

UNIVERSITY OF GHANA
SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES

**PREVALENCE OF POSTPARTUM DEPRESSIVE SYMPTOMS AND
ASSOCIATED FACTORS AMONG POSTPARTUM MOTHERS WITH
CHILDREN 0-6 MONTHS OF AGE AT THE GREATER ACCRA REGIONAL
HOSPITAL**

BY

MONICA OGOE

(10636863)

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DECLARATION

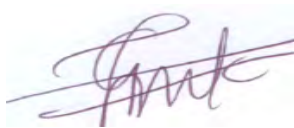
I, Monica Ogoe, declare that except for other people's studies which have been duly acknowledged, this dissertation is the result of my own original research undertaken under supervision and that it has neither in whole nor in part been presented for another degree in this university or elsewhere.

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MONICA OGOE
(STUDENT)

.....

DATE



.....

DR. JOHN KUUMUORI GANLE
(SUPERVISOR)

.....18/10/2018.....

DATE

DEDICATION

This dissertation is dedicated to my children Tziona and Neassim, you inspire me to keep moving.

ACKNOWLEDGEMENTS

I thank God for the grace thus far. I am thankful to Dr John Ganle for his immense guidance through this dissertation and also to Mrs Gifty Asabea Mensah for your continuous encouragement never to give up, I sincerely appreciate.

ABSTRACT

Background: Postpartum/postnatal depression is a type of mood disorder, which is associated with childbirth but could affect both sexes. Women with postnatal depression can experience disabling symptoms of low mood, irritability, fatigue, insomnia, changes in appetite, anxiety, guilt, inability to cope, feelings of worthlessness and thoughts of suicide. However, epidemiological data on the prevalence of postpartum depression and its associated factors are still unclear in Ghana. The main objective of this study was to determine the prevalence of postpartum depressive symptoms and associated factors among postnatal mothers at the Greater Accra Regional Hospital.

Methods: A facility based cross-sectional quantitative study was carried out between June 2018 and July, 2018, involving 124 mothers with children aged between 0-6 months who were attending Child Welfare Clinic (CWC)/postnatal clinic at the Greater Accra Regional Hospital. Simple random sampling (using random number generator software) technique was used to select respondents from CWC register. A structured questionnaire and the Edinburgh postnatal depression scale (EPDS) questionnaire were used for data collection. Descriptive, bivariate analyses (using chi-square), and a multivariable logistic regression analyses were used to describe important characteristics and examine the predictors of postnatal depression.

Results: In all, 124 respondents were recruited for the study. About 4 in 10 (44.4%) of the respondents had depressive symptoms scores classified as high by the EPDS. Loss of a loved one recently (AOR=5.44; CI=1.31-22.47, p= 0.019), number of antenatal clinic (ANC) visits the woman had during her recent pregnancy (AOR=61.88; CI=13.5-75.9, p= 0.001), time the woman stayed in the hospital before discharge (AOR=0.28; CI=0.14-0.83,

p=0.05) and child being ill or admitted after delivery (AOR=3.16; CI=1.58-17.03, p=0.019) were the factors associated with having postpartum depression symptoms.

Conclusion: This study has revealed that the prevalence of postnatal depressive symptoms among mothers with children aged 0-6months at the Greater Accra Regional Hospital is relatively high. Loss of a loved one recently, number of antenatal clinic (ANC) visits the woman had during her recent pregnancy, time the woman stayed in the hospital before discharge and child being ill or admitted after delivery were some of the factors found in this study to be associated with experiencing postpartum depressive symptoms.

There is the need for urgent measures including counselling and psychosocial support both at home and in health facilities to help address postpartum depression among postpartum mothers.

LIST OF ACRONYMS

AUC	Area under curve
BDI	Beck Depression Inventory
DSM	Diagnostic Statistical Manual
EPDS	Edinburgh Postnatal Depression Scale
GHQ	General Health Questionnaire
PSE	Present State Examination
PND	Postnatal Depression
PDSS	Postpartum Depression Screening Scale
PPD	Postpartum depression
ROC	Receiver Operator Characteristic
SDS	Self-Rating Depression Scale
SADS	Schedule of Affective Disorders and Schizophrenia
SCID	Structured Clinical Interview for DSM-IV-R

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CHAPTER ONE

INTRODUCTION

1.0 Background

It is estimated that depression will be the second most common cause of disability worldwide by 2020 (Dahlen et al., 2015). Postpartum depression is a type of mood disorder, which is associated with childbirth but could affect both sexes. Postpartum depression (PPD) is a serious problem across cultures and affects about 7%-15% of women sometime in the year after giving birth (Dahlen et al., 2015; Anokye et al., 2018). Women with postpartum depression can experience disabling symptoms of low mood, irritability, fatigue, insomnia, changes in appetite, anxiety, guilt, inability to cope, feelings of worthlessness and thoughts of suicide (Dahlen et al., 2015). Frequently exacerbating these symptoms are low self-esteem, lack of confidence, and unrealistic expectations of motherhood (Dahlen et al., 2015).

Adewuya and Afolabi (2005) in their report on the impact of postpartum depression on infants' growth in Nigeria found statistically significant poorer growth rates in infants of depressed mothers, compared to non-depressed mothers at 3 and 6 months postpartum. Depressed mothers were found to be more likely to stop breastfeeding earlier, and their infants were more likely to have episodes of diarrhoea and other infectious illnesses (Bobeovski et al., 2015).

There is not much evidence for a biological basis of postpartum depression. However, pregnancy and postpartum are associated with dramatic alterations in steroid and peptide hormones, which alter the mothers' hypothalamic pituitary adrenal (HPA) and hypothalamic pituitary gonadal (HPG) axes (Brummelte & Galea, 2016). Dysregulations in these endocrine axes are related to mood disorders and as such it should not come as a

major surprise that pregnancy and the postpartum period can have profound effects on maternal mood (Brummelte & Galea, 2016). Also, gynaecological and obstetric factors have been implicated as risk factors in some reports. Murray et al. (2015) found that it was only among those with previous history of depressive disorder that delivery complications were associated with postpartum depression. Also, Gorman et al. (2004) found that the joint presence of depression during pregnancy and higher levels of obstetric stressors was a significant risk factor for postpartum depression. Indeed, pregnancy and postpartum are associated with an increased risk for developing depressive symptoms in women (Gorman et al., 2004).

Postpartum depression also impairs mother–infant interactions that in turn are important for child development (Brummelte & Galea, 2016). Maternal attachment, sensitivity and parenting style are essential for a healthy maturation of an infant's social, cognitive and behavioural skills and depressed mothers often display less attachment, sensitivity and more harsh or disrupted parenting behaviours, which may contribute to adverse child outcomes in children of depressed mothers (Brummelte & Galea, 2016). Pregnant women with depression are also more likely to suffer from obstetrical complications such as pre-eclampsia (Patel, 2005). Maternal stress and mental illness is likely to have a profound impact in less developed parts of the world (Gorman et al., 2004). A mother experiencing mental illness in a low income setting is at risk of providing sub-optimal care for her offspring, which may have grave consequences in an environment where poverty, overcrowding, poor sanitation, malnutrition, tropical diseases and a lack of appropriate medical services may be pronounced (Ola et al., 2013.)

Evidence from Southwestern Ethiopia showed that the occurrence of depressive symptoms amid pregnancy was 19.9 % (95 % CI, 16.8– 23.1) (Brummelte and Galea, 2016). This investigation especially demonstrated that there is a scarcity of proof on post pregnancy

anxiety in many low salary nations, including Ghana. This proposes a requirement for more experimental research regarding the matter in settings such as Ghana.

1.1 Problem statement

The prevalence of postpartum depression is higher and debilitating among less privileged mothers in many developing countries, ranging from 16% to 35% (Chibanda et al., 2014). It is the most well-known reason for maternal morbidity, infanticide and suicide among women globally if not treated (Sampson, Villarreal & Rubin, 2014; Zhang & Jin, 2014; Trabold, 2007). It has been recently reported that 1 in 6 mothers suffers postpartum depression and it is the leading cause of suicide among postpartum women in Nigeria (Ekwerike, 2015). This is attributed to poor problem solving ability of the postpartum mothers, partly because depression has been demonstrated to weaken individual problem solving abilities (Emam, 2013; Yen et al., 2011). Positive problem orientation is the adaptive and constructive component of problem solving ability that is negatively related to depression, while the negative problem orientation is the maladaptive or unconstructive component of problem solving ability that is positively related to depression (Vasilevskaia, 2010; Robichaud, 2005). However, these relationships have not been extended to postpartum depression.

Postpartum depression occurs at a particularly important period in a woman's life. The early postpartum period is the time when the foundation of the mother-child relationship is laid, hence there is an adverse impact on the progress of this important early period (Brummelte & Galea, 2016). Studies have revealed that the nature of the early mother-infant relationship in the context of postpartum depression is predictive of the course of child cognitive, emotional and social development (Nagl et al., 2017)). However, epidemiological data required to implement appropriate early prevention are still lacking

in Ghana. A study conducted in Kintampo North and South districts in 2005 estimated the prevalence of post-partum depression to be 11.3%, which does not include depression during pregnancy but only depression rates in the period after birth (Weobong et al., 2009). Yet little is known about the experiences or perceived effects of postpartum depression cases on women and their children or about existing methods of care or coping in this area (Weobong et al., 2015). It is also not known whether postpartum depression is a condition that is widely acknowledged or recognized in Ghana. Data from the mental health unit of the greater Accra Regional Health Directorate showed a total of about 65 recorded cases from about 17 districts on pregnancy related mental disorders (2016 Annual health report, Greater Accra Regional Health Directorate).

For this reason, there is a need for more empirical studies to determine the prevalence of postpartum depression and associated factors among postnatal mothers. This is particularly important because while there is an increasing consensus among researchers that depression exists universally and is disabling across cultures (Hirschfeld, 2014), culture and context-specific manifestations may impact how interventions need to be tailored to particular settings in order to achieve maximum effect. This suggests the need for the current study to fill the existing gap in knowledge in Ghana.

1.2 Objectives

1.2.1 General objectives

The general objective of the study was to determine the prevalence of postpartum depressive symptoms and associated factors among postnatal mothers at the Greater Accra regional Hospital.

1.2.2 Specific objectives

The specific objectives were to:

1. Describe the maternal, infant, clinical and psychological characteristics of postpartum women attending the child welfare clinic at the Greater Accra Regional Hospital.
2. Estimate the proportion of women with postpartum depressive symptoms among postpartum mothers at the Greater Accra Regional Hospital.
3. Determine the factors that are associated with postpartum depressive symptoms among postpartum mothers at the Greater Accra Regional Hospital.

1.3 Research questions

To achieve the research objectives above, the following research questions were investigated:

1. What are the maternal, infant, clinical and psychological characteristics of postnatal women attending the child welfare clinic at the Greater Accra Regional Hospital.
2. What proportion of postnatal mothers at the Greater Accra Regional Hospital have postpartum depressive symptoms?
3. What factors influence postpartum depressive symptoms among postnatal mothers at the Greater Accra Regional Hospital?

1.4 Justification

Studies have revealed that the nature of the early mother-infant relationship in the context of postpartum depression is predictive of the course of child cognitive, emotional and social development (Ola et al., 2016). However, epidemiological data required to

implement appropriate early prevention are still lacking in Ghana. Given the profound consequences of postnatal mental illness on maternal mental health, foetal wellbeing and childhood growth and development in Sub-Saharan Africa, it is important as a first step, to ascertain the scale of the problem, particularly as epidemiological studies have been scarce in the region (Dos et al., 2017). Once this has been established it will also be vital for policy makers and clinicians to be able to identify those at risk of developing mental disorders in pregnancy and postpartum so that preventive measures can be implemented.

Primary prevention of postpartum depression is not just a matter of identifying symptoms, but looking for all predisposing factors that increase the mother's vulnerability to developing postpartum depression. Early recognition by the health provider of antepartum and postpartum factors experienced by the mother will allow for the development and assessment of strategies for early treatment of the mother, with the goal of prevention and reducing the morbidity associated with this disorder. The findings of this study could contribute to knowledge and practice and also help healthcare providers to assess and identify early depressive symptoms in mothers. Results from this study would also be a vital resource of literature for future researchers.

1.5 Chapter summary and dissertation outline

This chapter provided a background to the study. The chapter specifically provided a description of the problem and why there is a need to conduct this study in Ghana. The research objectives and questions were also outlined together with the justification for the study. The rest of the dissertation is organised as follows. Chapter two looks at literature review, focusing on the factors associated with postpartum depression. Chapter three will elaborate on methods for the study. Chapter four presents results and findings. Chapter

five will discuss the results and findings, while chapter six concludes with relevant recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter looks at the concept of postpartum depression, offering definitions, types and measurements of postpartum depression including prevalence, effects and factors associated with postpartum depression. The conceptual framework to be used to guide the study is also discussed.

2.1 Concept of post-partum depression

The postnatal period is settled as an expanded time of hazard for the development of mood disorders. There are three common types of affective illness after delivery: postpartum anxiety or maternity blues, postpartum depression and postpartum psychosis (Stewart et al., 2003). Every one of these contrasts in its occurrence, clinical presentation, and management (Stewart et al., 2003)

2.1.1 Postpartum Anxiety(Blues)

Baby blues is the most widely recognized watched puerperal state of mind aggravation, with estimates of occurrence going from 30-75% (Stephens et al., 2016) .The symptoms begin within a few days postpartum, more often than not on day 3 or 4, and could persist for up to months. (Stewart et al., 2003). The symptoms include but not limited to mood lability, crabbiness, mournfulness, summed up tension, and rest and hunger aggravation. Baby blues are by definition time-constrained and mellow and don't require treatment other than consolation as the symptoms are relieved in a short time (Leigh and Milgrom, 2008a). The affinity to create blues is disconnected to mental history, ecological stressors, social setting, breastfeeding, or how many children one has (Legere et al., 2017). Be that as it may, those factors may impact whether the blues lead to major depression or not.

(Miller, 2002). Up to 20% of women with blues will go ahead to experience major depression in first year of delivery. (Fiala et al., 2017)

2.1.2 Puerperal or Postpartum Psychosis

Postpartum or puerperal psychosis comprise extremely serious depressive scenes which are described by the presence of psychotic features (Stewart et al., 2003). These are not the same as post pregnancy anxiety in etiology, seriousness, indications, treatment and result. postpartum psychosis is the most serious and unprecedented type of postnatal affective illness, with rates of 1 – 2 episodes for every 1000 deliveries (Fiala et al., 2017). The clinical onset is fast, with symptoms presenting as early as 48 to 72 hours postpartum, and the larger part of episodes occurring within the initial 2 weeks after delivery (Stewart et al., 2003). The showing manifestations are normally discouraged or elated mind-set (which can change quickly), confused conduct, state of mind lability, and daydreams and visualizations (Stephens et al., 2016). Follow-up examines have demonstrated that the larger part of ladies with puerperal psychosis meet criteria for bipolar disorder (Fiala et al., 2017). Research has demonstrated that hazard factors for puerperal psychosis are organic and hereditary in nature (Turkcapar et al., 2015).

Psychosocial and statistic factors are most likely not main considerations in the improvement of puerperal psychosis (Afolayan et al., 2016). Because of the nature of depressive symptoms, new mothers are in danger of harming their youngsters through disregard, functional inadequacy or summon mind flights or daydreams (Turkcapar et al., 2015). Child murder is uncommon, happening in 1-3/50,000 births (Howard et al., 2014). However, mothers with postpartum psychotic disorders commit a significant percentage of these, and estimates suggest that 62% of mothers who commit infant murder also go on to commit suicide (Howard et al., 2014).

In view of these debilitating outcomes, early finding and treatment interventions of postnatal diseases are basic for the wellbeing and prosperity of the mother and child (Molyneaux et al., 2014). Puerperal psychosis requires hospitalization for treatment (Stone et al., 2015). In spite of the fact that the anticipation is by and large good and ladies completely recoup, they are in danger developing further puerperal episodes of bipolar affective disorder (Stone et al., 2015).

2.1.3 Postpartum Depression

Postpartum depression (PPD) is defined as an episode of non-psychotic depression according to standardized diagnostic criteria with onset within 1 year of childbirth (Stewart et al., 2003). Postpartum non-psychotic depression is the most widely recognized complexity of childbearing, influencing roughly 10-15% of women, and in that capacity, speaks to an impressive general medical issue influencing ladies and their families (Howard et al., 2014). In earlier research, postpartum depression had been defined in a number of ways (Stone et al., 2015). However, more recent studies have defined postpartum depression based on standardized diagnostic criteria for depression including DSM-IV (diagnostic statistical manual of mental disorders) 1994 (Stewart et al., 2003). The term 'postpartum depression' now commonly refers to a non-psychotic depressive episode that begins in the postpartum period (Stone et al., 2015). Postpartum depression is portrayed by sorrow, misery, enthusiastic lability, sentiments of blame, loss of hunger, and rest aggravations and sentiments of being lacking and unfit to adapt to the newborn child, poor focus, exhaustion and touchiness (Martha et al., 2017). Few women may stress too much over the infant's wellbeing or bolstering propensities and consider themselves to be 'terrible', lacking, or cold mothers (Madeghe et al., 2016).

As already expressed, screening for postnatal state of mind can be troublesome given the quantity of physical symptoms ordinarily connected with having a new child (Madeghe et

al., 2016). Recognizing depressive indications and the assumed 'typical' sequelae pregnancy and child birth, for example, changes in weight, rest, and vitality is a test that further convolutes clinical analysis (Stone et al., 2015). For instance, despite the fact that it is hard to evaluate rest aggravation in new mothers, the clinician may get some information about the mother's capacity to effortlessly rest or rest when given the opportunity. Numerous women with post birth anxiety frequently have such abnormal amounts of nervousness that they can't rest or come back to rest in the wake of getting up with the baby around evening time (Stewart et al., 2003). Post delivery adjustments in body weight are exceptionally a factor and it is vital to get some information about a woman's 'want for nourishment' and 'whether food tastes great' (Stewart et al., 2003). Additionally, jumbling the assurance of post birth anxiety is the nearness of conceivable physical causes, including paleness, diabetes, and thyroid brokenness, that could possibly add to depressive manifestations (Stone et al., 2015).

In view of the after- effects of epidemiological investigations, the time span most ordinarily used to determine onset of postpartum depressive symptoms in research ranges from 3 months to up to a year after delivery (Martha et al., 2017). This is to guarantee that all instances of postpartum depression are incorporated inside research concentrates to give precise data on the clinical and indicative parts of the ailment.

The effects of postnatal depression on the mother, her marital relationship, and her children make it an important condition to diagnose, treat and prevent (Turkcapar et al., 2015). Untreated postpartum depression can have adverse long-term effects. For the mother, the episode can be the precursor of chronic recurrent depression (Stewart et al., 2003). For her children, a mother's ongoing depression can contribute to emotional, behavioural, cognitive and interpersonal problems in later life (Martha et al., 2017).

2.2 Prevalence of postpartum depression

Many women experience the “baby blues” mood symptoms that develop within two to three days of birth, peak on the fifth day and resolve within two weeks (Stewart et al., 2003). According to Jones & Shakespeare (2014), about a third of postnatal depression begins in pregnancy and about a quarter begins before pregnancy. O'Hara and Swain (1996) in a meta-investigation of 59 studies from North America, Europe, Australasia and Japan (n=12,810 subjects), found a general prevalence of postpartum depression of 13%. This depended on studies that assessed symptoms after no less than two weeks postpartum (to abstain from jumbling of baby blues) and utilized an approved or institutionalized measure to evaluate depression (Stewart et al., 2003).. A recent systematic review shows that in low- and middle- income countries (LMICs), 18–25% of pregnant women experience postpartum depression (Husain et al., 2006; Fisher et al., 2012).

The prevalence of postpartum depression in northern Nigeria has been reported to be 44.5% in a clinical setting (Obinda et al., 2013) compared to the general average findings of 10-15% world-wide (O'Hara & Swain, 1996; 2004). In Ghana, research has shown that postpartum depression is prevalent and has adverse infant outcomes (Gold et al., 2013); Okronipa et al., 2012; Weobong et al., 2009). A study conducted in Kintampo North and South districts in 2005 estimated the prevalence of post-partum depression to be 11.3%, which does not include depression during pregnancy but only depression rates in the year after birth (Weobong et al., 2009). In a recent study carried out at the Komfo Anokye Teaching Hospital in the Ashanti region of Ghana, postpartum depression was prevalent among 7% of all mothers (Anokye, et al 2018).

It ought to be noticed that the writing relates to women 18 years of age and more . Research which has analyzed the rates of postpartum depression in mothers 14– 18 years (n=128) demonstrated a significantly higher rate of the condition, around 26% (Stone et

al., 2015). In any case, inside this more youthful population there might be chance components which incline to postpartum depression, as well as to pregnancy amid pre-adulthood and along these lines are risk factors for post pregnancy anxiety. This is a population which requires additional research to build up particular risk factors.

Evidence has shown that social support may decrease risk of depression during pregnancy, which leads to positive health and pregnancy outcomes (Wahn et al., 2000). The level of social support received around pregnancy is different for teen mothers (15–19 years old) and adult mothers (20+ years old) (Wahn et al., 2008). Teen mothers reported receiving significantly less social support than adult mothers as they had poorer ability to make and maintain relationships with others (Wahn et al., 2000). It was observed that teen mothers were more deprived in terms of lower education, lower social class (higher unemployment rate), and were more likely to be single compared to adult mothers (Wahn et al., 2008; Figueiredo et al., 2006). Other studies using the Maternity Experiences Survey have examined PPD as a function of outcome among mothers. A recent study by Kingston et al. (2012) examined the maternity experiences and behaviours among three groups of mothers - adolescent mothers, young adult mothers, and adult mothers - and found that adolescent and young adult mothers were more likely to experience postpartum depression. Vigod and colleagues examined area of residence and risk of postpartum depression, and found that prevalence of PPD was greater among mothers living in urban areas compared to rural areas (Vigod et al., 2013).

2.3 Prevention and management of postpartum depression

Preventive interventions incorporate any strategy that (1) reduces the likelihood of a disease/condition affecting an individual (primary prevention), (2) interrupts or slows the progress of a disease/condition through early detection and treatment (secondary prevention), or (3) slows the progress of a disease/condition and reduces resultant

disability through treatment of established disease (tertiary prevention) (Molyneaux, et al 2015).

These interventions can be classified into different categories depending on the target population: (1) universal measures are cost beneficial for everyone in the eligible population and target the whole population; (2) selective strategies are cost beneficial to a subgroup population who are considered to be at higher risk; and (3) indicated approaches can be applied to asymptomatic groups who have risk factors that could justify more costly and extensive interventions. Complex interactions of biopsychosocial risk factors with individual variations should be considered when planning intervention programmes, as a single approach will not be applicable to all women (Lara-Cinisomo, et al 2016). Standards for developing a preventive intervention have been suggested (Stephens et al., 2016), and when applied to postpartum depression should include:

- Establishing a base occurrence rate, recognizing that not all women with identified risk factors will develop postpartum depression.
- Determining the predictive accuracy of screening procedures such that vulnerable women are specifically identified.
- Being cognizant that screening procedures will exclude some women who will later develop postpartum depression.
- Devising interventions that are brief enough to be acceptable, long enough to achieve lasting benefits, intensive enough to have an effect, user friendly, and not too expensive.
- Assessing outcomes with regular monitoring and follow-up that includes a wide range of outcomes not just preventing the onset of postpartum depression.

- Recognizing that intervention non-compliance and participant attrition are major problems and that those who decline enrolment or withdraw from involvement may be those at greatest risk (Stephens et al., 2016).

The criteria used to assess potentially preventable conditions include the current burden of suffering (impact on the individual and on society), the manoeuvre (risks and benefits; screening accuracy; and safety, simplicity, cost, and acceptability), and intervention effectiveness (Molyneaux et al., 2014). Applying these principles, postpartum depression is appropriate for preventive interventions as the long-term health consequences have been established; there is an approximate marker of onset and a defined high-risk inception period (first 12 weeks postpartum); and women have frequent contact with health professions enabling intervention implementation (Martha et al., 2017).

Furthermore, specific knowledge about potentially modifiable risk and protective factors that influence the development of postpartum depression has been identified to guide the nature of preventive strategies. However, translating risk factor research into predictive screening protocols and effective preventive interventions is challenging (Bobevski et al, 2015). From the literature, preventive strategies have been classified into the following: pharmacological (such as use of antidepressant medication therapy), psychological (such as interpersonal and cognitive behavioural therapy), psychosocial (such as intrapartum, peer, and partner support and supportive interaction), quality improvement (such as continuity of care and early postpartum follow-up), hormonal interventions (such as oestrogen and progesterone therapies), and educational interventions such as relaxation and guided imagery (Bobevski et al., 2015).

2.4 Assessment of Postpartum Depression: Clinical & Self-Reported Measures

Both general and postpartum-specific depression instruments have been used to quantify depressive symptomatology (Stewart et al., 2003). The approval of screening apparatuses and the conclusion of postpartum depression must be expert through the utilization of symptomatic criteria, for example, the prevalent and dynamically advancing Diagnostic and Statistical Manual [i.e., DSM-III (APA, 1980), DSM-III-R (APA, 1987), or DSM-IV (APA, 1994) criteria for major depression notwithstanding the Research Diagnostic Criteria (RDC) (Martha et al., 2017), and the International Classification of Diseases (ICD-10) (Stone et al., 2015). Measures used to evaluate depressive symptomatology include standardized interviews, clinician-rated scales, and self-reported questionnaires. . To give an unmistakable comprehension of the distinctive measures and to advance methodological examinations, the most widely recognized interviews and questionnaires used to survey depressive symptomatology in postpartum depression research are briefly presented (Stone et al., 2015)

2.4.1 Standardized Interviews

examples include

- 1.Schedule of Affective Disorders and Schizophrenia (SADS).
- 2 .Structured Clinical Interview for DSM-IV-R (SCID).
- 3 .Standard Psychiatric Interview (SPI).
- 4.Present State Examination (PSE).

2.4.2 Clinician-Rated Scales

examples include

- 1 Hamilton Rating Scale for Depression (HRSD).
- 2 Montgomery-Asberg Depression Rating Scale (MADRS).

2.4.3 Self-Report Questionnaires

Several self-reported scales are available to assess depressive symptoms and measure treatment response. These measures generally have respondents rate depressive symptoms in terms of frequency or severity; however, they cannot be used to diagnose depression and high scores should be followed-up with a clinical assessment.

Example of self-report questionnaires are as follows;

1. Beck Depression Inventory (BDI).
2. Center for Epidemiological Studies Depression Scale (CES-D).
3. Depression Adjective Checklist (DAACL).
4. General Health Questionnaire (GHQ).
5. Hospital Anxiety and Depression Scale (HADS).
6. Profile of Mood States (POMS).
7. Pitt Depression Scale.
8. Postpartum Depression Screening Scale (PDSS)
9. Zung Self-Rating Depression Scale (ZSDS)
10. Edinburgh Postnatal Depression Scale (EPDS).

2.4.4 Comparisons between Screening Instruments

Several studies have been done to ascertain which of these scales is more effective. For example a study that compared EPDS and BDI in their abilities to identify the 15% of mothers who were diagnosed with major depression according to DSM-III criteria found that the sensitivity of the EPDS was 95% and its specificity 93% (Stewart et al., 2003). However, the performance of the Beck Depression Inventory (BDI) was markedly inferior, with a sensitivity of 68% and specificity of 88% (Stewart et al., 2003). Similarly, the results of a study looking into the association between thyroid status and postpartum depression were re-analyzed to explore the psychometric properties of the rating scales employed (Stewart et al., 2003). The performance of the EPDS was found to be superior to that of the Hospital Anxiety and Depression Scale (HADS) in identifying RDC-defined depression and on par with the observer-rated Hamilton Rating Scale for Depression (HRSD). In an Australian study, 200 mothers completed questionnaires at 4, 18, and 32 weeks postpartum to ascertain the degree of agreement between four self-report depression scales, with particular emphasis on whether each scale would identify the same subgroup of women as being 'most depressed' (Condon & Corkindale, 1997). The four instruments included were the EPDS, the depression subscale of the Hospital Anxiety Depression Scale, the Zung Self- Rating Depression Scale, and the depression subscale of the Profile of Mood States. The EPDS had the best sensitivity and specificity values.

2.4.5 Edinburgh Postnatal Depression Scale (EPDS).

Edinburgh Postnatal Depression Scale (EPDS) is the most widely used scale in postpartum depression studies and for population-based screening. The scale has 10-items; and each item is scored from 0 – 3. The total score range from 0 to 30. The items are normally written in the past tense; and includes questions on maternal feelings in previous 7 days,

depressed mood, anhedonia, guilt, nervousness, and suicidal feelings. One advantage of EPDS is its exclusion of common somatic symptoms such as insomnia and appetite changes, which may occur naturally in postpartum women. It only has one item addressing a somatic symptom and this relates to mood: “I have been so unhappy that I have had difficulty in sleeping”. According to Shrestha “EPDS does not give a measure of intensity as a women who score over 18 can meet DSM criteria for minor depression while others scoring between 14 to 16 can be classified as experiencing major depression” (Shrestha et al., 2016). Hence the EPDS is not a replacement for a full clinical assessment but a high score is indicative for extensive assessment. The selection of a cut-off score is influenced by the purpose of assessment. A 12/13 cut-off is indicative of major depressive symptomatology, and a lower threshold of 9/10 has been recommended for community screening to ensure all potential cases of postpartum depression are identified (Shrestha et al., 2016). Moreover, the EPDS has been used in several countries leading in varied paraphrases and corresponding validation investigations. For example, differences in diagnosis may be challenging as some new translated scales measures (e.g., PSE) presence of depressive symptoms in previous 4 weeks while others (e.g., SPI) measures symptoms in past 2 weeks. This latter timescale is closer to the EPDS instructions, improving comparison between the two measures. However there has been concerns that sensitivity and specificity may vary according to participants’ ability to identify their psychological status as morbid (Shrestha et al., 2016). Owing to this, there has been proposals that the EPDS if completed after a semi-structured interview, may not provide the same results as those completed before, since the interview may have sensitized the participant to depressive symptoms that might not have otherwise been acknowledged. Another explanation for the differing sensitivity and specificity is the impact of the reference diagnosis criteria used (Stewart et al., 2003). For instance, a major depressive diagnosis

requires more symptoms to be established in RDC than in DSM. Stewart et al further said “differences in the positive predictive value are dependent on the prevalence of the condition being examined thus, studies with mothers who present clinical symptoms of distress will have a higher prevalence rate and positive predictive value than population-based studies” (Stewart et al., 2003). These validation studies have also stressed that scores from transformed versions should be interpreted carefully as different cut-off points have been suggested (Stewart et al., 2003). For example, Guedeny and Fermanian (1995) concluded in their study that “a threshold of 11/12 was appropriate in a French population, giving a sensitivity of 80% and a specificity of 92%”. Wickberg and Hwang (1996), validating the EPDS in a Swedish community sample at 3 weeks postpartum, also suggested an 11/12 cut-off. Ghubask and Abou-Saleh (1999) adopted a threshold score of 11/12 to detect cases of depression among Arabic women when the EPDS was administered at 7 days postpartum and the Present State Examination (PSE) at 8 weeks. Lee et al. (1998) recommended that a cut-off of 9/10 was the best when assessing postpartum depression within 6 weeks of postpartum among Chinese population. Okano et al. (1996). On the other the EPDS has been found by numerous researchers as the easiest to administer, including via telephone, its interpretations are uncomplicated and it can be easily incorporated into routine practice. Additionally, numerous researchers have recorded high maternal approval with the use of EPDS (Ferguson et al., 2002;; Schaper et al., 1994; Webster et al., 1997; Zerkowitz & Milet, 1995).

The foregoing discussions advises that while an optimal cut-off appears to vary slightly for different cultures and countries, a score beyond 9 seems to be the most advantageous threshold if a two-stage screening process (e.g., universal screening where high scoring mothers are contacted further for a more detailed assessment) is executed to decrease false positive scores (Stewart et al., 2003).

2.5 Factors associated with postpartum depression

2.5.1 Socio-demographic factors

Fiala et al. (2017) reported several factors that have the potential to influence postpartum depression among postpartum women and these include; age of the mother, marital status, educational level attained, number of children, length of relationship with partner, and sex of child. However, their analysis did not find significant association between these factors and postpartum depressive symptoms among postpartum women.

A study conducted among rural women from developing countries by Villegas et al. (2010) indicated an association between maternal age and showing postpartum depressive symptoms. “A significant association was found between maternal age and postpartum depressive symptoms among white, African American, and Hispanic women who live in low-income rural areas in Southeastern North Carolina” (Hutoo et al. (2011).

Lower level of education have been found as major contributing factor in mental health disorders (Saligheh et al., 2014). A study conducted in Czech shows that postpartum women who had attained education above secondary level had reduced odds of showing postpartum depressive symptoms compared to those who had no formal education (OR=0.6) (Fiala et al., 2017).

Quelopana et al. (2014) did not find significant association between education and postpartum depressive symptoms in Chilean women. Villegas et al. (2010) reported a statistically significant association between women who had low education level and postpartum depressive symptoms in both developed and developing countries. They also found an association between income level and showing postpartum depressive symptoms among women in developed and developing countries. They reported a significant association between women with more number of children and postpartum depressive

symptoms. In their study, postpartum women with children more than 3 were more likely to show postpartum depressive symptoms compared to those with one child (OR 4.52, CI 0.90-22.8)". They however did not find a statistically significant relationship between income levels and postpartum depression. "The sex of child not being the one desired from the mother were reported to be associated with postpartum depressive symptoms in a study conducted among postpartum women in Palestine" (Qandi et al., 2016). Villegas et al. (2010) also found an association between unwanted sex of baby and postpartum depressive symptoms among women in developed and developing countries.

A study conducted among women who reside in urban areas in India found that these women had higher risk of showing depressive symptoms compared to those in rural areas (Upahyay et al., 2017). However a similar study in Bethlehem among Palestine women did not find any significant association between settlement type and showing depressive symptom (Quandil et. al., 2014).

2.5.2 Clinical factors

Studies have found out that clinical factors including having previously experienced psychiatric symptoms, having a family history of psychiatric illness have the potential to cause postpartum depressive symptoms among postpartum women in both developing and developed countries (Leigh & Milgrom, 2008b). A study by O'Hara and Swain's (1996) found that women with previous history of depression were more likely to experience subsequent postpartum depression. This is an indication that, women with a previous history of postpartum depression are at higher risk of showing postpartum depression than those without past history of depression (Johnstone et al., 2001).

2.5.3 Maternal and infant-related factors

Maternal and infant related factors have been found to be associated with postpartum depressive symptoms among postpartum women in various studies carried out in

developing and developed countries of the world (Qandil et al., 2016). Beck (1996) conducted study on postpartum women and found that unplanned or unwanted pregnancy was significantly associated with postpartum depression. “Fiala et al. (2017) however, did not found a significant association between unplanned pregnancy and postpartum depression symptoms among postpartum women in a study conducted in Czech”.

Warner et al. (1996) also found a significant association between unplanned pregnancy and depression at 6 weeks postpartum among women in developing countries. Qandil et al. (2016) reported in a study that women whose pregnancy was not planned had 44% higher odds of postpartum depressive symptoms (OR 2.44; 0.99, 6.01), $p = 0.05$ compared to women with planned pregnancy. “Unplanned pregnancy and postpartum depressive symptoms among postpartum women was also found to be associated in a study conducted in Turkey” (Turkcapar et al., 2015).

Physical violence has also been reported in literature as a major significant and contributing factor in the development of postpartum depressive symptoms among postpartum women. Fiala et al. (2017) reported a statistically significant relationship between physical violence meted out to women during their pregnancy period (OR = 6.20), during postpartum period (OR = 5.87) and postpartum depression symptoms. There was an association between physical abuse during pregnancy and after childbirth with postpartum depressive symptoms among women in developed and developing countries (Villegas et al., 2010).

Other related maternal factors the could have some bearing on the development of postpartum depressive symptoms among postpartum women also has to do with either the woman had previous history of depression and breastfeeding history. Women with

previous history of depression had increased odds of showing postpartum depressive symptoms compared to women without history of depression (Turkcapar et al., 2015).

“Quelopana et al. (2014) reported that mothers who breastfed exclusively or combined with bottle-feeding had a lower risk (OR = 1.06, 95% CI = 1.00 - 1.12) of screening positive for symptoms of postpartum depression compared to women who do not breastfed exclusively”. “However, Forman et al. (2000) did not find any relationship between not breastfeeding and postpartum depression”.

2.5.4 Psychological factors

Psychological disorders are disorders that are usually distressing but allow one to think rationally and function socially and this may be classified as a neurotic disorder (Leigh & Milgrom, 2008). Neuroticism and the development of postpartum depressive symptoms was found to have a weak relationship with postpartum depression (O'Hara & Swain, 1996). Lee et al. (2000) found that increase levels of neurotic conditions were significantly associated with postpartum women with postpartum depressive symptoms. “Women who were ‘shy-self-conscious’ or a ‘worrier’ were found to have higher odds of developing postpartum depressive symptoms” (Johnstone et al., 2001).

“Cognitive attribution style was also measured as a predictor of postpartum depression” (Stephens et al., 2016). Negative cognitions are also said to be significant predictors of depression as depressive attributions have the potential to lead to mood changes (Stephens et al., 2016). Stewart et al. (2003), found that a negative cognitive attribution style was weakly related to postpartum depression.

2.5.5 Social factors

The association between life events and the development of depressive symptoms among postpartum women is well documented in literature (Stephens et al., 2016). Life

experiences including death of a loved one, relationship breakdowns or divorce, losing ones job have being reported to cause stress and can serve as major triggers of depression in individuals. “Pregnancy and birth are often regarded as stressful life events in their own right, and the stressfulness of these events may lead to depression “(Stephens et al., 2016). Stephens et al. (2016) reported that negative life events classified as either moderate to severe were significantly associated with depression. They indicated that high levels of negative life events from the beginning of pregnancy until about 11 weeks postpartum were associated with higher levels of depressive symptoms. No association was found between life events and postpartum depression in a study conducted by (Leigh & Milgrom, 2008b). “One of the challenges of assessing a possible relationship between life events and the onset of depression postpartum is the study design as retrospective collection of data may lead to over reporting of life events as subjects try to connect a stressful life event as a possible cause of the illness. The prospective collection of data eliminates this source of bias, as the outcome of postpartum depression is not known a prior” (Corrigan et al., 2015).

Gorman et al. (2004) found a strong-moderate association between experiencing a life event and developing postpartum depression, However, “there was heterogeneity between studies which related to where the study was conducted: studies undertaken in Britain and North America showed strong associations between postpartum depression and recent life events, while Japanese studies showed a non-significant association” (Corrigan et al., 2015).

“A study conducted by Lee et al. (2000) in Hong Kong found no significant association between life events and postpartum depression”. This indicates stressful events during pregnancy are clear risk factors for developing postpartum depression.

Research have also proven that women who receive social support from friends and relatives during stressful times are protective against showing depressive symptoms (Leigh & Milgrom, 2008b). There are diverse sources from which postpartum women could get support from that could release them from stress and this include spouse, relatives, friends among others. “There are also different types of social support, for example informational support (where advice and guidance is given), instrumental support (practical help in terms of material aid or assistance with tasks) and emotional support (expressions of caring and esteem)” (Danasabe & Elias, 2016). “Studies have consistently shown a negative correlation between postpartum depression and emotional and instrumental support “(Leigh & Milgrom, 2008b). “Some studies have found that perceived social isolation (or lack of social support) was a strong risk factor for depressive symptoms postpartum” (Forman et al., 2000). However, there may be differences between perceived and received social support.

Logsdon et al. (2000) found a significant association between perceived support showing of depressive symptoms among African-American low income pregnant women during delivery. This evidence makes it clear that postpartum women who do not mostly get social support during pregnancy are more likely to develop postpartum depressive symptoms compared to those with some or total support from relatives and other cohorts.

In addition to support, “studies have reported an increased risk of postpartum depression in women who experience marital problems during pregnancy” (Stephens et al., 2016). It has been reported previously that women with postpartum depression perceived their husbands to be less supportive compared to women who were not depressed, but these differences were apparent found only during postpartum period and not during pregnancy period (Stephens et al., 2016).

It is evidently clear that studies have consistently found differences between perceived and received social support in women with postpartum depression. These differences may be accounted for, in part, by the fact that depressed individuals tend to view everything more negatively, including their perceptions of level of support. “The majority of studies have focused on cross sectional samples of pregnant women; however there may be special groups for whom social support may be pertinent. For example, there is a dearth of work examining the role of social support within low income groups” (Lee et al., 2000; Logsdon et al., 2000).

2.6 Conceptual framework

The figure below is the conceptual framework of this study. It shows a pictorial representation of the interplay of factors that could contribute to postpartum depression. These include socio-demographic factors, clinical factors, maternal and infant related factors, psychological factors and social factors.

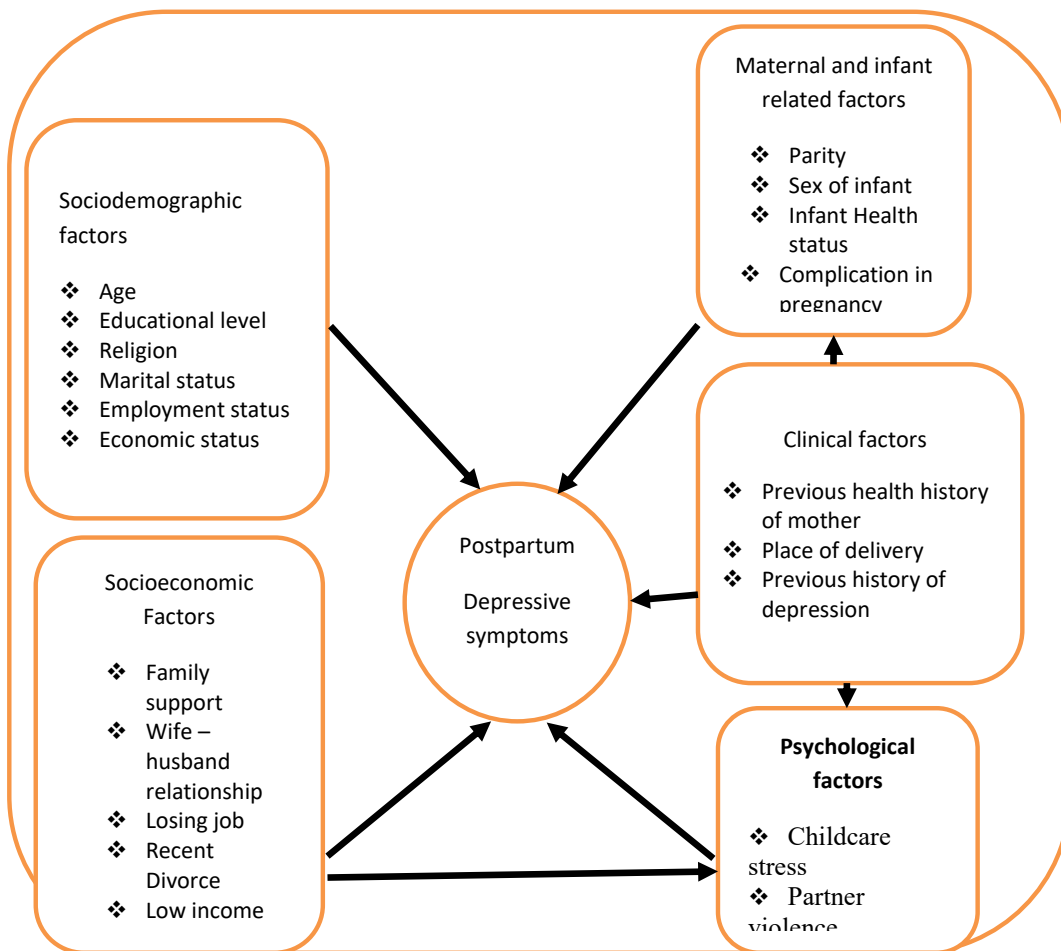


Figure 2.1: Conceptual framework showing possible factors that are associated with postpartum depression

Source: Authors own construct

It suggests that socio-demographic variables including marital status, religion, employment status, parity, maternal age, level of education, length of relationship with partner, and sex of child could influence the occurrence of postpartum depressive symptoms.

The role of socioeconomic status in the aetiology of mental health disorders and depression cannot be over emphasized. Socioeconomic deprivation indicators such as unemployment, low income and low education have been mentioned as risk factors in mental health disorders (World Health Organization, 2001; Ghaffari, 2011). Recent studies from North America, Latin America and Europe reported that depression is more common among poorer countries (World Health Organization, 2001).

Maternal and infant related factors including pregnancy related complications such as preeclampsia, hyperemesis, premature contractions as well as delivery related complications such as emergency elective caesarean, instrumental delivery, premature delivery and excessive bleeding intrapartum (Dahlen et al., 2015). Staying in the hospital for too long after delivery, previous miscarriages, infertility treatment, whether pregnancy was planned, sex of child, ill child, inability of baby to suckle properly, number of children the woman has, temperament of baby, special needs baby are some of the factors whose relationship to postpartum depression have been investigated. (Gold et al 2013).

Clinical factors includes having previously experienced psychiatric symptoms, having a family history of psychiatric illness, as well as measures of affect during pregnancy. Previous studies reports that women with a history of postpartum depression have an increased odds of developing postpartum depression (Johnstone et al., 2001; Josefsson et al., 2002). Also, Johnstone et al. (2001) found an increased odds of postpartum depression in 490 women with a family history of psychiatric illness.

The relationship between life events and the onset of depression is well established (Corrigan et al., 2015). Experiences such as the death of a loved one, relationship breakdowns or divorce, losing a job or moving home are known to cause stress and can

trigger depressive episodes in individuals with no previous history of affective disturbance (Stewart et al., 2003).

In summary, the conceptual framework depicts factors that could contribute to postpartum depression. Perception, communication and support may contribute to the goal of early detection of postpartum depression and hence promote early initiation of care.

2.7 Chapter summary and outstanding gaps in literature

The puerperium is well known as a time of increased risk for the development of serious mood disorders. Literature on factors associated with developing postpartum depression identified particular areas in which more work needs to be done. Lower socioeconomic status is a known risk factor for postpartum depression. The experience of pregnant women in low income setting, who may already be at higher risk of depression, is presently under researched. Their access to health care services, and opportunities for social networks and support may vary greatly from those on the other side. The rate of postpartum depression within the general population has been found as 10-15%, however the rate is higher among teenage mothers. Rate in teenage mothers have reported to be as high as 26%. The use of standardized assessment tools for depression may not be appropriate with all cultural groups and researchers need to be culturally sensitive. However the experience of postpartum depression outside a woman's home country requires further work. Such women may be at increased risk of developing postpartum depressive symptoms due to of lack of social support, cultural expectations of motherhood and a unwillingness to reveal psychiatric symptoms and obtain care from health professionals.

CHAPTER THREE

METHODS

3.0 Introduction

This chapter is devoted to the methods and procedures used in carrying out this study. The study location and ethical issues were also discussed.

3.1 Study design

The study was a facility based , cross-sectional study, involving mothers with a children aged 0-6 months attending Child Welfare clinic (CWC)/postnatal clinic at the Greater Accra Regional Hospital. The study was carried out between June, 2018-July, 2018.

3.2 Study Area

The study was conducted at the Greater Accra Regional Hospital in Accra, the capital city of Ghana. The population of Accra Metropolitan Assembly (AMA), according to the 2010 Population and Housing Census, is 1,665,086, representing 42% of the region's total population (district analytical report, AMA, 2014). Males constitute 48.1% and females represent 51.9%. The Metropolis is entirely (100%) urban. It has a sex ratio of 93 and youthful population (children under 15 years) (42.6%), depicting a broad base population pyramid which tapers off with a small number of elderly persons (60+ years) constituting 5.9% (district analytical report, AMA, 2014). The Metropolis has a total age dependency ratio of 48.5%, and a child dependency ratio of (42.6%). Accra Metropolis has a Total Fertility Rate of 2.2, which is lower than the Regional average of 2.6. The General Fertility Rate, 63.7 births per 1000 women aged 15-49 years, is also lower than the regional average of 75.7 (district analytical report, AMA, 2014). The Crude Birth Rate

(CBR), 19.7 per 1000 population, is also lower than the Regional average of 22.7. The crude death rate for the metropolis is 4.4 per 1000 population. Of the population 11 years and above, 89% are literate and 11% are non-literate (AMA, 2014). The number of non-literate females (98,439) is more than twice that of males (39,567). Out of the 533,291 persons enumerated as currently in school, 38.4% were at the primary level, 18.2% were at the JSS/JHS level while 12.8% were at the Senior High School level. About 70.1% of the population aged 15 years and older are economically active while 29.9% are economically not active. Among the economically active population, 93% are unemployed while 7.0% is unemployed (AMA, 2014).

The Greater Accra Regional Hospital is believed to have been opened by the British around 1928. It occupies a total land area of about 15.65 acres. It has recently undergone renovation and has a current bed capacity of 620 beds (AMA, 2014). Politically, it falls within the Osu Klotey Sub Metro of the Accra Metropolitan Area. Its catchment area is the whole of the Greater Accra Region with an estimated population of about 4,283,322 inhabitants. However, the immediate catchment area includes the following suburbs: Nima, Maamobi, Kanda, Accra New Town, Kotobabi, Osu, La, Adabraka, Achimota, Airport Residential Area and Central Accra (AMA, 2014).

The Greater Accra Regional Hospital was chosen for this study based on the fact that between five hundred (500) to six hundred (600) deliveries occur monthly at the facility and about six thousand to seven thousand deliveries yearly of women aged mostly between 18 and 35 years (Greater Accra Regional Hospital labour ward, 2017). This was to ensure that sufficient numbers of postnatal women are available to be included in the sample.

3.3 Study Population

The study population were postnatal mothers who were attending the postnatal clinic with babies aged 0-6months within the period of June and July 2018 at the Greater Accra Regional Hospital.

3.3.1 Inclusion criteria

The study included all mothers who fully met these criteria:

- 18years and over
- Medically uncomplicated pregnancy or delivery
- Full term at delivery
- Singleton baby
- Baby discharged with mother

3.3.2 Exclusion criteria

- Women who were dependent on illicit drugs or alcohol
- Women with pre-existing medical conditions
- Women whose babies had died

3.4 Sampling size determination

A total sample size of 124 mothers was considered for this study. This was determined using the Cochran formula:

$$, n = \frac{Z_{\alpha/2}^2 P(1-P)}{e^2} = \frac{1.96^2 \times 0.07(1-0.07)}{0.05^2} = 100$$

Where,

$Z_{\alpha/2}$ – score at 5% significance level = 1.96

e – 0.05, the margin of error, set at 5%

α = significance level = 5%

P = Prevalence of PPD = 7% (Anokye, Acheampong, Ainooson, et al., 2018)

n = Minimum required sample size = 100

Adjusting for non-response rate of 24% = $100 + 0.24(100) = 124$.

Total sample size = 124

3.5 Sampling procedure

Simple random sampling technique was used in selecting mothers into the study. This involved three steps. Firstly, the Child Welfare Clinic(CWC) register was obtained with permission and a list of mothers aged 18-49 years with children aged 0-6 months compiled and given unique numbers. Secondly, the number of respondents required were then randomly selected by using a random number generator google software. Thirdly, the researcher and research assistants visited the CWC to meet selected women on the day they attended the CWC to discuss the study and conduct interviews. Finally, if any selected woman refuses or did not come to the CWC in the course of the study, such respondents were dropped from the sample and subsequently replaced.

3.6 Data collection methods

A quantitative survey using a structured questionnaire and the Edinburgh postnatal depression scale (EPDS) questionnaire was conducted to collect data from selected mothers. Data collection was done by trained Research Assistants and the Principal Investigator.

3.7 Instrument for data collection

A questionnaire was used to collect information on participants' characteristics as well as other independent variables while the Edinburgh postnatal depression scale (EPDS) questionnaire was used for assessing symptoms of perinatal depression and anxiety. The Edinburgh Postnatal Depression Scale (EPDS) is one of the most widely used screening instruments for assessing symptoms of perinatal depression and anxiety (Gibson et al., 2009, Kozinsky et al., 2015). This self-reporting instrument was originally developed in the United Kingdom (UK) by Cox, Holden and Sagovsky in 1987 (Cox et al., 1994). Its use has now extended far beyond the UK to other high-income English-speaking and non-English speaking countries, and increasingly to non-Anglophone lower/middle income countries. The popularity of this brief instrument reflects the original British validation study (Shrestha et al., 2016), in which nine out of ten women who were diagnosed by a psychiatrist as being depressed after giving birth were correctly identified in a blinded comparison with scores above a cut-off on the EPDS.

The psychometric properties of the EPDS in primary healthcare were: 86 % sensitivity (correctly identifying true cases), 78 % specificity (correctly identifying people without the condition) and 73 % positive predictive value (proportion of respondents scoring positive in the test who had a mental disorder diagnosed by clinical interview) (Shrestha et al., 2016). The questionnaire is easy to administer, simple to interpret and could readily be incorporated within the routine services provided to all postpartum women. It is a 10-item scale that documents depressive symptoms. It does not however diagnose postnatal depression (as this can be accomplished only through a psychiatric clinical interview) but rather used to assess postpartum depressive symptoms. Each item is scored on a four-point (0-3) rating scale that represent the level of occurrence (zero, the lowest level of occurrence and three the highest level of occurrence). The scores for all 10 items are then

summed up to obtain a total depression score. Women with a total EPDS score of 12 and above are classified as showing symptoms of postpartum depression. This questionnaire has previously been used in Ghana (Okronipa et al., 2012) and other African countries (Nhiwatiwa et al., 1998) to measure postpartum depression.

3.8 Pre- test

The study instruments (questionnaires) were pre-tested at the Korle-bu polyclinic, since it has similar characteristics as the Greater Accra Regional (Ridge) Hospital. The essence of this pre-test was to determine the suitability of the questions, estimate the amount of time needed to conduct the study, and to finalize the tools for the main study.

3.9 Data processing and analysis

The collected data were checked, coded and entered into excel, and exported into STATA version 15 for cleaning and analysis. Descriptive statistics were employed to describe important characteristics of respondents and estimate the prevalence of postnatal depressive symptoms. Bivariate analyses (binary logistic regression) were carried out to examine the relationship between independent variables and postnatal depression. Using a p-value of <0.05 to determine statistical significance from the bivariate logistic regression models, a multivariable logistic regression model was fitted to identify the independent predictors of postnatal depression. The strength of association was measured by odds ratios with 95 % confidence intervals.

3.10 Variables

3.10.1 Dependent variable

The dependent or outcome variable is postpartum depression symptom. This was measured using the Edinburgh postpartum scale. The EPDS consists of 10 questions. Responses are scored 0, 1, 2, or 3 according to absence and increased severity of the symptom. The total score was determined by adding together the scores for each of the 10 items. Mothers with scores of 12 points and above were classified to have postpartum depression symptoms and otherwise for those with lesser total EPDS total score (0-11 points).

3.10.2 Independent Variables

A number of independent variables were defined and measured using the questionnaire. These factors are broadly classified into four: Socio demographic factors, clinical factors, maternal and infant related factors and socioeconomic factors.

Socio-demographic factors:

- maternal age,
- religion,
- occupation,
- income,
- marital status
- level of education,
- place of residence

Maternal and infant related factors:

- Antenatal care attendance and number of visits,
- knowledge on postpartum depression,
- duration of pregnancy ,
- bed rest during pregnancy,
- complications intra or postpartum,
- long hospital stay after delivery,
- previous miscarriages,
- infertility treatment,
- was pregnancy planned,
- sex of child,
- ill child,
- Inability of the child to suckle properly ,
- number of children,
- temperament of baby,
- difficulty feeding baby,
- special needs baby

Socioeconomic Factors

- cultural practices and beliefs e.g. new mothers should not be seen outside for some time, sitting on hot water after delivery which might cause more pain and discomfort to new mother.
- family Support from partners or grandmothers in taking care of baby.
- death of loved
- recently divorced,

- monthly income earned (low income)
- monthly expenditure
- losing job,
- recent home relocation

Clinical factors

- previous history of psychiatry illness
- family history of psychiatry illness
- place of delivery

Psychological factors

- intimate partner violence
- childcare stress
- pressure of any sort from family members

3.10 Quality assurance

The research assistants were given one day training on the administration of the questionnaires. Data collection was done on daily basis, and completed questionnaires were cross-examined for identification of missing data, completeness and consistency at the end of the day by the researcher. Data entry and cleaning were done concurrently in Microsoft Excel.

3.11 Ethical issues

Approval was sought from various stakeholders before the study was carried out. They included the Hospital authorities as well as the Ghana Health Service Ethical Review Committee. Consents of participants were sought before interviews were completed.

There was no direct risks associated with this study except that, participants were advised to avoid sharing any personal or confidential information they feel uncomfortable talking about. There was no direct benefits to the participants of this study. However, the respondents were informed that the information they will provide could contribute to overall knowledge on postpartum depression. Also, participants were informed that involvement in the study is voluntary and they could withdraw from the study at any time without attracting any penalty. Participants were informed that there would be no consequences, forfeiting of healthcare or other benefits if they chose to withdraw from the study.

Data collected for the study were kept confidentially and used solely for the purpose indicated for the study. Privacy was ensured by carrying out interview in a separate room designated purposely for the study during the data collection period. Electronic data files were password protected while hard copy data were stored securely in locked file cabinets without the names of study participants, and access was limited to the Principal Investigator of the study.

3.12 Chapter Summary

In summary, this chapter elaborated on the study design, which is a descriptive cross sectional quantitative. Also, data collection methods and instrument for data collection, together with quality assurance and ethical issues were elaborated on. The next chapter presents the results.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter deals with the results of the study and reports the findings on socio-demographic characteristics of postpartum mothers, socio-economic characteristics, maternal and infant related factors, and clinical and psychological factors. The prevalence of postpartum depressive symptoms among the respondents is also presented in addition examining the factors associated with postpartum depressive symptoms.

4.1.1 Socio-demographic characteristics of respondents

A total of 124 women of reproductive age were recruited into the study and all of them responded to the questionnaire, giving a response rate of 100%. Table 4.1a and 4.1b show the socio-demographic and socio-economic characteristics of respondents. The mean age of respondents was 33.4 ± 8.8 SD years, and the majority (31.5%) were between the age of 25 to 29 years. Majority (77.6%) of the respondents were urban dwellers and few lived in rural areas (3.4%). Majority of respondents were married (79.0%). Concerning educational status, the majority of respondents (33.9%) had attained SHS education and the least (4.8%) had no formal education. Furthermore, the majority of respondents' partners or husbands attained SHS education (34.7%), and tertiary education (33.2%). Most respondents were self-employed (62.9%). With regard to religion, majority of respondents were Christians (79.8%).

Table 4.1: Socio-demographic characteristics of respondents

Variable	Frequency	%
Age		
Mean Age (SD)	33.4 (8.8)	
18-24	9	7.3
25-29	39	31.5
30-34	31	25.0
35-39	18	14.5
40+	27	21.8
Residence type		
Urban	90	77.6
Peri-urban	22	19.0
Rural	4	3.4
Marital Status		
Married	98	79.0
Co-habiting	20	16.1
Divorced	3	2.4
Widowed	3	2.4
Educational status		
No Formal education	6	4.8
Primary	9	7.3
JSS/MLSC	37	29.8
SHS	42	33.9
Tertiary	30	24.2
Occupation		
Civil servants	22	17.7
Self employed	78	62.9
Student	11	8.9
Home maker	9	7.3
Unemployed	4	3.2
Religion		
Christianity	99	79.8
Islamic	24	19.4
Traditional	1	0.8
Partner's educational status		
No Formal education	5	4.2
Primary	5	4.2
JHS/MLSC	28	23.7
Secondary/SHS	41	34.7
Tertiary	39	33.2
Partner's occupation		
Trading	48	38.7
Civil servants	40	32.3
Student	1	0.8
Farmer	2	1.8
Artisan	18	14.5
Unemployed	11	8.9
Variable	Frequency	%
Forced to stay indoors after delivery		
Yes	14	11.3

No	110	88.7
Forced to sit on hot water after delivery		
Yes	41	33.3
No	82	66.7
Received any form of family support in taking care of your baby		
Yes	97	80.8
No	23	19.2
Lost a loved one recently		
Yes	27	22.1
No	95	77.9
Gone through a divorce recently		
Yes	4	3.2
No	120	96.8
Lost your job recently		
Yes	8	6.5
No	115	93.5
Relocated to a new home recently		
Yes	8	6.5
No	115	93.5
Combined monthly income		
Below GH ₵199	3	2.4
GH ₵200-499	60	48.4
GH ₵500-999	36	29.0
≥ GH ₵1000	25	20.2
Amount spent in the month		
Below GH ₵199	15	12.2
GH ₵200-499	34	27.6
GH ₵500-999	46	37.4
≥ GH ₵1000	28	22.8

4.1.2 Socio-economic characteristics of postpartum clinic attendants

Table 4.1b summarises socio-economic characteristics of respondents. The results show that among the various socio-economic variables investigated, majority (80.8%) of respondents asserted that they received some form of family support in taking care of their baby after delivery. Out of the 124 respondents, only 11.3% reported to have been forced to stay indoors during delivery. Furthermore, 33.3% reported that they were forced to sit on hot water after delivery. A little below a quarter (23.1%) of the respondents reported to have lost a love one recently and gone through divorce (3.2%). Additionally, 3.2% and 6.5% of the respondents, respectively, reported to have lost their jobs or relocated to new homes recently. Concerning the income status of respondents, the majority earned between GH ₵200-499 (48.4%) per month. However, with regard to the amount spent in a month, 37.4% of the respondents spent between GH ₵500-999 in a month.

4.1.3 Maternal and infant related characteristics of respondents

A number of maternal and infant related factors of respondents were also examined. The results are reported in Tables 4.2a, 4.2b, and 4.2c. Out of the 124 respondents, 91.9 % attended antenatal clinic during pregnancy (see table 4.2a). Out of those that attended antenatal clinic, majority (70.3%) did so during their first trimester and few (5.9%) in their third trimester. The results also show that majority (52.1%) of the respondents had attended antenatal clinic at least four times, while some 46.2% had received a health professional counsel on postpartum depression during ANC visit. Furthermore, most respondents (59.7%) reported not to have previous knowledge on postpartum depression.

Table 4.2: Pregnancy and Antenatal related of respondents

Variable	Frequency	%
Was last pregnancy planned		
Yes	65	54.2
No	55	45.8
Antenatal clinic during pregnancy		
Yes	114	91.9
No	10	8.1
Age of pregnancy when Antenatal was started		
<3 months	83	70.3
3-6 months	28	23.7
>6 months	7	5.9
Number of ANC visits		
< 4 times	38	32.5
4 times	18	15.4
> 4 times	61	52.1
Farmer		
Received a health professional counselling on Postpartum depression during ANC		
Yes	55	46.2
No	64	53.8
Had previous knowledge on postpartum depression		
Yes	48	40.3
No	71	59.7

Table 4.2b also shows that, most respondents (83.2%) delivered their recent baby in a health facility, with only 16.8% delivering at home. Most deliveries (51.3%) were

spontaneous vaginal deliveries, and the remaining had caesarian section (48.7%). Majority of respondents (66.9%) had their babies brought to them for breastfeeding within one hour after delivery.

Table 4.2b: Delivery history of respondents

Variable	Frequency	%
Babies delivered		
One baby	124	100
More than one baby	0	0.0
Place delivered recent baby		
Home	20	16.8
Health facility	99	83.2
Mode of recent delivery		
Spontaneous vaginal delivery	61	51.3
Caesarian section	58	48.7
Bed rest for more than two months		
Yes	52	44.4
No	65	55.6
Time baby was brought for breastfeeding after delivery		
Within one hour	79	66.9
1-3 hours later	19	16.1
4- 6 hours later	3	2.5
24 hours later	17	14.4
Time stayed in hospital before discharged		
less than 1 week	95	90.5
More than 1 week	23	19.5
Had previous miscarriages		
Yes	48	40.3
No	71	59.7
Had treatment for infertility in the past		
Yes	13	11.0
No	105	89.0
How many children do you have		
1-3	112	91.1
4-6	10	8.1
>6	1	0.8

The results (see tables 4.2c) further revealed that majority (79.8%) of postpartum mothers had their children able to be breastfed properly; and few of the babies had special needs (6.5%) and difficult temperament (12.1%).

Table 4.2c: Infant related Characteristics after birth

Variable	Frequency	%
Sex of child		
Male	62	52.1
Female	57	47.9
Child able to breastfeed properly		
Yes	99	79.8
No	25	20.2
Baby have a difficult temperament		
Yes	15	12.1
No	109	87.9
Experience difficulty feeding your baby		
Yes	12	9.8
No	111	90.2
Baby have special needs		
Yes	8	6.5
No	115	93.5
Child ill or admitted after delivery		
Yes	26	21.0
No	98	79.0

4.1.4 Clinical and Psychological Characteristic of respondents

Table 4.3 shows the clinical and psychological characteristic of respondents. Out of the 124 respondents, 10.5 % had previous history of depression and few had their depressive symptoms linked to family history (5.7%). With regard to whether respondents feel extremely tired caring for their child, few answered in the affirmative (26.0%). Some 14.5% of the respondents reported to have had an abuse from their partners or husband recently and few (12.1%) also experience some sort of pressure from family members/friends, with most respondents asserting that the pressure came from their in-laws.

Table 4.3: Clinical and psychological Characteristic of respondents

Variable	Frequency	%
Previous history of depression		
Yes	13	10.5
No	111	89.5
Family history of depression		
Yes	7	5.7
No	116	94.3
Health facility is far from where she stay		
Yes	72	59.5
No	49	40.5
Feel extremely tired caring for your child		
Yes	32	26.0
No	91	74.0
Had any abuse from your husband recently		
Yes	18	14.5
No	106	85.5
Experienced any sort of pressure from family members/friends		
Yes	15	12.1
No	109	87.9
Source of pressure		
Spouse	4	22.2
In-laws	14	77.8
Friends	1	5.6
Relatives	2	11.1

4.2 Prevalence of postpartum depressive symptoms

Figure 4.1 shows that 44.4% (55/124) of the postpartum women surveyed had postpartum depressive symptoms.

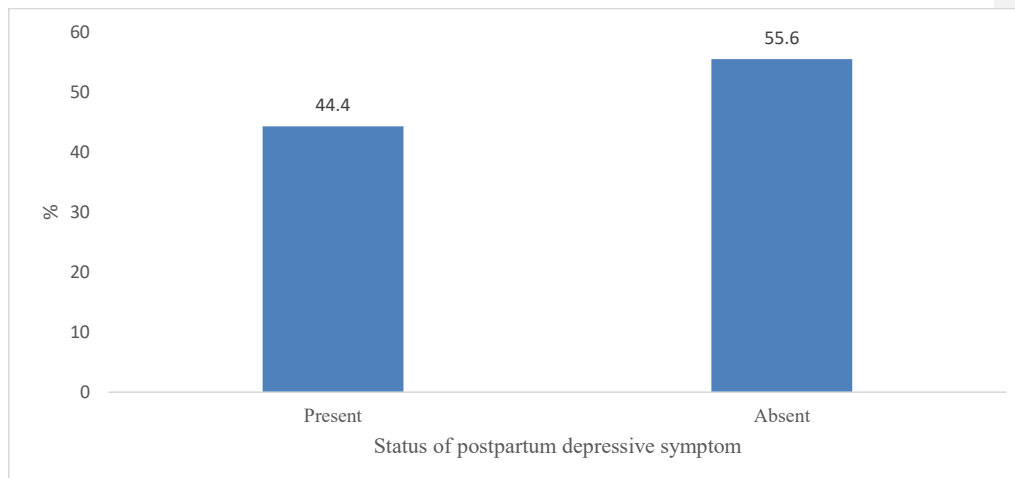


Figure 4.1: Prevalence of postpartum depressive symptoms

4.3 Factors associated with postpartum depressive symptoms

4.3.1 Socio-demographic factors associated with postpartum depressive symptoms

The main objective of this study was to examine the factors associated with postpartum depressive symptoms among postnatal women. Bivariate analyses were therefore first conducted to determine whether there existed any associations between socio-demographic factors and development of postpartum depressive symptoms among respondents. The results (see 4.3a and 4.3b) showed that among the socio-demographic factors examined, none was significantly associated with postpartum depressive symptoms.

Table 4.3a: Association between socio-demographic characteristics and postpartum depressive symptoms (Bivariate Analysis)

Variable	Depressive symptoms		Chi-square p-value
	Present (%)	Absent(%)	
Age			
Mean Age (SD)			0.120
18-24	4(7.3)	5(7.2)	
25-29	23(41.8)	16(23.3)	
30-34	14(25.5)	17(24.6)	
35-39	7(12.7)	11(15.9)	
40+	7(12.7)	20(29.0)	
Residence type			
Urban	40(75.5)	50(79.4)	0.082
Peri-urban	9(7.0)	13(20.6)	
Rural	4(7.5)	0(0.0)	
Marital Status			
Married	42(76.4)	56(81.2)	0.261
Co-habiting	11(20.0)	9(13.1)	
Divorced	2(3.6)	1(1.4)	
Widowed	0(0.0)	3(4.3)	
Educational status			
No Formal education	2(3.6)	4(5.8)	0.145
Primary	4(7.3)	5(7.2)	
JHS/MSLC	22(40)	15(21.7)	
Secondary/SHS	13(23.6)	29(42.1)	
Tertiary	14(25.5)	16(23.2)	
Occupation			
Civil servants	9(16.4)	13(18.8)	0.553
Self employed	36(65.5)	42(60.9)	
Student	3(5.4)	8(11.6)	
Home maker	4(7.3)	5(7.3)	
Unemployed	3(5.4)	1(1.4)	
Religion			
Christianity	43(78.2)	56(81.2)	0.519
Islamic	11(20.0)	13(18.8)	
Traditional	1(1.8)	0(0.0)	
Pagan			
Partner's educational status			
No Formal education	2(3.6)	3(4.8)	0.427
Primary	3(5.5)	2(3.2)	
JHS/MSLC	17(30.9)	11(17.5)	

SHS	18(32.7)	23(36.5)	
Tertiary	15(27.3)	24(38.2)	
Partner's occupation			
Civil servants	18(33.3)	22(33.3)	0.08
Trading	28(51.9)	20(30.3)	
Student	1(1.9)	0(0.0)	
Artisan	3(5.6)	15(22.7)	
Farmer	1(1.9)		
Forced to stay indoors after delivery			0.006*
Yes	11(20.0)	3(4.3)	
No	44(80.0)	66(95.7)	
Forced to sit on hot water after delivery			0.608
Yes	17(30.9)	24(35.3)	
No	38(69.1)	44(64.7)	
Received any form of family support in taking care of your baby			0.831
Yes	44(80.0)	53(81.5)	
No	11(20.0)	12(18.5)	
Lost a loved one recently			0.023*
Yes	7(12.7)	20(29.9)	
No	48(87.3)	47(70.1)	
Gone through a divorce recently			0.210
Yes	3(5.5)	1(1.4)	
No	52(94.5)	68(98.6)	
Lost your job recently			0.210
Yes	3(5.5)	1(1.4)	
No	52(94.5)	68(98.6)	
Relocated to a new home recently			0.706
Yes	3(5.6)	5(7.2)	
No	51(94.4)	64(92.8)	
Combined monthly income			0.08
Below GH ₵199	3(5.6)	0(0.0)	
GH ₵200-499	28(50.9)	32(46.4)	
GH ₵500-999	17(30.9)	19(27.5)	
≥ GH ₵1000	7(12.7)	18(26.1)	
Amount spent in the month			0.278
Below GH ₵199	10(18.2)	5(7.4)	
GH ₵200-499	13(23.6)	21(30.8)	
GH ₵500-999	21(38.2)	25(36.8)	
≥ GH ₵1000	11(20.0)	17(25.0)	

4.3.2 Socio-economic factors associated with postpartum depressive symptoms

Among the socio-economic factors investigated, being forced to stay indoors after delivery ($p=0.036$) and losing a loved one recently ($p=0.023$) were the two factors found to be significantly associated with the postpartum depressive symptoms (table 4.3c).

4.3.3 Maternal and Infant factors associated with postpartum depressive symptoms

The study also investigated the link between a number of maternal and infant characteristics and postpartum depressive symptoms. The results (table 4.4a, 4.4b and 4.4c) show that number of ANC visits, ($p =0.001$), time stayed in hospital before discharge ($p=0.029$) and child ill or admitted after delivery ($p=0.047$) were the significant maternal and infant related factors associated with the postpartum depressive symptoms.

Table 4.4: Association between Maternal and Infant characteristics and postpartum depressive symptoms (Bivariate Analysis)

Variable	Depressive symptoms		Chi-square p-value
	Present (%)	Absent (%)	
Antenatal clinic during pregnancy			0.773
Yes	51(92.7)	63(91.3)	
No	4(7.3)	6(8.7)	
Age of pregnancy when Antenatal was started			0.334
<3 months	40(76.9)	43(65.1)	
3-6 months	9(17.3)	19(28.8)	
>6 months	3(5.8)	4(6.1)	
Number of ANC visits			<0.001
< 4 times	33(63.5)	5(7.7)	
4 times	12(23.1)	6(9.2)	
> 4 times	7(13.5)	54(83.1)	
Received health professional counsel on Postpartum depression during ANC			0.580
Yes	23(43.4)	32(48.5)	
No	30(56.6)	34(51.5)	

Previous knowledge on postpartum depression			0.371
Yes	19(35.8)	29(43.9)	
No	34(64.2)	37(56.1)	
Place delivered recent baby			
Home	5(9.4)	15(22.7)	0.054
Health facility	48(90.6)	51(77.3)	
Mode of recent delivery			
Spontaneous vaginal delivery	23(43.4)	38(57.6)	0.124
Caesarian section	30(56.6)	28(42.4)	
Bed rest for more than two months			
Yes	22(41.5)	30(46.9)	0.561
No	31(15.5)	34(53.1)	
Time baby was brought for breastfeeding after delivery			
Within one hour	33(62.3)	46(70.8)	0.254
1-3 hours later	9(17.0)	10(15.4)	
4- 6 hours later	3(5.6)	0(0.0)	
24 hours later	8(15.1)	9(13.8)	
Time stayed in hospital before discharge			
less than 1 week	38(71.7)	57(87.7)	0.029*
More than 1 week	15(28.3)	8(12.3)	
Had previous miscarriages			
Yes	16(30.2)	15(22.7)	0.357
No	37(69.8)	51(77.3)	
Had treatment for infertility in the past			
Yes	6(11.3)	7(10.8)	0.924
No	47(88.7)	58(89.2)	
Was pregnancy planned			
Yes	25(47.2)	40(59.7)	0.171
No	28(52.8)	27(40.3)	
Sex of your child			
Male	28(52.8)	34(51.5)	0.887
Female	25(47.2)	32(48.5)	
Child able to breastfeed properly			
Yes	41(74.5)	58(84.1)	0.190
No	14(25.5)	11(15.9)	
How many children do you have			
1-3	48(88.9)	64(92.8)	0.390
4-6	6(11.1)	4(5.8)	
≥7	0(0.0)	1(1.1)	
Baby have a difficult temperament			
Yes	10(18.2)	5(7.2)	0.064
No	45(81.8)	64(92.8)	
Experience difficulty feeding your baby			
Yes	6(10.9)		6(8.8)
No	49(89.1)	62(91.2)	0.698
Baby have special needs			
Yes	6(10.9)	2(2.9)	
No	49(89.1)	66(97.1)	0.075

Child ill or admitted after delivery

Yes	16(29.1)	10(14.5)	
No	39(70.9)	59(85.5)	0.047*

4.3.4 Clinical and Psychological factors associated with postpartum depressive symptoms

Further analysis was done to examine the association between clinical and psychological characteristics of respondents and postpartum depressive symptoms. The results (table 4.5) show that experiencing recent abuse from husband was the only clinical and psychological factor significantly associated with postpartum depressive symptoms ($p=0.039$).

Table 4.5: Association between Clinical and Psychological characteristics and postpartum depressive symptoms (Bivariate Analysis)

Variable	Depressive symptoms		Chi-square
	Present (%)	Absent (%)	p-value
Previous history of depression			0.187
Yes	8(14.5)	5(7.2)	
No	47(85.5)	64(92.8)	
Family history of depression			0.143
Yes	5(9.1)	2(2.9)	
No	50(90.9)	66(97.1)	
Health facility is far from where she stay			0.636
Yes	34(61.8)	38(57.6)	
No	21(38.2)	28(42.4)	
Feel extremely tired caring for your child			0.984
Yes	14(25.9)	18(26.1)	
No	40(74.1)	51(73.9)	
Had any abuse from your husband recently			0.039*
Yes	12(21.8)	6(8.7)	
No	43(78.2)	63(91.3)	
Experiencing any sort of pressure from family members/friends			0.455
Yes	8(14.5)	7(10.1)	
No	47(85.5)	62(89.9)	
Specify who gave such pressure			0.241
Spouse	4(26.7)	0(0.0)	

In-laws	8(53.3)	6(100.0)
Friends	1(6.7)	0(0.0)
Family Member	2(13.3)	0(0.0)

4.3 Determinants of postpartum depressive symptoms

Multiple logistic regression was conducted on all factors that were statistically significant at the bivariate level. These factors included forced to stay indoors after child delivery, lost a loved one recently, number of ANC visits during entire pregnancy period, time stayed in hospital before discharge, child ill or admitted after delivery and abuse from partner or husband recently. Four of these factors were statistically associated with having postpartum depressive symptoms at the multiple logistic regression analyses level ($P \leq 0.05$) (see table 4.6). These include losing a loved one recently, number of ANC visits, time stayed in the hospital before discharge and child ill or admitted after delivery. Specifically, the results show that women who lost their loved ones recently had 5.44 times the odds of showing postpartum depressive symptoms compared to those who had not lost a love recently (AOR=5.44; CI=1.31-22.47). Women who visited antenatal clinic at most four times during the 9 months pregnancy period had increased odds of showing depressive symptoms compared to those who had visited for at least four times (AOR=61.88; CI=13.5-75.9). Women who stayed in the hospital for less than one week after delivery were less likely to show postpartum depressive symptoms compared to those who had stayed one week or more after delivery (AOR=0.28; CI=0.14-0.83). Mothers whose children were ill after delivery were 3.16 times more likely to show postpartum depressive symptoms compared to those whose children were not sick after delivery (AOR=3.16; CI=1.58-17.03). Partners occupation, forced to stay indoors after delivery and receiving recent abuse from partner were not significant in the multiple logistic model.

Table 4.6: Factors associated with postpartum depressive symptoms

Characteristics	Depressive Symptoms		Unadjusted OR (95% CI)	P Value	Adjusted OR (95% CI)
	Present(%)	Absent(%)			
Partner's occupation					
Civil servants	18(33.3)	22(33.3)	0.53(0.08-3.28)	0.497	0.58(0.19-11.10)
Artisan	1(1.9)	0(0.0)	0.24(0.06-0.97)	0.047	0.32(0.18-18.65)
Farmer	3(5.6)	15(22.7)	1.0		1.0
Lost a loved one recently					
Yes	48(87.3)	47(70.1)	2.92(1.13-7.55)	0.027	5.44(1.31-22.47)*
No	7(12.7)	20(29.9)	1.0		
Forced to stay indoors after delivery					
Yes	11(20.0)	3(4.3)	5.5(1.15-20.8)	0.012	1.56(0.21-11.44)
No	44(80.0)	66(95.7)	1.0		1.0
Number of ANC visits					
< 4 times	33(63.5)	33(63.5)	50.9(15.0-63.2)	<0.001	61.88(13.5-75.9)*
4 times	12(23.1)	12(23.1)	3.3(1.3-11.9)	<0.001	2.2(1.24-12.52) *
> 4 times	7(13.5)	7(13.5)	1.0		1.0
Time stayed in hospital before discharged					
Less than one week	38(71.7)	57(87.7)	0.36(0.11-0.99)	0.029	0.28(0.14-0.83)*
More than 1 week	15(28.3)	8(12.3)	1.0		1.0
Child ill or admitted after delivery					
Yes	16(29.1)	10(14.5)	2.42(1.17-6.58)	0.047	3.16(1.58-17.03)*
No	39(70.9)	59(85.5)	1.0		1.0
Had any abuse from your husband recently					
Yes	12(21.8)	6(8.7)	2.93(1.24-10.19)		2.38(0.76-7.40)
No	43(78.2)	63(91.3)	1.0		1.0

*p<0.05; OR= odds ratio; CI=confidence interval

4.4 Chapter summary

In summary, the evidence in this study suggests that socio-demographic and socio-economic factors make a small and insignificant contribution to the development of postpartum depression symptoms among postpartum women. The study found that maternal and infant related factors such as women who have lost a loved one recently, number of ANC visits, time stayed in the hospital before discharge and child ill or admitted after delivery were the factors significantly associated with the development of postpartum depressive symptoms among postpartum women in Greater Accra Region hospital. The next chapter deals with the discussion of the findings.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discusses the findings obtained in the previous chapter. The discussion include a summary of the findings, comparison of the results with other studies in scholarly literature, and explanation of the findings and their implication. The chapter also deals with the strength and limitations of the study.

5.2 Summary of findings

This study revealed that the estimated proportion of women with postpartum depressive symptoms among postnatal mothers at the Greater Accra Regional Hospital is 44.4%. It further revealed that only 40.34% of postpartum women were aware of postpartum depressive symptoms. In this study, 14.5% of postpartum women reported to have previous history of depression, and 9.1% had family history of depression.

Loss of a love one recently (AOR=5.44; CI=1.31-22.47, $p= 0.019$), number of antenatal clinic (ANC) visits the woman had during her recent pregnancy (AOR=61.88; CI=13.5-75.9, $p= 0.001$), time the woman stayed in the hospital before discharge (AOR=0.28; CI=0.14-0.83, $p=0.05$) and child being ill or admitted after delivery (AOR=3.16; CI=1.58-17.03, $p= 0.019$) were the four factors that strongly predicted postpartum depression symptoms after other factors were controlled for. Specifically, postpartum mothers who had lost a loved one recently had 5.44 times the odds of showing postpartum depressive symptoms compared to those who had not lost a love recently (AOR=5.44; CI=1.31-22.47). Women who visited antenatal clinic less than four times during their recent 9 months pregnancy period had increased odds of showing depressive symptoms compared to those who had visited at least four times (AOR=61.88; CI=13.5-75.9).

Also women who stayed in the hospital for less than one week after delivery were also less likely to show postpartum depressive symptoms compared to those who had stayed one week or more after delivery (AOR=0.28; CI=0.14-0.83). Finally, mothers whose children were ill after delivery had 3.16 times the odds of showing postpartum depressive symptoms compared to those whose children were not sick after delivery (AOR=3.16; CI=1.58-17.03).

5.3 Consistency with previous research

Several findings from this study are similar to findings from previous studies. The findings from this study revealed that the estimated proportion of women with postpartum depressive symptoms among postnatal mothers at the Greater Accra Regional Hospital is 44.4%. This findings supports the argument that postpartum non-psychotic depression represents a considerable public health problem affecting women and their families (Howard et al., 2014). This finding also agrees with those Stephens et al. (2016) who reported prevalence ranging from 30-75%. However the prevalence obtained in this study is far higher than that reported at Komfo Anokye Teaching Hospital, where the prevalence of postpartum depressive symptoms was 7% (Anokye et al., 2018). The findings of this study also show a higher prevalence compared to a study by O'Hara & Swain (1996) who found an overall prevalence of postpartum depressive symptoms of 13% in a study conducted in Europe among postpartum women after assessing symptoms after at least two weeks postpartum period.

In this study, only 40.34% of postpartum women were aware of postpartum depressive symptoms. Although literature does not report comprehensively on knowledge and awareness of postpartum women on postpartum depression symptoms, some studies have

been conducted among healthcare workers. A study conducted in Ankara among healthcare workers by Nihal and Bilgili (2010) revealed that 84.4% of the nurses and midwives did not know postpartum depression, 73.4% had no knowledge on the risk factors for postpartum depression and 72.2% did not know the diagnosis method. Knowledge and awareness of postpartum depression and its associated risk factors among nurse and midwives in a Nigerian tertiary hospital was found to be very low (25%).

Several studies have shown that postpartum depression has diverse causal factors. The results show that postpartum mothers who had lost a loved one recently had 5.44 times the odds of showing postpartum depressive symptoms compared to those who had not lost a love recently (AOR=5.44; CI=1.31-22.47). This finding is consistent with previous studies which suggested that negative life events including loss of love ones were associated with increased probability of being diagnosed as clinically depressed after showing depressive symptoms (Stephens et al.,2016; Leigh & Milgrom, 2008b). Stone et al.(2015) reported that high levels of life events from the beginning of pregnancy until about 11 weeks postpartum were associated with higher levels of depressive symptomatology and a greater likelihood of being diagnosed with postpartum depressive symptoms. The findings of this study however are in discord with the study of Leigh & Milgrom (2008) who found no association between life events and postpartum depressive symptoms among partum women in India.

The results of the study also suggested that women who visited antenatal clinic less than four times during their recent 9 months pregnancy period had increased odds of showing depressive symptoms compared to those who had visited at least four times (AOR=61.88; CI=13.5-75.9). This findings agrees with the work of Martha et al. (2017) who reported that women who visited ANC most often have frequent contact with health professions enabling intervention implementation and this made them have specific knowledge about

potentially modifiable risk and protective factors that influence the development of postpartum depressive symptoms.

In this study, mothers whose children were ill after delivery were significantly associated with the development of postpartum depressive symptoms (AOR=3.16; CI=1.58-17.03). Josefsson et al. (2002) however in their case control study reported a non-significant association between delivery complications/illness and postpartum depression.

This current study did not find any significant associations between any socio-demographic or socio-economic factor and postpartum depressive symptoms among postpartum women. Though in this study, 41.8% of postpartum women between the ages of 25-29 formed the majority to show postpartum depressive symptoms, age was not significantly associated with postpartum depressive symptoms ($p=0.120$). Majority of women who had achieved JHS/middle school (40%) were found to show symptoms of depression. Educational level was however not significant ($p=0.145$). Similarly, religion ($p=0.519$), and employment status ($p=0.553$) were all not significantly associated with postpartum depressive symptoms. Though the results show that 76.4% of married women showed symptoms of depression compared to those that were single, marital status was not associated with depressive symptoms ($p=0.261$). Settlement type (rural or urban) ($p=0.08$) and income ($p=0.08$) were all also not statistically significant. Taken together, these findings seem to agree with the study by Saligheh et al. (2014) who reported that socio-demographic variables including marital status, age and parity did not show any significant association with postpartum depressive symptoms. The results are also consistent with the findings of Fiala et al. (2017), who reported that socio-demographic variables including marital status and religion did not show any significant association with postpartum depressive symptoms. The results however disagree with the study of Villegas et al. (2010) who reported that socioeconomic variable such as marital status, age,

religion and settlement type were significantly associated with postpartum depressive symptoms in a study among postpartum mothers in China. Though in this study, 75.5% of postpartum women who live in urban settlement showed depressive symptoms, the effect was not statistically significant. The finding obtained with regard to settlement type disagrees with a study carried out by Upahyay et al. (2017) in where postpartum women who resided in rural areas had higher risk of showing depressive symptoms compared to those who resided in the urban areas. However a similar study carried out in Bethlehem among postpartum women saw no association between settlement type and showing depressive symptom (Quandil et.al. 2016) which is consistent with this current findings. Other studies however found significant associations between postpartum depressive symptoms and marital status, age, employment status and resident type among postpartum women in some low income populations in India and China (Lee et al., 2000; Patel et al., 2002).

In this study, 14.5% of postpartum women reported to have previous history of depression and 9.1% had family history of depression. However, the study did not find a significant association between previous history of depression ($p=0.187$) and family history of depression ($p=0.143$) and postpartum depressive symptoms. This findings is in contrast with a similar study by Quelopana et al. (2014) who reported that postpartum women with a history of depression were more likely to show symptoms of postpartum depressive symptoms compared to women without history of depression.

5.4 Explanation of findings and implications

This study revealed that only 40.34% of postpartum women were aware of postpartum depressive symptoms. The proportion of postpartum mothers who were aware of postpartum depressive symptoms in this study hence lower and could partly be attributed to inadequate knowledge and awareness on the part of healthcare attendants including the nurses and midwives. If healthcare workers however have knowledge and awareness on postpartum depression, then such knowledge and awareness were not being transmitted to postpartum women in the Greater Accra Regional hospital.

The study found that losing a loved one recently ($p=0.023$) was an important predictor of postpartum depressive symptoms among postpartum women. This finding may be due to the fact that life experiences such as death of a loved one, relationship breakdowns or divorce are known to cause stress and these could serve as triggers of depressive episodes in individuals with no previous history (Stephens et al., 2016).

The number of antenatal clinic visited during the entire period of pregnancy was significantly associated with postpartum depressive symptoms. The results suggest that women who visited antenatal clinic less than four times during their recent 9 months pregnancy period had increased odds of showing depressive symptoms compared to those who had visited at least four times (AOR=61.88; CI=13.5-75.9). This finding may be attributed to the fact that women who visit ANC most frequently have opportunity of receiving counselling by the health workers making them aware of the effects of postpartum depression and how to guide themselves against it. This suggest a need for health workers and other civil society groups to endeavour to get mothers attend ANC as many times as possible.

Women who stayed in the hospital for less than one week after delivery were also less likely to show postpartum depressive symptoms compared to those who had stayed one week or more after delivery (AOR=0.28; CI=0.14-0.83). Most mothers could stay longer than required in a hospital possibly due to low income and lack of social support; others also may stay longer due to sickness in themselves or their babies. Any of these could lead to depression since the mother is worried about either how to raise money to get herself out of the hospital or the risk of losing her live or that of her baby.

In this study, mothers whose children were ill after delivery were significantly associated with the development of postpartum depressive symptoms. (AOR=3.16; CI=1.58-17.03). This finding may be due to the fact that the expectation of every mother is high about her new born baby and the fear of losing the baby when ill after delivery makes them depressed due to mood changes and this could subsequently lead to showing of postpartum depressive symptoms.

5.5 Strengths and Limitations of study

This study has helped bring to the fore new findings concerning postpartum depressive symptoms and its associated factors among postpartum women attending clinic at Greater Accra Regional Hospital, which have significant implication for policy interventions and strategies on maternal and child health. The results of this study however is limited to an extent. First and foremost, as a cross sectional study, no causal relationship was established among study variables. Second, respondents' bias especially recall bias, could have limited the study's findings as information given could not be verified by clinical psychologist. This is an indication that those women who showed symptoms of postpartum depression in this study should further be investigated by a clinical psychologist to support the findings obtained in this questionnaire based quantitative studies.

5.6 Chapter Summary

This chapter discussed the results in accordance to the study objectives. The discussion showed that postpartum mothers who had lost a loved one recently, decreased antenatal visits, and mothers whose children were ill after delivery had increased odds of showing postpartum depressive symptoms compared to those who were not. In the next chapter, conclusions and recommendations are made.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

In this study, the prevalence and determinants of postpartum depressive symptoms were assessed among postnatal mothers who attended the child welfare clinic at the Greater Accra Regional Hospital. Almost half of the women had postpartum depressive symptoms scores classified as high by the Edinburgh Postnatal Depression Scale (EPDS). Loss of a love one recently, number of ANC visits the woman had during her recent pregnancy, time the woman stayed in the hospital before discharge, and child being ill or admitted after delivery were the factors that significantly predicted postpartum depression symptoms after potential confounders were controlled for. Based on these results, it is concluded that there is need for urgent measures including counselling and psychosocial support both at home and in health facilities to help address postpartum depressive symptoms among postpartum mothers.

6.2 Recommendation

On the basis of the findings and discussion presented in the last two chapters, the following clinical, public health and research-related recommendations are hereby made.

Clinical

- The management of Greater Accra Regional Hospital should ensure that postpartum women are routinely assessed. Where applicable or feasible, women who show symptoms of postpartum depression should be further assessed by a clinical psychologist and treated for depression where applicable

Public Health

- Midwives and Nurses at the antenatal unit of the Greater Accra Regional Hospital should endeavour to educate pregnant women on depressive symptoms and what to do when they occur. As part of this public health intervention, counselling and psychosocial support both at home and in health facilities should be encouraged to help address postpartum depressive symptoms among postpartum mothers.

Research

- Management of the Greater Accra Regional Hospital and other researchers should assess knowledge of health staff on postpartum depression.

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