeding (Adedinsewo, Fleming, Steiner, Meaney, & Girard, 2014).

Another Cohort study in Brazil evaluates the association between PPD and interruption of exclusive breastfeeding in the first two months of life. PPD was assessed using the Edinburgh Post-Natal Depression Scale. Children of mothers with postpartum depressive symptoms were at higher risk of early interruption of exclusive breastfeeding in the first and second months of follow-up (RR = 1.46; 95%CI: 0.98-2.17 and RR = 1.21; 95%CI: 1.02-1.45, respectively). The results indicate the importance of maternal mental health for the success of exclusive breastfeeding (Hasselmann and Valéria, 2008).

2.3.3 Breastfeeding duration

A consistent relationship between postpartum depressive symptoms and breastfeeding duration has been found among diverse populations. In a secondary analysis of a cross-sectional Canadian telephone survey of 526 mothers 6 weeks after delivery,

women with depressive symptoms were more likely to discontinue breastfeeding than those with no symptoms after controlling for age and education (OR: 0.28 [95% CI: 0.11–0.71]; P = .007) (Dennis and McQueen, 2009).

In detecting the relationship between PPD and early cessation of breastfeeding; A cohort study of 1745 women in Australia was conducted; Self-report questionnaires were completed at recruitment, at 2, 6, and 12 months postpartum. Early cessation of breastfeeding was found to be significantly associated with postnatal depression (adjusted hazard ratio 1.25, 95% CI 1.03–1.52). Onset of postnatal depression occurred before cessation of breastfeeding in most cases. A study concluded that postnatal depression has a significant negative impact on breastfeeding duration (Henderson, Evans, Straton, Priest, and Hagan, 2003).

Similarly, in Nigeria a longitudinal case controlled study was carried, 242 women with their infant's were recruited .Weight and length were measured at the 6th week, 3rd month, 6th month and 9th month after delivery. Discontinuation with breastfeeding and illnesses like diarrhea, persistent vomiting, fever and cough were also recorded at these periods. Depressed mothers were more likely to stop breastfeeding earlier and their infants more likely to have episodes of diarrhea and other infectious illnesses, Infants of depressed mothers had statistically significant poorer growth than infants of non-depressed mothers at the 3rd month (weight OR 3.41, 95% CI 1.30-8.52; length OR 3.28, 95% CI 1.03-10.47) and the 6th month postpartum (weight OR 4.21, 95% CI 1.36-13.20; length OR 3.34, 95% CI 1.18-9.52) (Hurley, Surkan, and Black, 2012).

2.4 Postpartum depression and poor growth

The Lancet series on global mental health highlighted the links between mental health and physical disorders of public health importance (Robert et al, 2008). Maternal and child under nutrition is highly prevalent in low-income and middle-income countries, resulting in substantial increases in mortality and overall disease burden (Black et al., 2008). several studies have found a link between growth and maternal depression that, mothers with depressive symptoms were 40% more likely to have underweight or height-stunted children than mothers who were not depressed (Surkan et al., 2011).

In Pakistan a prospective cohort study determined maternal depression as a risk factor for malnutrition and illness in infants living in a low-income country in rural community in Rawalpindi. The results were infants of prenatally depressed mothers showed significantly more growth retardation than controls at all-time points. The relative risks for being underweight (weight-for-age z score of less than -2) were 4.0 (95% [CI], 2.1 to 7.7) at 6 months of age and 2.6 (95% CI, 1.7 to 4.1) at 12 months of age, The study concluded that maternal depression in the prenatal and postnatal periods predicts poorer growth and higher risk of diarrhea in a community sample of infants (Rahman et al., 2007).

Another study was conducted in Ghana to examine the association between maternal depression and febrile illness in children that were enrolled in a prospective birth cohort in 2010–2011 and underwent 2-years of follow up. The prevalence of depression at 3 and 12 months postpartum were 11.8% and 16.1% (Côte d’Ivoire) and 8.9% and 7.2% (Ghana). Peri- natal depression was frequent and associated with febrile illness in the off springs. The results showed that a high prevalence of

depression in sub-Saharan Africa may pose a serious public health threat to women and their off- spring (Guo et al., 2013).

In Zambia a cross-sectional study was undertaken, women with infants between 2 and 12 months were recruited from under five clinics in three locations. Depression was assessed using the self-reporting questionnaire. Outcomes of infant size (actual weight and length, and as \leq 5th percentile) and infant health (serious illness, diarrhea episodes, incomplete vaccination) were obtained. The results were adverse infant health outcomes were all proportionally greater in infants of depressed mothers, and the associations with adjusted mean difference in weight (0.58 kg, CI 0.09-1.08) and length (1.95 cm, CI 0.49-3.50) were statistically significant. The study concluded that reduced infant weight and length were significantly associated with maternal depression (Ndokera & MacArthur, 2011).

In Malawi, a cross-sectional study was conducted at a district hospital child health clinic. Participants were infants due for measles vaccination, and their mothers. Mean infant weight-for-age and length-for-age z-scores were compared between infants of mothers with and without Common Mental Disorder (CMD). Median infant age was 9.9 months. 29.9% of mothers scored 8 or above on the SRQ indicating CMD. Mean length-for-age z-score for infants of mothers with CMD (-1.50 SD 1.24) was significantly lower than for infants of mothers without CMD (-1.11 SD 1.12). The study demonstrates an association between maternal CMD and infant growth impairment in rural sub-Saharan Africa (Robert.,et al 2008).

A study from Ethiopia found no association between maternal common mental disorder and infant underweight status or infant stunting; the same was found in a study done in South Africa which found no clear relationship between maternal depressive symptoms and infant stunting or weight for age (Parsons et al., 2012).

CHAPTER 3: METHODOLOGY

3.1 Study design

This was a cross –section descriptive study (quantitative). The study design was appropriate because it provided the prevalence of postpartum depression and enabled the researcher to assess mother’s infant feeding practices and infant’s nutrition status.

3.2 Study area description

The study was conducted in Nairobi County at Kariobangi North- health centre, maternal and child health clinic (MCH). Kariobangi MCH clinic captures women mostly from Korogocho slums and surrounding areas. Korogocho is one of the largest slum neighborhoods of Nairobi, Kenya, home to 150,000 to 200,000 people within 1.5 square kilometers, northeast of the city centre. Korogocho was founded as a shanty town on the then outskirts of the city. In 2009 it was estimated to be the fourth largest slum in Nairobi, after Kibera, Mathare Valley and Mukuru kwa Njenga. It borders one of Nairobi's main rubbish dumps, Dandora. The slum is a "Location" (a formal subdivision) of Kasarani division, Nairobi Province, and is divided into seven "villages": Highridge, Grogan, Ngomongo, Ngunyumu, Githaturu, Kisumu Ndogo/Nyayo and Korogocho. The name kariobangi is a Swahili term meaning crowded shoulder to shoulder. Korogocho residents come from more than thirty ethnic groups, although most are from the Kikuyu, Luo, and Luhya peoples.

Kariobangi/ Korogocho was chosen because of the fact that in low income settlement like Korogocho slums there may be more malnourished children and this gave a lead that postpartum depression may be likely. Socioeconomic deprivation indicators such

as unemployment, low income and low education have been cited as risk factors in mental health disorders.

3.3 Study population

The research sampled from mothers attending maternal and child health clinic at Kariobangi MCH clinic for their infant's immunization at 6 to 14 weeks.

3.3.1 Inclusion criteria

- Women with babies who come to the MCH- clinic for their infants immunization at 6 to 14 weeks
- Women who gave consent
- Women resided in Kariobangi/Korogocho

3.3.2 Exclusion criteria

- Known cases of mental illness/mental medications

The rationale of excluding known mental illness is because illness predates partum period and thereafter may not be postpartum depression.

3.4 Sample size determination and calculation

Sample size was determined based on the prevalence of PPD which is 10-15%. The 15% was used because (World Health Organization, 2011) estimates the prevalence of depressive symptoms among women in developing countries at anywhere from 15%, therefore Kenya being among the developing countries and the prevalence of postpartum depression is not yet known, the (WHO,2011) estimates was used.

Minimum required sample size was calculated using the prevalence formula by Cochran's (1963) cited in Cochran, (1977).

$$n = z^2 p (1-p)/d^2$$

Where

n =required sample size

d = degree of precision at 5%

Z =represents the standard normal deviate corresponding to the 95% confidence level
=1.96

P = the estimate prevalence of the characteristic studied, in this case an estimate prevalence of women with depression symptoms is 15% .Therefore p- value= 0.15

Therefore;

$$n = (1.96)^2 \times 0.15 \times (1-0.15)/0.05^2$$
$$= 3.8416 \times (0.15 \times 0.85)/0.05^2$$

=196 plus 10% of sample size for refusal and incompletes

Therefore 216 women with infants were recruited in the study.

3.5 Sampling method

Consecutive sampling method was used where every mother with her infants who comes to the MCH clinic and meets the inclusion criteria was recruited. Participants were recruited every day of the clinic that is Monday to Friday from 9am to 1pm at Kariobangi-Maternal and Child Health clinic. Inclusion into the study was done until the required sample size of 216 was achieved.

The rationale of using consecutive sampling is that it included all accessible subjects as part of the sample. It was the best choice of the nonprobability sampling techniques since by studying everybody available, a good representation of the overall population was possible in a reasonable period of time.

3.5.1 Data collection instruments

The instruments used in the study include;

- Social demographic questionnaire.
- The Edinburgh Postnatal Depression Scale.
- Modified USAID Tool kit for monitoring and evaluating breastfeeding practices.
- Weighing scale and used in hospital.
- Growth monitoring charts.

3.5 2 Validity of Edinburgh postpartum depression scale (EPDS)

The Edinburgh Postnatal Depression scale is the most well known and evaluated instrument for postnatal depression. The development of the EPDS was described firstly by Cox, Holden and Sagovsky in 1987. The scale was developed first with 13 items, 6 of these being adapted from existing questionnaires. Later the scale was reduced to 10 items and validated in a sample of 84 postpartum mothers. The scale asks the respondent about their feelings over the previous seven days. Possible responses are scored from 0-3, in growing order of severity, creating a maximum score of 30. In the initial studies, the sensitivity and specificity of the EPDS were 86% and 78 % respectively, with a positive predictive value of 73% using a cutoff point of

9/10. The scale has been tested in countries as diverse as England, Australia, Sweden and Ethiopia among others (Tesfaye, Hanlon, Wondimagegn, & Alem, 2010).

3.5.3 Data collection procedure

Every clinic day Monday to Friday during the study period July 15 to August 15, 2014, the principal investigator was available at the postnatal clinic for recruitment of participants. After identifying the mothers who met the criteria for selection, and after Consent explanation and consent form signing; data was collected on:

Socio demographic characteristic using demographic questionnaire was translated form English to Kiswahili.

Prevalence of Postpartum depression was assessed directly using structured questionnaire, the Edinburgh Postnatal Depression Scale (EPDS) in Kiswahili. EPDS is the most widely used questionnaire which measures, a range of cut-off points. A general consensus for EPDS cut-offs is 13 and above. Therefore this study used EPDS cut-off 13 as clinically significant.

Infant feeding practices was determined using modified USAID Tool Kit for monitoring and evaluating breastfeeding practices translated in Kiswahili, based on WHO infant and young children feeding practices recommendations. The practice assessed in infant feeding practice was breastfeeding exclusively.

Nutrition status was assessed using anthropometric measurement; Weight/length for age. This study used growth index, weight for age, which can reflect either stunting and or wasting. Weight /age for babies was taken using weighing scale and interpreted

through infant's growth monitoring card the percentiles and Z –scores. Weight for age compares the weight of child with the weight of a healthy child of the same age in the reference population; all children in this study with weight for age of minus-1SD and below were considered malnourished/underweight, classified as mild, moderate or severe.

3.6 Training procedures

One research assistant was identified (Nursing Officer) and approached for willingness to assist in the study with taking weight for infants. The ethical consideration was explained and what the study entails was made clear to her.

3.7 Recruiting and consenting procedures

Recruitment was undertaken by the principal investigator and the assistant. All women who attended maternal and child health clinics during the study period and satisfied the study criteria were approached. The purpose of the study and the ethical concerns was explained to them. A written consent form was signed by the willing participant.

3.8 Data analysis and management

Questionnaires were edited, coded and data entered using SPSS data entry builder version 3 in a password protected computer. (SPSS) version 20 was used for analysis. Descriptive statistics were obtained i.e. frequencies and percentages. Pearson's Chi-square test ($P < 0.05$) were used to test relationships between predictor variables and outcome variable Binary Logistic regression model was used to determine association between PPD and outcome variables.

3.9 Minimization of error and bias

The EPDS and IYCF questionnaires had been translated into Kiswahili with every caution taken to maintain its original meaning; and to ensure that the questions were asked and understood well. The questionnaires were (interview assisted) administered and completed by the principle investigator. The weighing scale was recalibrated at every tenth time. All filled questionnaire was reviewed daily.

3.10 Ethical considerations

Ethical approval was obtained from The Kenyatta National Hospital / University of Nairobi Ethical and Research Committee (KNH/UoN-ERC). Permission to conduct the study was obtained from Nairobi city council; Kariobangi North county council and the nurse in charge of Kariobangi maternal and child health clinics. A written informed consent was signed by the respondent, after detailed explanation of the study purpose to the respondents before commencing the interviews. Confidentiality was assured. The information collected was kept confident, serial numbers was used instead of names. All information obtained from participants was kept under lock and key. Information in computers was stored in password protected locations. In the facility, the investigator did not interfere with patient management.

The Potential risks included discussion of sensitive topics, the time length of the interviews and child nutrition status assessment. Babies cried due to discomfort in undressing. The study used short time as much as possible for the interview. Patients found to have a diagnosis of depression were referred to attend the Psychiatry clinic on every Tuesday at the Health centre. Children with symptoms of malnutrition were referred to visit the nutrition unit in the Health centre.

There were no direct benefits from participating in this study. However the study finding may result to implementation of better interventions for mothers with postpartum depression and children who have malnutrition.

3.11 Use of the study

This study was undertaken in partial fulfillment of a master of public health degree at the school of public health university of Nairobi (SPHUN). The study findings were discussed first with the academic staff and fellow student at the school. The finding will be published and shared with the concerned Division at the Ministry of Public Health and sanitation Kariobangi. It is expected that these finding will be utilized by the MCH clinic to improve the life of women and children.

3.12 Study limitation

The study recruited one population in Kariobangi/Korogocho. Therefore the study can only be generalized to the urban slum population. The EPDS questionnaire was interview assisted and base on the psychological orientation of the respondents therefore the findings could be based on the mental ability and mood of the respondent on that particularly day. Breastfeeding exclusively was assessed using (24-hour recall) which may have led to bias because 24 hour recalls only reveals what the infant ingested in the previous 24 hours and may include both children that were really in exclusive breastfeeding as well as others who ingested breast milk only during that 24-hour recall. The study being facility based may have excluded other depressed mothers who don't come to the facility as opposed to population based study.

CHAPTER 4: STUDY FINDINGS

4.1 Introduction

The chapter presents the research findings and the interpretations. The chapter is organized into three main sections: The first two sections are mainly descriptive analysis, the social demographic characteristics of mothers, prevalence of postpartum depression, prevalence of breastfeeding practices and prevalence of malnutrition. The last section includes statistical tests odd ratios and the corresponding interpretation of the findings.

4.2 Social demographic characteristics of mothers

A total sample of 216 mothers and their infants who met the inclusions criteria were recruited in the study from July 15 to August, 15, 2014, at Kariobangi Postnatal Clinic. 200 mothers and their infants were eligible for analysis.

The mean age of the mothers was 25 years, the median age was 25 years and the range was between 17-39 years. Mothers who were married were 87% and 13% were single. Their education, 2.5% of the mothers had never been to school, 64% of the mothers had schooled up to primary level and 33.4% were above primary education secondary and tertiary. Majority of mothers were housewives with no income 58.5%, business women were 26% and 7.5 were employed with salary. Slightly over half of the mothers live in semi-permanent houses 57%, while 39.5% live in temporary houses. The family income for majority was between Ksh 500-10,000 per month 78.5%. Most mothers had less than 3 children 78.3%, as most of them are from youthful group, and 25.2 % of the mothers had more than three children as seen in table 4.1.

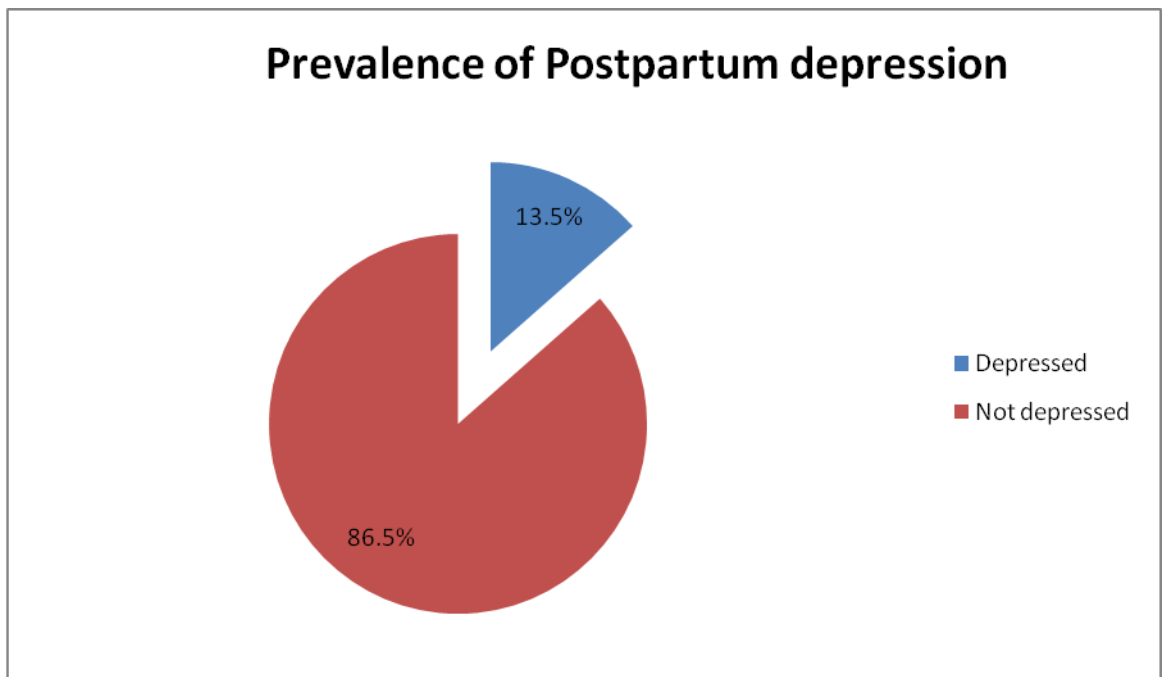
Table 4.1: Socio-Demographic characteristics of the Mothers

Demographic variable	Total (n=200)	
	Number	Percent
Age group		
<20 Yrs	35	17.0
21-25 Yrs	77	38.1
26-30 Yrs	65	32.2
31-35 Yrs	18	9.0
36> Yrs	5	2.5
Marital status		
Married	174	87.0
Single	20	10.0
Divorced	2	1.0
Separated	3	1.5.0
Widowed	1	0.5
Education status of the respondent		
None	5	2.5
Primary	128	64.0
Secondary	64	32.0
Tertiary (College, University)	3	1.5
Occupation of respondent		
Housewife	117	58.5
Employed/Salaried	15	7.5
Business Women	52	26.0
Other Specification	15	7.5
Type of dwelling		
Temporary (Mad-Wall, Grass, Roof)	79	39.5
Semi-Permanent (Mad Wall With Cement)	114	57.0
Permanent (Stone Wall, Iron Sheet/Tiled Roof)	7	3.5
Monthly Family income		
<Kshs 5000	37	18.3
Kshs 5000-10,000	157	78.5
Kshs 10,000-30,000	6	3.0
Number of children		
Less than 3 children	151	74.8
3 & more children	51	25.2

4.3 Prevalence of postpartum depression

The prevalence of postpartum depression was assessed using the Edinburg postpartum depression scale where the women were subjected to 10 standard questions which they answered according to how they felt in the past 7 days. Out of 200 mothers studied 27 (13.5%) were found to have postpartum depressive illness as measured by an EPDS score of ≥ 13 , as seen in fig 4.1.

Figure 4.1 Prevalence of PPD

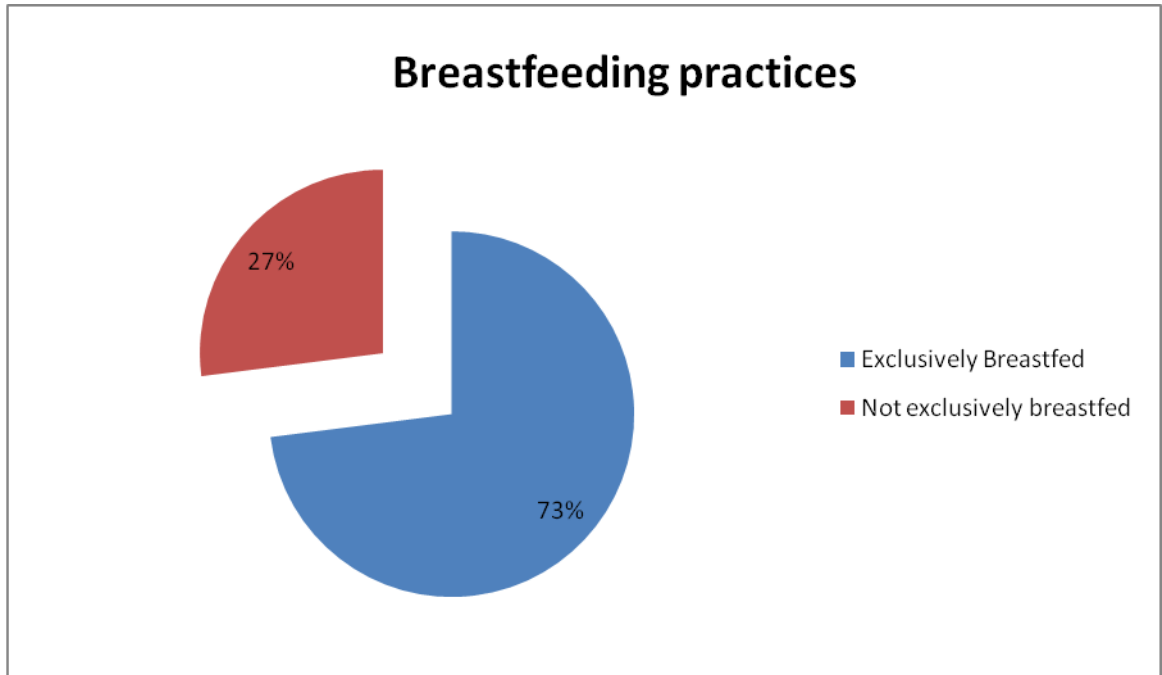


4.4 Infant feeding practices

Infant feeding practices was determined using modified USAID Tool Kit for monitoring and evaluating breastfeeding practices, based on WHO infant and young children feeding practices recommendations. The practice assed in infant feeding practice was breastfeeding exclusively. The results revealed that 73% of the women

exclusively breastfed their infants, while 27% had supplemented particularly water, cow milk, and soft porridge as seen in figure 4.2.

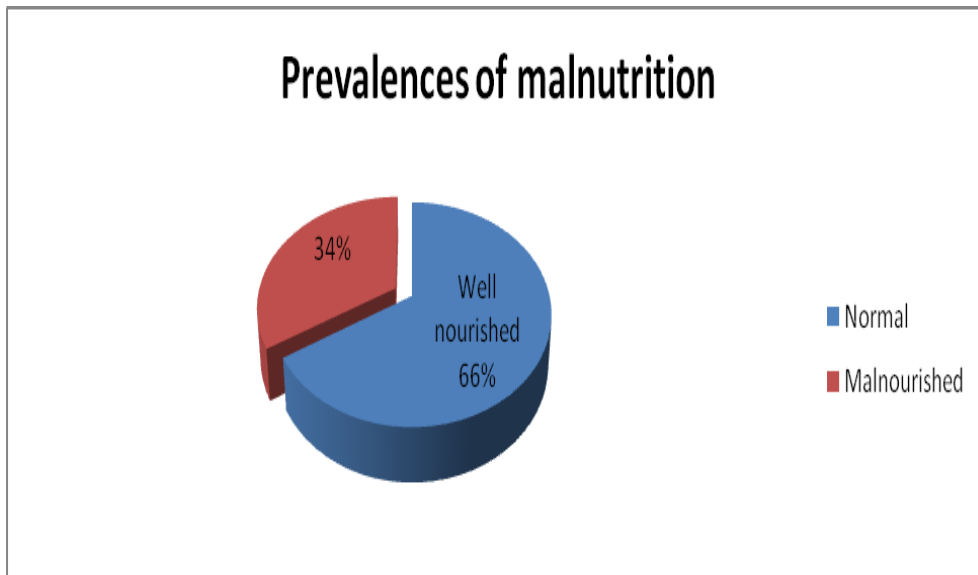
Figure 4.2: Breastfeeding practices



4.5 Infant's nutrition status

In determining the Infants nutrition status at Kariobangi postnatal clinic, the weight for age of infants 6weeks to 14weeks were measured and interpreted in infant's growth monitoring card. All infants in this study with (weight-for-age Z-score of less than -1) and below were considered malnourished /underweight. This can be mild, moderate or severe .The study found that 66 % of the mothers had well nourished children; while 34% mothers had underweight infants with mild and moderately malnutrition. Out of 27 depressed mothers 18(66%) of the underweight infants were from the depressed mothers as seen in figure 4.3.

Figure 4.3: Infant's nutrition status



4.6 Relationship between postpartum depressions and socio demographic characteristics

Statistical tests were performed to determine relationship between postpartum depression and socio-demographic characteristics of mothers. Factors found to be related with postpartum depression was marital status, the single mothers were likely to be more depression ($p < 0.005$) and income level of less than 10,000 per month was also statistically significant related to PPD ($p < 0.05$) other factors such as age group, education, type of dwelling and number of children did not prove relationship with PPD as seen in table 4.2.

Table 4.2: Relationship between Postpartum depressions and socio demographic characteristics

Demographic variables	Without PPD n =173(%)	With PPD, n =27(%)	X² statistic	p-value
Age group				
24 and below	84 (84.0)	16(16.0)	1.07	0.301
25 and above	89 (89.0)	11(11.0)		
Marital status				
Married	156 (89.7)	18 (10.3)	11.410	0.001
Single	17 (65.4)	9 (34.6)		
Education				
Primary and less	113 (84.9)	20 (15.1)	0.809	0.370
Secondary and above	60 (89.6)	7 (10.4)		
Occupation				
No income	101 (85.6)	17 (14.4)	0.203	0.653
With income	72 (87.8)	10 (12.2)		
Type of dwelling				
Temporary	63 (79.7)	16 (20.3)	5.100	0.24
Semiperm/permanent	110 (90.9)	11 (9.1)		
Number of children				
Less than 3	155 (86.1)	25 (13.9)	0.233	0.629
More than 3	18 (90.0)	2 (10.0)		
Monthly income				
Less Ksh 10,000	167 (86.1)	27 (13.9)	7.114	0.012
Above 10,000	6 (100)	0 (0.0)		

4.7 Relationship between socio-demographic characteristics and infant's nutrition status

When socio demographic characteristics were analyzed against infants' nutrition status, the only factors found to be significant related to nutrition status was the income level of less than Ksh 10,000 $P < 0.05$. Other socio-demographic factors the age group, education, type of dwelling and number of children did not prove relationship between PPD and infants nutrition status, as seen in table 4.3.

Table 4.3: Relationship between Socio-demographic characteristics and infant's nutrition status

Demographic Variables	Normal weight n =131 (%)	Underweight n=69 %	X² statistic	p-value
Age group				
24 years and below	62 (62.0)	38 (38.0)	2.684	0.261
25years and above	69 (69.0)	31 (31.0)		
Marital status				
Married	119 (68.4)	55 (31.6)	5.004	0.082
Single	12 (46.2)	14 (53.8)		
Education				
Primary and less	84 (63.2)	49 (36.8)	1.300	0.522
Secondary and above	47 (70.1)	20 (29.9)		
Occupation				
No income	78 (66.1)	40 (33.9)	1.950	0.377
With income	53 (64.6)	29 (35.4)		
Type of dwelling				
Temporary	47 (59.5)	32 (40.5)	3.076	0.215
Semiperm/permanent	84 (69.4)	37 (30.6)		
Number of children				
Less than 3	117 (65.0)	63 (35.0)	0.325	0.850
More than 3	14 (38.9)	22 (61.1)		
Monthly income				
Less than Ksh 10,000	167 (86.1)	27 (13.9)	7.114	0.012
Above 10,000	6 (100)	0(0.0)		

4.8 Relationship between socio-demographic characteristics and breastfeeding practices

When socio-demographic characteristics were analyzed against breastfeeding practices the factors found to be significant related with breastfeeding practices were the income level of less than 10,000Ksh $P < 0.05$, and the married women $p < 0.05$. Other socio-demographic characteristics did not prove significant relationship with breastfeeding practice as seen in table 4.4.

Table 4.4: Relationship between socio-demographic characteristics and breastfeeding practices

Demographic variables	Exclusively breastfed n =146(%)	Not exclusive breastfed, n =54(%)	X²statistic	p-value
Age group				
24 and below	74 (74.0)	26 (26.0)	0.101	0.750
25 and above	72 (72.0)	28 (28.0)		
Marital status			8.021	0.005
Married	133 (76.4)	41(23.6)		
Single	13(50.0)	13(50.0)		
Education			0.001	0.975
Primary and less	97(72.9)	36 (27.1)		
Secondary and above	49(73.1)	18 (26.9)		
Occupation			1.563	0.211
No income	90 (76.3)	28(23.7)		
With income	56 (68.3)	26(31.7)		
Type of dwelling			3.413	0.065
Temporary	52 (65.8)	273 (8.2)		
Semiperm/permanent	94 (77.7)	27 (22.3)		
Number of children			0.101	0.750
Less than 3 children	132 (73.3)	48 (26.7)		
More than 3 children	14 (70.0)	6 (30.0)		
Monthly income			4.223	0.040
Less than Ksh 10,000	166(77.2)	49(22.8)		
Above 10,000	1(16.7)	5(83.3)		

4.9 Supplementary feeding

When postpartum depression was analyzed against the supplementary feeding, the finding shows that the depressed mothers were more likely to give their infants cow milk $P<0.001$; sweet drinks $P<0.05$; plain water $p<0.001$, mash food $p<0.05$. baby cereal $P<0.00$ before the age of four month as seen in table 4.5.

Table 4.5: Supplementary feeding

Supplementary feeding		Without PPD n=173	With PPD n=27	X ² statistic	p-value
Breast milk	Yes	171 (98.8)	27(100.0)	0.315	0.574
	no	2 (1.2)	0(0.0)		
Formula	yes	15 (8.7)	26(96.3)	0.783	0.376
	no	158 (91.3)	1 (3.7)		
Cow milk	yes	5 (2.9)	7 (25.9)	21.974	0.000
	no	168 (97.1)	20 (74.1)		
Sweet drinks	yes	2 (1.2)	3 (11.1)	9.496	0.002
	no	171 (98.8)	24 (88.9)		
Vitamins, mineral medicine	yes	166 (96.0)	26 (96.3)	0.007	0.705
	no	7 (4.0)	1 (3.7)		
Plain water	yes	43 (24.9)	19 (70.4)	22.619	0.000
	no	130 (75.1)	8 (29.6)		
Fruit juice	yes	4 (2.3)	2 (7.4)	2.084	0.187
	no	169 (97.7)	25 (92.6)		
Tea or infusions	yes	2 (1.2)	0 (0.0)	0.158	0.864
	no	171(98.8)	27 (100.0)		
Sugar water	yes	2 (1.2)	1 (3.7)	1.026	0.311
	no	171 (98.8)	26 (96.3)		
Mushy or solid food	yes	2 (1.2)	3 (11.1)	9.496	0.018
	no	171 (98.8)	24 (88.9)		
Oral Rehydration Salts	yes	1 (0.6)	1 (3.7)	2.305	0.252
	no	172 (99.9)	26 (96.3)		
Baby cereal	yes	22 (12.7)	11 (40.7)	13.046	0.000
	no	149 (87.3)	16 (59.3)		

4.10 Relationship between postpartum depression and outcome variables, PPD and infants nutrition status; PPD and breastfeeding practices

When postpartum depression was analyzed with breastfeeding practices, results shows significant relationship between postpartum depression and breastfeeding $P < 0.001$, depressed mothers are more likely not practicing exclusive breastfeeding than mothers who are not depressed. When postpartum depression was analyzed with infant's nutrition status, there was significant relationship between postpartum depression and nutrition status $P < 0.001$, depressed mothers were more likely to have underweight infants than infants of not depressed mothers as seen in table 4.6.

Table 4.6: Relationship between postpartum depression and outcome variables; PPD and infants nutrition status; PPD and breastfeeding practices

Outcome variables		Without PPD n=173(%)	With PPD n=27(%)	X ² statistic	P-value
Feeding	Exclusive breastfed	137(79.2)	9(33.3)	24.91	0.000
	Not exclusive breastfed	36(20.8)	18(66.7)		
Nutrition status	Normal nutrition	122(70.5)	9(33.4)	14.292	0.000
	Underweight	51(29.5)	18(66.6)		

4.11 Results of logistic regression analyses

Binary logistic regression analysis was performed to determine the association between postpartum depression and breastfeeding practices; and the association between postpartum depression and infant's nutrition status. The results revealed that there is significant association between PPD and poor breast feeding practices (OR=7.123 95%CI: [2.858-17.750]; P<0.001), depressed mothers were 7 times more likely not to practice exclusive breastfeed than mothers who are not depressed. There were also significant association between postpartum depression and child under nutrition, (OR=4.401; 95%CI [1.756-11.028]; (p<0.05) depressed mothers were 4 times more likely to have underweight infants than mothers without depression as seen in table 4.7.

Table 4.7: Binary regression to associate postpartum depression, breastfeeding practices and infants nutrition status.

Outcome Variables	Regression coefficient	Wald' statistic	Degree of freedom	Odd ratio	95% C.I. for EXP(B)		P-value
					Lower	Upper	
Breastfeed practices	1.963	17.758	1	7.123	2.858	17.750	.000
Nutrition status	1.482	9.994	1	4.401	1.756	11.028	.002

CHAPTER 5: DISCUSSION

5.1 Prevalence of postpartum depression

This study observed prevalence of postpartum depression of 13.5% at Kariobangi. These observations are higher than that reported by (Mwikali.v, 2013) at Kenyatta National hospital prevalence of 10.6%. In Ghana (Guo et al., 2013) reported prevalence of depression at 3 and 12 months postpartum at 11.8% and 16.1% (Côte d'Ivoire) and 8.9% and 7.2% (Ghana). These results compares well with similar studies done in Africa which found the prevalence of PPD ranging from 6.1 % - 28 % (Nakku. et al, 2006);(Cyamana, et al 2010). But in contrasts with (Tomlinson,et al, 2006) who found prevalence of postpartum depression as higher as 34.7% in a peri-urban settlement in Cape Town South Africa, and (Parsons, et al 2008) in Zambia who reported prevalence of 33% .

The reasons for these differences could be methodological differences and the setting where the study was carried. Another possible reason may be different screening instrument and the timing at which the study was done. Some studies were screened at two weeks, or 8weeks, some three month and some up to 12month after delivery. There are also wide variations in what is considered clinically significant score on the EPDS. While the EPDS is the most widely used questionnaire measure, a range of cut-off points have been used, these include; 10, 12 and 13. A general consensus for EPDS cut-offs is 13 and above. The prevalence would be higher if the significant score was lowered to 10 or 12 cutt-off points (Cox. 1987).

5.2 Associations of PPD and socio-demographics characteristics

In this study the factors found to be associated with postpartum depression were; Income level of less than Ksh10, 000 per month ($p < 0.05$) and marital status being single was associated with depression ($p < 0.001$) the possible reason could be that women lack socio-support from their husband and some were abused by their husbands. Some partners run away from their wives and leave them alone with children, in such a low-income environment mothers struggle with life hence depression. These findings are consistent with (Parsons et al.2012) who reported that socio-economic status in both low and high-income countries is a key moderator of the effects of PND on parenting difficulties and subsequent child development. In poor economic environments, especially in the context of low levels of social support, parenting difficulties are more likely and the risk of negative child outcomes. (Black et al 2008) who reported higher rates of postpartum depression among low-income women in developing countries. (Mwikali.v, 2013) (Tesfaye, et al, 2010);(Verkerket al,2,003), found same social demographic characteristics to be associated with depression.

5.3 Infant feeding practices and postpartum depression

According to (WHO, 2009) exclusive breastfeeding means that an infant receives only breast milk from his or her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, not even water, with the exception of oral rehydration solution, drops or syrups consisting of vitamins, minerals supplements or medicines.

The results of this study found that children of mothers with symptoms of postpartum depression present an increased risk of early introduction of other foods before 4 months. 27% of the interviewed mothers supplemented their infants with water, cow milk, and soft porridge. On probing many women gave excuses that their children were not getting satisfied with the breast milk alone. Others described low volumes of breast milk due to lack of food, while others had their children suffer digestive complications like constipation, prompting them to give them water.

These results compare well with the results reported by (Hasselmann & Valéria, 2008) in Brazil who evaluated the association between postpartum depression and interruption of exclusive breastfeeding in the first two months of life. Children of mothers with postpartum depressive symptoms were at higher risk of early interruption of exclusive breastfeeding (RR = 1.46 and RR = 1.21, respectively). In Australia (Henderson, et al, 2003) reported that early cessation of breastfeeding to be significantly associated with postnatal depression (adjusted hazard ratio 1.25, 95% CI 1.03–1.52). In Nigeria (Hurley et al., 2012) reported that depressed mothers were more likely to stop breastfeeding earlier and their infants more likely to have episodes of diarrhea and other infectious illnesses. These results contrast with (Adedinsowo et al., 2014) in Canada who found that depressive symptoms at 1 week were negatively associated with full breastfeeding at 1 week ($P < 0.05$); similar findings were found at 24 weeks. Same with (Hasselmann and Valéria, 2008) who reported that mothers who were exclusively breastfeeding at the first month, postpartum depression was not associated with interruption of exclusive breastfeeding in the second month. Socio economic factors associated with not exclusively breastfeeding was income level and marital status.

Socioeconomic factors like schooling and housing conditions, number of children, age did not prove relevant in determining early interruption of exclusive breastfeeding, the same was reported by (Hasselmann & Valéria, 2008), who found no association between socioeconomic factors with interruption of exclusively breastfeeding, only income level was significant associated with not exclusive breastfeeding.

5.4 Infant's nutrition status with postpartum depression

This study provides evidence of an association between postpartum depression and poor infant nutritional status. Out of 200 children whose mothers were depressed 69(34%) were underweight. These results are in consistent with other studies. In Pakistan, (Rahman et al., 2007) reported that infants of prenatally depressed mothers showed significantly more growth retardation than children of not depressed mothers. The relative risks for being underweight (weight-for-age z-score of less than -2) were 4.0 at 6 months of age and 2.6 at 12 months of age. In Nigeria(Hurley et al., 2012) reported that infants of depressed mothers had statistically significant poorer growth than infants of non-depressed mothers at the 3rd month (weight OR 3.41, 95% CI 1.30-8.52;).

In Zambia (Ndokera & MacArthur, 2011) found adverse infant health outcomes proportionally greater in infants of depressed mothers, and the associations with adjusted mean difference in weight and length were statistically significant. The same was found in Malawi (Robert,et al,2008) reported that mean length-for-age z-score for infants of mothers with CMD (-1.50 SD 1.24) was significantly lower than for infants of mothers without CMD (-1.11 SD 1.12). These results are in contrast with the study in Peru and Ethiopia which found no association between postpartum depression and

infant poor growth. Despite similar levels of CMD and substantial levels of child malnutrition; it is interesting to find no such association between maternal mental health and child malnutrition in the Peruvian and Ethiopian populations. In this study the socio economic characteristic related to poor nutrition status was the income level. Other socio-demographic characteristics like education levels, number of children dwelling, age and marital status was not significant related to poor infant nutrition status.

CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The findings of this study add to the evidence available to inform practice the need for caring for mothers and their infants in the first year postpartum. Findings reveal the effect of postpartum depression on infant feeding practices and child malnutrition, and point the importance of a special view towards maternal mental health in the postpartum period. The potential adverse effect of postpartum depression upon the mother and child development reinforces the need for early identification and effective treatment. Infant healthy is essential for the growth and survival of children beginning from the time they are born. Inappropriate feeding practices associated to postpartum depression should be eliminated through early detection of postpartum depression and treatment, so that mothers are healthy and able to feed their infants properly as per WHO infant feeding recommendation; hence reducing levels of malnutrition in Kenya.

The extent to which early experiences are considered formative has also been underlined by the World Health Commission on Social Determinants of Health, which concludes that giving each child the best start in life is the highest priority for reducing health inequality .Since growth failure occurs exclusively almost during the intrauterine period and in the first two years of life, there is an urgent need to address maternal pre and postpartum depression. Understanding the early rearing environment of young children is important because it has the potential to have effects on later health and development.

Therefore in order to achieve millennium development goals; MDG; 4 ‘reducing child mortality’ it is important for the MDG; 5 “improve maternal health” to be implemented first; this is because malnutrition cannot be avoided without focusing on women health. Mental health is crucial for women in the first postpartum year; specifically in the areas of low social economic status. If women become health there will be healthy babies resulting to health nation.

6.2 Recommendation

1. The policy makers to allocate resources to reduce PPD among women of reproductive age, hence reducing maternal and child mortality.
2. Screening women for depression should be one among services given every day in the maternal and child clinic, this is because some women are depressed and they go home without being diagnosed and the depression continues to affect them.
3. It is important to sensitize women and create awareness about the symptoms and characteristics of Post partum depression. Many women suffer PPD and are not aware that they are sick, the involvement of the husbands or partners of the mothers in addressing the depression issues that women suffer is important because the support of men will help ease out the PPD for women who are married.
4. Nutrition interventions for mothers suffering malnutrition need to be implemented in the MCH clinics especially those in low social economic status, so that they may be able to exclusively breastfeed their infants.
5. More research on postpartum depression to be done using different study designs, such as longitudinal community based study to assess factors and prevalence of PPD and its effect on various health conditions.

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APPENDICES

Appendix 1: Declaration Form for Student

UNIVERSITY OF NAIROBI

Declaration of Originality Form

This form must be completed and signed for all works submitted to the University for examination.

Name of Student _____
Registration Number _____
College _____
Faculty/School/Institute _____
Department _____
Course Name _____
Title of the work _____

DECLARATION

1. I understand what Plagiarism is and I am aware of the University's policy in this regard
2. I declare that this _____ (Thesis, project, essay, assignment, paper, report, etc) is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other people's work, or my own work has been used, this has properly been acknowledged and referenced in accordance with the University of Nairobi's requirements.
3. I have not sought or used the services of any professional agencies to produce this work
4. I have not allowed, and shall not allow anyone to copy my work with the intention of passing it off as his/her own work
5. I understand that any false claim in respect of this work shall result in disciplinary action, in accordance with University Plagiarism Policy.

Signature _____

Date _____

Appendix II: Consent Explanation Form

Study Title: Effect of postpartum depression on infant feeding practices among women in an urban low income settlement-Nairobi.

Investigator: Beatrice Madeghe

Postgraduate Student

School of Public Health

University of Nairobi.

My name is Beatrice Madeghe, Masters Student in the field of Public Health, College of Health Sciences; university of Nairobi, at Kenyatta National Hospital .I wish to conduct a research study about postpartum depression a complication of childbearing affecting women and their families. I would like to invite you to participate in this study which will uncover the magnitude of postpartum depression and its effect to the children. It is very important that you understand the following general principles which apply to all participants in our study that;

- Participation is voluntary and you may withdraw from the study at any time.
- Refusal to participate will involve no penalty of benefits to which you are entitled at this clinic.
- After you read/ listen to the explanation, please feel free to ask any questions that will allow you to clearly understand the nature of the study.
- All information obtained from this study will remain confidential and your privacy will be upheld. Identification will be by number only; no names will be used in this study or in its future publications.

Background Information

Postpartum depression is a complication of childbearing affecting women and their families, as such representing a considerable public health problem which needs to be diagnosed and treated.

Aim of the research

The aim of this study will be to determine the effect of postpartum depression on early Infants feeding practices which may impact on infant nutrition status.

Procedures

In this research, we shall ask you questions regarding your feelings, thoughts about yourself and how you feed your infant. We will also measure weight for your baby, using weighing scale to see how they grow.

Risks

There may be inconveniences due to the length of the interview, discussion of sensitive personal issues; assessing baby nutrition status which involves undressing a baby. We will try to use short time as much as possible for the interview and to allow the mother to undress her baby to reduce discomfort for the baby.

Benefits

The study finding may result to implementation of better interventions and comprehensive care for mothers and children.

Compensation

There will be no payment for taking part in this study.

For any concerns about this project, you may call Beatrice Madeghe at 0700684027.

OR for any questions concerning your rights as a research subject you may contact the secretary of the KNH/UON Ethical and research committee, P.O. Box 20723-0020, Nairobi ,Tel 020726300-9.

Consent form

I.....hereby provide informed consent to take part in this study on the effect of postpartum depression on feeding practices and infants nutrition status. I have understood the nature of the study and purpose. The risks and benefits of participating in this study have fully been explained to me

Name of participantsign
.....

Interviewer/investigator.....sign.....
.....

FOMU YA MAELEZO YA MAKUBALIANO

Utafiti: Madhara ya ugonjwa wa kisaikolojia unaowapata wakina mama baada ya kujifungua yanavyoathiri ulishaji wa watoto na afya zao wakina mama baada ya kujifungua yanavyoathiri ulishaji wa watoto na afya zao.

Mtafiti: beatrice Madeghe

Mwanafunzi wa shahada ya pili

Chuo cha elimu ya afya ya jamii hospitali ya taifa ya Kenyatta

Chuo kikuu cha Nairobi

Jina lang ni Beatrice Madeghe , mwanafunzi wa shahada ya pili katika afya ya jamii chuo kikuu cha Nairobi; Ambacho ni chuo cha sayansi ya afya, Hospitali ya Taifa ya Kenyatta Ninawakaribisha wote kushiriki katika utafiti unaohusu; Madhara ya ugonjwa wa kisaikolojia unaowapata wakina mama baada ya kujifungua yanavyoathiri ulishaji wa watoto na afya zao..Utafiti huu ni sehemu ya masomo yangu. Mambo muhimu unayopaswa kuelewa kabla hujashiriki ni kwamba:

- Kushiriki katika utafiti huu ni kwa hiari, kama unakubali kushiriki na baadae ukabadili mawazo kuwa hutaki, utakuwa huru kabisa kuondoka wakati wowote ; na hautobaguliwa kwanamna yoyote kwa kutokushiriki.
- Usiri utazingatiwa na habari zote zitatumiwa kwa madhumuni ya utafiti pekee.hatutumia majina wala kitambulisho chako , tutatumia namba ili kuhakikisha usiri.
- Baada ya kuelezewa na kuelewa madhumuni ya utafiti unaruhusiwa kuuliza swali lolote unalohitaji kuelewa

Utangulizi wautafiti

Baadhi ya wakina mama baada ya kujifungua hupatwa na ugonjwa wa kisaikolojia na nitatizo la kijamii kwa sababu linaadhiri wamama ,watoto wao na familia kwa ujumla. Kwa hivyo nimuhimu tatizo hilo kugunduliwa na kutibiwa.

Madhumuni ya utafiti: Madhumuni ya utafiti huu ni kutafuta kiasi cha tatizo la ugonjwa huu na madhara yake katika kuwalisha watoto na hali zao za kiafya.

Itakavyofanyika: Tutakuuliza maswali yanayohusiana na jinsi unavyojisikia mwenyewe baada ya kupata mtoto wako na jinsi unavyomlisha motto wako. Pia tutapima uzito wa mwanao kuona jinsi wanavyoendelea kukua.

Madhara ya utafiti: Unaweza kuchoka kutokana na muda mrefu kidogo wa mahojiano na mtoto anaweza akalia. Tutahakikisha kuwa tutatumia muda mfupi iwezekanavyo na kumruhusu mama amvue nguo mtoto anapochukuliwa uzito kupunguza maudhi.

Faida: Utafiti huu unaweza kusaidia serikali kubuni mbinu mbalalimbali za kuwasaidia wamama wanaopatwa na ugonjwa na kuwasaidia watoto wao.

Malipo: Hakutakuwa na malipo yoyote kwa kushiriki katika utafiti huu.

Ukiwa na swali lolote kuhusu utafiti huu unaweza ukanipigia mimi Beatrice Madeghe kwa namba hii; 0700684027. Na kwa maswali yoyote yanayohusu haki zako kama mshiriki wa utafiti unaweza kuwasiliana na; Mwenyekiti/katibu mkuu, kamati ya maadili ya Hospitali ya Kenyatta/Chuo Kikuu Cha Nairobi; Sanduku la posta 20723-0020 Nairobi namba simu 020726300-9.

FOMU YA KUKUBALI

Mimi.....ninakubali kushiriki katika utafiti huu unaohusu Madhara yanayotokana na huzuni kwa wa mama baada ya kujifungua yanavyoathiri wamama na afya za watoto wao. Kwa sababu nimeelezewa malengo na madhumuni ya utafiti huu na nimeelewa .

Jina la mshiriki.....saini.....

Mtafiti.....saini.....

Appendix III : Social Demographic Questionnaire

Date of interview: (Tarehe ya utafiti).....

Code Number (numba ya utafiti).....

I. Date of birth of respondent (Tarehe ya kuzaliwa)

.....Age(umri).....

II. Marital status(hali ya ndoa)

✓ married (ameolewa)

✓ single(mpweke)

✓ Divorced(ameachika)

✓ Separated(wametengana)

✓ Widowed(mjane)

III. Education status of the respondent(Hali ya kielimu ya mama)

✓ None(hana)

✓ primary(msingi)

✓ secondary(upili)

✓ tertiary (college, university)(chuoni)

IV. occupation of respondent(Kazi ya mama)

✓ housewife(mama wa nyumbani)

✓ employed/salaried(kazi ya mshahara)

✓ business women(mfanyabiashara)

✓ other specification(kazi zingine)

V. Type of dwelling(aina ya makazi)

- Temporary (mad-wall, grass, roof)(si kudumu)
 - Semi permanent (kudumu kwa muda)
 - permanent (stone wall, iron sheet/tiled roof)
- (nyumba ya kudumu)

VI. Household size(namba ya watu ktk nyumba)

VII. Monthly Family income(mapato kwa mwezi)

- i. <Ksh 5000
- ii. Ksh 5000-10,000
- iii. Ksh 10,000-30,000
- iv. Ksh 30,000-60,000
- v. >Ksh 60,000

Appendix III: Edinburgh Postnatal Depression Scale (EPDs)

Study number _____ Nambari ya tafiti _____

Date of completion _____ Tarehe ya kujaza _____

As you have recently had a baby, we would like to know how you are feeling. Please circle the number next to the answer which comes closest to how you have felt in the past 7 days, not just how you feel today.

Kwa vile umejifugua hivi karibuni, tungependa kujua namna unavyohisi. Tafadhali weka alama ya mviringo nambari ambayo iko umbavuni wa jibu ambalo linalokaribiana na vile ulivyokuwa ukijihisi siku saba zilzopita, na si vile tu unavyohisi leo.

ENGLISH

Here is an example, already completed.

I have felt happy:

- a. Yes, all the time.
- b. Yes, most of the time.
- c. No, not very often.
- d. No, not at all.

This would mean that “I have felt happy most of the time” during the past week.

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.

- a. As much as I always could.
- b. Not quite so much now.
- c. Definitely not so much now.
- d. Not at all.

2 I have looked forward with enjoyment to things.

- a. As much as I ever did.
- b. Rather less than I used to do.
- c. Definitely less than I used to do.

SWAHILI

Huu ni mfano, tayari umeshajazwa.

Nimehisi furaha:

- a. Ndio, wakati wote.
- b. Ndio, wakati mwingi.
- c. La, sio kila mara.
- d. La, hata .

Hii ingemaanisha “nimehisi furaha kwa wakati mwingi” katika juma iliyopita.

Tafadhali kamilisha maswali haya mengine kwa utaratibu huohuo.

KATIKA SIKU SABA ZILIZOPITA:

Nimekuwa na uwezo wa kucheka na kuona upande wa furaha wa vitu.

- a. Kama vile nilivyokuwa
- b. Sio vile sana kwa sasa.
- c. Kwa hakika sivyo vile kwa sasa.
- d. Hata kamwe.

Nimetarajia kufurahia vitu.

- a. kama vile nilifanya daima.
- b. Afadhali kidogo kuliko nilivyokuwa.
- c. Kwa hakika kidogo kuliko nilivyokuwa.

<p>d. Hardly at all.</p> <p>3 I have blamed myself unnecessary when things went wrong.</p> <p>a. Yes, most of the time.</p> <p>b. Yes, some of the time.</p> <p>c. Not very often.</p> <p>d. No, never.</p>	<p>d. Hata kabisa.</p> <p>Nimejilaumu mwenyewe pasipo sababu vitu vikivurugika.</p> <p>a. Ndio, wakati mwingi.</p> <p>b. Ndio, wakati mwingine.</p> <p>c. Sio mara nyingi.</p> <p>d. La, kamwe.</p>
<p>4 I have been anxious or worried for no good reason.</p> <p>a. No, not at all.</p> <p>b. Hardly ever.</p> <p>c. Yes, sometimes.</p> <p>d. Yes, very often.</p>	<p>Nimekuwa na wasiwasi au sumbuko pasipo sababu nzuri.</p> <p>a. La, hata kamwe.</p> <p>b. Hata kabisa.</p> <p>c. Ndio, wakati mwingine,</p> <p>d. Ndio, mara nyingi.</p>
<hr/>	
<p>5 I have felt scared or panicky for no good reason.</p> <p>a. Yes, quite a lot.</p> <p>b. Yes, sometimes.</p> <p>c. No, not much.</p> <p>d. No, not at all.</p>	<p>Nimeshikwa na hofu au kuangaika pasipo sababu nzuri.</p> <p>a. Ndio, hakika mara nyingi.</p> <p>b. Ndio, wakati mwingine.</p> <p>c. La, sio sana.</p> <p>d. La, kamwe.</p>
<p>6 Things have been getting on top of me.</p> <p>a. Yes, most of the time I haven't been able to cope at all.</p> <p>b. Yes, sometimes haven't been coping as well as usual.</p> <p>c. No, most of the time I have quite coped well.</p> <p>d. No, I have been coping as well as ever.</p>	<p>Vitu vimekuwa vikinilemea.</p> <p>a. Ndio, wakati mwingi sijaweza kuvumilia kabisa.</p> <p>b. Ndio, wakati mwingine sijaweza kuvumilia kama kawaida.</p> <p>c. La, wakati mwingi nimevumilia hakika vizuri.</p> <p>d. La, Nimevumilia vizuri kama kila wakati.</p>
<p>7 I have been so unhappy that I have had difficulty sleeping.</p> <p>a. Yes, most of the time.</p> <p>b. Yes, sometimes</p>	<p>Nimekuwa sina furaha hadi nimepata tatizo la kulala.</p> <p>a. Ndio, wakati mwingi.</p> <p>b. Ndio, wakati mwingine.</p>

- | | |
|---|--|
| <ul style="list-style-type: none"> c. Not very often. d. No, not at all. | <ul style="list-style-type: none"> c. Sio kla mara.. d. La, kamwe. |
| <p>9 I have been unhappy that I have been crying.</p> <ul style="list-style-type: none"> a. Yes, most of the time. b. Yes, quite often. c. Only occasionally. d. No, never. | <p>Nimekuwa sina furaha hadi nimekuwa nikilia.</p> <ul style="list-style-type: none"> a. Ndio,wakati mwingi. b. Ndio,mara kwa mara. c. Mara chache tu. d. La, hasha. |
| <p>1 The thought of harming myself has Occurred to me.</p> <ul style="list-style-type: none"> a. Yes, quite often. b. Sometimes. c. Hardly ever. d. Never. | <p>Wazo la kujidhuru mwenyewe limenijia.</p> <ul style="list-style-type: none"> a. Ndio, mara kwa mara. b. Wakati mwingine. c. Kwa nadra daima. d. Hata. |

Source: Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry. 1987;150:782-786.

**Appendix IV: Modified USAID Tool kit for monitoring and evaluating
breastfeeding practices**

1. Date of interview (Tarehe ys utafiti)
2. Child's date of birth (Tarehe ya mtoto kuzaliwa).....
3. Is your baby a boy or a girl? Boy..... Girl.....
(Mtoto ni mvulana au msichana Mvulana.....msichana...)
- 1 Are you breastfeeding? (unanyonyesha)? Yes (ndio)..... No
(hapana).....
- 2 About how long after your delivery did you breastfeed or try to breastfeed your
baby for the very first time? (Uianza kumyonyesha mtoto wako kwa mara ya
kwanza katika muda gani)? Less than 30 min..... Within 1hour.....
1hour to 2hoursMore than one day.....(Kabla ya nusu
saa.....baada ya saa moja..... zaidi ya Baada ya siku
nzima.....zaidi ya siku mbili)
- 3 How long did it take for your milk to come in?
 - 1 Day or less.....
 - 3 Days.....
 - 3 Days.....
 4. More than 4 days.....
(Muda gani ulichukua kwa maziwa yako kuingia? Chini ya siku moja.....Siku
moja.....
Zaidi ya siku mbili...I ya siku nnezaidi ya siku nne)
- 4 Has anyone in this hospital helped you to put the baby on the breast in order to
breastfeed well? (Ulionyeshwa na kuelekezwa jinsi ya kunyonyesha
ulipojifungua hospitalini?Yes.....no.....

5 How did you feed your baby after leaving the birth center? Whenever he or she cried or seemed hungry..... on a schedule or routine.....

(Baada ya mtoto wako kuzaliwa ulimlisha namna gani? Anapolia au akionekana mwenye njaa..... Kwa ratiba.....)

9. How would you say you felt about breastfeeding during the first week you were breastfeeding? (Ulijisikiaje kuhusu kunyonyesha katika wiki ya kwanza?)

DISLIKED VERY MUCH (sikupenda kabisa)

(1)

(2)

(3)

(4)

LIKED VERY MUCH (nnimefurahia kabisa)

10. How would you say you feel about breastfeeding now that your baby is several weeks old? Utasema unajisikiaje sasa kuhusu kunyonyesha vile motto wako una umri huo?)

DISLIKE VERY MUCH (sipendi kabisa)

(1).....

(2).....

(3).....

(4).....

LIKE VERY MUCH (nafurahia)

(5).....

Since this time yesterday, has [NAME] received any of the following?Tangu jana wakati huu[jina] alikula nini kati ya vifuatavyo?		FEEDING PER DAY {Milo kwa siku}
Breast milk(Kunyonyeshs)	1 = NO, 2= YES (Ndio/hapana)	
Formula (maziwa kopo)	1 = NO, 2= YES	
Cow milk(maziwa ya ngombe)	1 = NO, 2= YES	
Sweet drinks (juice drinks, soft drinks, soda, sweet tea, Kool-Aid, etc.) (vinywaji vitamu juice,soda,chai)	1 = NO, 2= YES	
Vitamins, mineral supplements, medicine(matone ya vitamin madini au dawa)	1 = NO, 2= YES	
Plain water(maji matupu)	1 = NO, 2= YES	
Fruit juice(maji ya matunda)	1 = NO, 2= YES	
Tea or infusions(chai)	1 = NO, 2= YES	
Sugar water(Maji ya sukari)	1 = NO, 2= YES	
Mushy or solid foods(vyakula vya kupondaponda)	1 = NO, 2= YES	
Oral Rehydration Salts(ORS) solution(maji ya dawa ya kuhara)	1 = NO, 2= YES	
Baby cereal(uji wa motto)	1 = NO, 2= YES	

11. How old was your baby when he or she was first fed formula? (mtoto alikuwa na umri gani ulipomuanzishia chakula?)

1 day or less (siku moja)..... 7 to 13 days..... More than 20 days.....

2to 6 days 14 to 20 days..... Never fed formula.....

12. Have they told you here in the hospital how old your baby should be when you begin to give tea, juice or other foods to the baby? (uliambiwa ukiwahospitalini ni umri gani motto wako atakuwa utakapoanza kumpa chai, juice na vinginevyo)

Yes.....no.....

13. What age did they tell you? Months (....) Weeks (....) (walikuambia umri gani?)

[The response is Correct, ONLY if the mothers respond at around six (6 months (jibusahihi ni miezi sita)]

SOURCE:(Sommerfelt & Baker, 1996) Tool Kit for Monitoring and Evaluating Breastfeeding Practices and Programs and U.S. Department of Health and Human Services

Thank you for your cooperation