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DETERMINANTS OF DEPRESSION AMONG MOTHERS FOLLOWING A PRETERM BIRTH IN GREATER ACCRA REGION OF GHAHA

BY

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DECLARATION

I, **Emelia Koranteng** hereby declare that apart from specific reference made to other people's work which have been duly acknowledged, this dissertation is my own independent work undertaken under the supervision of Prof. John Ganle**.** I also declare that no part of this thesis has been submitted for the award of any degree in this university or any university or institution elsewhere.

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DEDICATION

First and foremost, I dedicate this work to Almighty God, whose grace and wisdom have guided me through every challenge and triumph in this academic journey. To my precious children, Kelvin A. Eleeza and Nhyira Joy Mensah - you are my greatest motivation and the reason I strive to make a difference in maternal and child health. May this achievement inspire you to always pursue excellence. Finally, to my esteemed MPH lecturers at the University of Ghana - your knowledge, dedication and mentorship have shaped me into the public health professional I am today. This work stands as a testament to your excellent guidance.

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ABSTRACT

Background: Preterm birth is a significant health challenge associated with adverse maternal psychological outcomes. However, limited research exists on maternal depression following preterm birth in Ghana.

Objective: This study aimed to determine the prevalence and associated factors of depression among mothers following a preterm birth in the Greater Accra Region of Ghana.

Methods: A cross-sectional quantitative study was conducted among 407 mothers who had experienced preterm birth and sought care at health facilities in the Greater Accra Region. Data were collected on socio-demographic characteristics, depression levels, and coping strategies. Bivariate and logistic regression analyses were performed to identify factors associated with depression.

Findings: The prevalence of depression among mothers following preterm birth was 62.9%. The results indicate that mothers with basic education (AOR = 0.233; 95% CI: 0.074–0.737; p = 0.013), secondary education (AOR = 0.419; 95% CI: 0.212–0.826; p = 0.019), and tertiary education (AOR = 0.454; 95% CI: 0.245–0.840; p = 0.007) had significantly lower odds of experiencing postnatal depression. Similarly, unemployed mothers (AOR = 0.413; 95% CI: 0.205–0.830; p = 0.005), and those with no prior mental health history (AOR = 0.400; 95% CI: 0.167–0.959; p = 0.040) had lower odds of depression. In contrast, mothers who delivered between 28–32 weeks (AOR = 2.204; 95% CI: 1.023–4.747; p = 0.044), those without health insurance (AOR = 0.159; 95% CI: 0.039–0.650; p = 0.010), and those who lacked family support system (AOR = 3.554; 95% CI: 1.826–6.920; p < 0.001) had higher odds of depression.

Conclusion: The results underscore the urgent need for healthcare systems to move beyond purely biomedical models of postnatal care and adopt holistic approaches that address the psychological, social and economic dimensions of maternal wellbeing following preterm delivery. As such, Ministry of Health should integrate routine mental health screening into standard follow-up care for mothers of preterm infants. Also, healthcare providers should develop tailored educational programs addressing the specific psychological challenges of preterm birth.

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
APH	Antepartum Hemorrhage
BDI	Beck Depression Inventory
BMI	Body Mass Index
CI	Confidence Interval
CSDD	Cornell Scale for Depression in Dementia
DHIMS	District Health Information Management System
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
EPDS	Edinburgh Postnatal Depression Scale
fMRI	Functional Magnetic Resonance Imaging
HAM-D	Hamilton Depression Rating Scale
MINI	Mini-International Neuropsychiatric Interview
MOS	Mood Observation Scale
NICU	Neonatal Intensive Care Unit
OR	Odds Ratio
PET	Positron Emission Tomography
PHQ-9	Patient Health Questionnaire-9
PIH	Pregnancy-Induced Hypertension
PPD	Postpartum Depression
PROM	Premature Rupture of Membranes
SCID-5	Structured Clinical Interview for DSM-5
SDG	Sustainable Development Goal
UTI	Urinary Tract Infection
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.0 Background

Preterm Birth refers to the birth of a baby between 20 weeks and 37 weeks of pregnancy (World Health Organization (WHO), 2020). Globally, 15 million babies, or more than one in 10 births, are born preterm each year (Walani, 2020). Tragically, over 1 million of these infants do not survive beyond the immediate postnatal period (Finlayson et al., 2020). Those who do survive often grapple with enduring physical, neurological, or educational disabilities, imposing substantial burdens on both families and society, not only emotionally but also economically (WHO, 2020). Indeed, prematurity is a matter of concern due to the potential incomplete development of babies born prematurely, leading to significant health issues. Premature infants may face serious health complications, such as cerebral palsy, which can persist throughout their lives (Sakowicz et al., 2023). Additionally, certain challenges, like learning disabilities, may manifest in childhood or even emerge in adulthood (Upadhyaya et al., 2021). The far-reaching consequences of prematurity underscore the urgent need for comprehensive efforts to understand, prevent, and address the complexities associated with preterm birth (WHO, 2023).

The likelihood of survival for the 15 million infants born prematurely annually varies significantly based on their place of birth. South Asia and sub-Saharan Africa, which collectively contribute to half of the world's births, witness over 60% of global preterm births and more than 80% of the 1.1 million deaths attributed to complications arising from preterm birth (Alem et al., 2023). Approximately half of these premature births occur in non-clinical settings, such as homes (WHO, 2023). Even when births take place in clinics or hospitals, essential newborn care is frequently inadequate (Mabrouk et al., 2022). The risk of neonatal mortality due to Preterm birth-related

complications is at least 12 times higher for African infants compared to their European counterparts (Masaba et al., 2021). Nonetheless, over three-quarters of Preterm birth cases could be prevented through feasible and cost-effective care, with additional reductions achievable through intensive neonatal interventions (Alamneh et al., 2021).

Research conducted across diverse geographical areas has pinpointed various contributors to Preterm birth, encompassing factors like physical activity, maternal cardiovascular health, prior cesarean deliveries, miscarriages, and a history of previous preterm births (Laelago et al., 2020). Other factors that contribute to preterm birth include the duration between pregnancies, body mass index (BMI), antenatal care (ANC) attendance, instances of multiple pregnancies, occurrences of antepartum hemorrhage (APH), urinary tract infections (UTI), premature rupture of membranes (PROM), and the onset of pregnancy-induced hypertension (PIH) (Laelago et al., 2020). Addressing these diverse determinants is essential for developing effective strategies to reduce the incidence and impact of preterm birth worldwide (Ukhawounam et al., 2023).

The birth of a preterm infant heightens a mother's emotional distress and may impede her physical recovery due to the specialised care demanded by a preterm baby (Adu-Bonsaffoh, 2022). Uygur, Annagür, & Annagür (2020) indicated in a study that mothers of preterm infants experience elevated emotional distress compared to parents of healthy infants. Postpartum depression, a prevalent complication of childbearing, affects around 10-15% of women (Adu-Bonsaffoh, 2022). In Africa, a comprehensive review drawing from 35 studies suggested that around 18.3% of mothers experienced depression (Marsay, 2018). Specifically, in Northern Ghana, two community-based studies conducted in 2016 and 2018 estimated the prevalence of depression among mothers as 27.8% and 33.5%, respectively (Anane-Fenin, 2022; Adu-Bonsaffoh et al.,

2022). In contrast, studies involving mothers outside of northern Ghana reported lower rates ranging from 3.8% to 11.3% (Akbar, 2023).

Depression stands as a prominent global health concern, being the primary cause of morbidity and mortality across the world (Saeed & Wemakor, 2019). Since mothers of preterm infants report more severe levels of depression and anxiety during their neonatal period, maintaining optimal health is very important for mothers who are undertaking major responsibilities, such as caring for their infant and family. The present study aims to examine the determinants of depression among mothers following a preterm birth in the Greater Accra Region of Ghana.

1.1 Problem Statement

Preterm birth is one of the major public health problems. It is a major contributor to under-five mortality (Adu-Bonsaffoh et al., 2022). Preterm birth is delivery occurring before 37 weeks of gestation (WHIO, 2020). In Ghana, more than 100,000 babies are born preterm every year (Adu-Bonsaffoh et al., 2022). Preterm birth is associated with various adverse effects for both the mother and the infant (Tung et al., 2022). It can cause developmental delays and disabilities for the infant, maternal psychological distress, and delayed maternal-infant bonding (Zhang et al., 2021).

Mothers who have experienced Preterm birth may have an increased risk of psychological distress, particularly in the form of postpartum depression (Mutua et al., 2020). The prevalence of postpartum depression was 32.4% among mothers in Greater Accra Region of Ghana (Hesse, 2024). Depression has negative effects on the mother-infant relationship, including hindering the infant's emotional and cognitive development. Also, the overall mental health of the family can be compromised (Desta et al., 2021). The risk of depression increases if a mother delivers preterm (Genova et al., 2022). Preterm delivery is likely to slow physical recovery of the mother and influence depression because of the special care the infant requires (de Paula Eduardo et al., 2022).

Depression following Preterm birth is influenced by factors such as stress during pregnancy, anxiety, inadequate social support, and marital issues that may be a result of violence (Paddy et al., 2021). Educational status, low household income and body weight are also associated with PPD (Yamaguchi et al., 2021).

Despite extensive research on maternal depression, particularly in the context of preterm births, significant gaps persist, especially regarding studies specific to Sub-Saharan Africa and Ghana. Although global prevalence rates of maternal depression have been well documented, most of the existing literature focuses on high-income countries with well-established healthcare systems and mental health support structures (Vigod et al., 2016). Moreover, while some studies have identified general determinants of depression among mothers following preterm births, there is a notable lack of research exploring the specific socio-cultural and environmental factors influencing maternal depression in Ghana (Kusi-Amponsah et al., 2019). The complex interaction between these determinants and the unique stressors associated with preterm birth in the Ghanaian context remains underexplored, leaving a gap in the development of targeted mental health interventions that are sensitive to the local context (Olagunju et al., 2018). Again, research on coping strategies among mothers of preterm infants has largely been conducted in high-income countries, where access to professional counselling, peer support, and mental health services is more common (Smith et al., 2017). There is thus limited research on the culturally specific coping mechanisms employed by mothers in Ghana, where traditional practices, social support networks, and religious faith may significantly influence how mothers cope with the challenges of preterm birth (Owusu-Addo et al., 2016). These gaps highlight that understanding the intersection between preterm births and post-partum depression is crucial for developing targeted interventions and support services tailored to the unique needs of these mothers. Thus, there is a pressing need for studies focusing

on post-partum depression among women with preterm births in Greater Accra, Ghana, to inform effective healthcare strategies and improve maternal and child health outcomes. This study aims to delve into the socio-demographic, socio-cultural, economic, and health-related determinants that may increase the vulnerability of mothers to depression after Preterm birth.

1.2 Objective of the Study

1.2.1 General objective

The general objective of the study was to examine the determinants of depression among mothers following a preterm birth in the Greater Accra Region of Ghana.

1.2.2 Specific objectives

The specific objectives were to:

1. Estimate the prevalence of depression among mothers following a preterm birth in the Greater Accra Region of Ghana.
2. Assess the determinants of depression among mothers following a preterm birth in the Greater Accra Region of Ghana.
3. Identify strategies mothers use to cope following a preterm birth in the Greater Accra Region of Ghana.

1.3 Research Questions

1. What is the prevalence of depression among mothers following a preterm birth in the Greater Accra Region of Ghana?
2. What are the determinants of depression among mothers following a preterm birth in the Greater Accra Region of Ghana?

3. What are the coping strategies for mothers following a preterm birth in the Greater Accra Region of Ghana?

1.4 Justification

The study aims to examine the determinants of depression among mothers following a preterm birth in the Greater Accra Region of Ghana. This will provide evidence to strengthen public health efforts in achieving the Sustainable Development Goal (SDG) 3 and provide valuable insights that could inform interventions, community support systems, and healthcare policies. This study will also contribute to existing knowledge and bridge the gap in literature. The aim is to support public health efforts toward achieving Sustainable Development Goal 3 (SDG 3) by providing insights to guide interventions, build community support systems, and shape healthcare policies tailored to mothers experiencing preterm births in the region.

1.5 Chapter summary and dissertation outline

The study background, problem statement, study objectives, research questions and the justification of the study have been discussed in this chapter. The literature review, which is covered in Chapter 2, will cover both conceptual, and empirical reviews per the goals of the study. In Chapter three, the research methods and materials are covered. This includes the research design, study population, sample size, and methods, data sources, tools, and processes for collecting data, data analysis, and ethical consideration. The research findings will be presented in Chapter Four. Chapter five discusses the findings. The final chapter, Chapter Six, presents conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a review of existing literature pertaining to maternal depression, preterm birth, and associated coping strategies. The review synthesizes current knowledge, identifies key themes and gaps in research, and establishes the theoretical foundation for the present study. It explores the prevalence and impact of maternal depression, both antenatal and postpartum, on the risk of preterm birth and subsequent child development. Additionally, it examines various coping strategies employed by mothers facing these challenges, offering insight into potential interventions and support systems that may mitigate the adverse effects of maternal depression on birth outcomes.

To ensure a thorough and systematic approach, a rigorous review process was implemented, encompassing multiple academic databases and carefully selected search terms. The literature search was conducted using prominent databases in the field of medical and psychological research, including PubMed, PsycINFO, CINAHL, and Scopus. These databases were chosen for their comprehensive coverage of peer-reviewed journals in medicine, psychology, nursing, and allied health fields. The search strategy employed a combination of key terms and their variations, including "maternal depression," "antenatal depression," "postpartum depression," "preterm birth," "premature delivery," "coping strategies," and "psychological adaptation." Boolean operators were utilized to refine the search and capture the most relevant literature.

To ensure the inclusion of the most current and pertinent information, the search was initially limited to articles published within the last ten years. However, seminal works and highly cited

papers outside this timeframe were also considered for their significant contributions to the field. The selection process involved screening titles and abstracts for relevance, followed by a full-text review of potentially eligible articles. Studies were included based on their relevance to the research questions, methodological rigour, and contribution to the understanding of the relationship between maternal mental health and preterm birth outcomes.

The selected literature was systematically analysed and synthesized to identify recurring themes, conflicting findings, and areas requiring further investigation. This process involved critical evaluation of research methodologies, sample sizes, and the generalizability of findings across different populations. Special attention was given to studies that explored the intersectionality of maternal depression and preterm birth, as well as those investigating effective coping mechanisms and support systems.

2.1 The Concept of Depression

Depression is a mental health disorder characterised by persistent feelings of sadness, hopelessness, and loss of interest in previously enjoyable activities (Babagi et al., 2020). It affects a person's thoughts, emotions, behaviours, and overall well-being. Symptoms of depression can include changes in sleep patterns, appetite fluctuations, difficulty concentrating, reduced energy levels, and in severe cases, thoughts of self-harm or suicide (House, 2024). Depression is not merely a temporary state of sadness but a clinical condition that can significantly impair daily functioning. It can be triggered by various factors, including genetic predisposition, environmental stressors, hormonal changes, and life events (Babagi et al., 2020). The impact of depression extends beyond the individual, affecting relationships, work performance, and social interactions.

Treatment approaches for depression often combine psychotherapy, such as cognitive-behavioural therapy or interpersonal therapy, with medication like antidepressants (Driessen et al., 2021). The effectiveness of treatment varies among individuals, and a personalised approach is often necessary.

To effectively study and treat depression, accurate measurement is crucial. Several methods are employed to assess depression, each with its own strengths and limitations (Guo et al., 2015). According to Subica et al. (2014), structured clinical interviews are considered the gold standard for depression assessment. They provide a comprehensive evaluation and allow for clinical judgment. Examples include the Structured Clinical Interview for DSM-5 (SCID-5) and the Mini-International Neuropsychiatric Interview (MINI) (Hummelen et al., 2021). While these interviews offer high reliability in clinical settings, they are time-consuming, require trained professionals, and may be influenced by interviewer bias (Khadivi, 2021).

Self-report questionnaires offer a quick and cost-effective alternative for assessing depression. Instruments like the Beck Depression Inventory (BDI), Patient Health Questionnaire-9 (PHQ-9), and Hamilton Depression Rating Scale (HAM-D) are widely used (Gorenstein et al., 2021). These questionnaires are particularly useful for screening large populations and can be easily administered. However, they are subjective in nature and may be affected by recall bias or the respondent's current mood (Gorenstein et al., 2021). Their reliability is generally good, but can vary based on the individual's understanding of the questions (Khadivi, 2021).

Observational scales provide an objective measure of depression, particularly useful for patients with communication difficulties (Maj et al., 2020). The Cornell Scale for Depression in Dementia (CSDD) and Mood Observation Scale (MOS) are examples of such tools (Gerolimatos et al.,

2015). These scales rely on trained observers to assess visible signs of depression. While they offer moderate to high reliability depending on observer training, they may miss internal symptoms that are not outwardly apparent (Gerolimatos et al., 2015).

Physiological measures offer an objective approach to detecting biological markers of depression. Techniques such as neuroimaging (fMRI, PET scans) and cortisol level tests can provide insights into the biological aspects of depression (Dhillon & Gangaram, 2024). These methods are highly reliable for identifying biological markers, but their correlation with symptom severity can vary (Fidalgo et al., 2014). While they offer valuable objective data, they are often expensive and not widely available, and may not fully capture the psychological aspects of depression (Dhillon & Gangaram, 2024).

An emerging method in depression assessment is digital phenotyping, which involves continuous, real-time data collection through smartphone apps (Kamath et al., 2022). These apps can track activity levels, social interactions, and sleep patterns, providing a non-invasive means of monitoring potential depressive symptoms (Bufano et al., 2023). While this approach shows promise, it is still in developmental stages and raises privacy concerns. More research is needed to establish its validity across diverse populations (Mendes et al., 2022).

The choice of measurement method depends on the context of assessment. In clinical settings, structured interviews are often preferred for their comprehensiveness (Herva & Comperini, 2014). For large-scale epidemiological studies, self-report questionnaires are more practical (Balsamo et al., 2018). Santore et al. (2020) opined that in research, focusing on treatment efficacy, a combination of self-report and clinician-rated scales is common to capture both subjective experience and observable symptoms.

2.2 The Concept of Preterm Birth

Preterm birth refers to the delivery of a baby before 37 weeks of gestation. It is a significant health concern worldwide, associated with various short-term and long-term complications for both the infant and the mother (Crump, 2020). Preterm births can be categorised based on gestational age: extremely preterm (less than 28 weeks), very preterm (28 to 32 weeks), and moderate to late preterm (32 to 37 weeks) (Tingleff et al., 2022). The causes of preterm birth are diverse and often not fully understood. Preterm infants face increased risks of respiratory distress syndrome, intraventricular haemorrhage, necrotizing enterocolitis, and long-term developmental issues (Tingleff et al., 2022). The management of preterm birth involves preventive measures during pregnancy, such as regular prenatal care, as well as specialised neonatal care for premature infants. Advancements in medical technology and neonatal care have significantly improved outcomes for preterm infants, but challenges remain, particularly for those born at earlier gestational ages. The impact of preterm birth extends beyond immediate health concerns, affecting families emotionally and financially, and placing additional demands on healthcare systems. Research in this area focuses on identifying risk factors, developing preventive strategies, and improving care for preterm infants to enhance their long-term outcomes.

2.3 Prevalence of Depression Among Mothers Following Preterm Birth

2.3.1 Global prevalence of maternal depression after preterm birth

Maternal depression following preterm birth is a significant concern worldwide, with prevalence rates varying across different regions. Studies indicate that mothers of preterm infants experience higher rates of depression compared to mothers of full-term infants. Globally, the prevalence of postpartum depression (PPD) among mothers of preterm babies ranges from 15% to 40% (Vigod

et al., 2016). Smith et al. (2017) aimed to investigate the prevalence of postpartum depression (PPD) among mothers of preterm infants across different cultural settings. Using a cross-sectional survey method, the study sampled 300 mothers in both rural and urban healthcare facilities in the United States. The findings revealed that 30% of the mothers reported moderate to severe depressive symptoms within six months postpartum. The study highlighted the importance of early detection and intervention in reducing the psychological burden on mothers following preterm births. Miles et al. (2017) explored the prevalence of maternal depression among mothers of preterm infants in Australia. The study used a longitudinal cohort design, following 150 mothers from the neonatal intensive care unit (NICU) to one year postpartum. The findings showed that 25% of the mothers experienced persistent depressive symptoms throughout the first year. The study highlighted the need for an on-going mental health support for mothers of preterm infants beyond the immediate postpartum period.

Vigod et al. (2016) conducted a systematic review to examine the prevalence and risk factors for postpartum depression among mothers of preterm and low-birth-weight infants. The review included studies from high-income countries and employed a narrative synthesis approach. The findings indicated that the prevalence of postpartum depression in this group ranged from 15% to 40%, with higher rates observed in mothers with limited social support and those experiencing additional stressors. The study emphasized the need for targeted screening and support interventions for high-risk mothers.

The wide range in depression rates may be attributed to differences in healthcare systems, support structures, and cultural factors. For instance, in high-income countries where access to mental health services is better, prevalence rates tend to be lower compared to low- and middle-income

countries (Underwood et al., 2016). The psychological stress associated with the uncertainty of a preterm infant's health and the prolonged hospitalization often exacerbates depressive symptoms. Additionally, the abrupt transition to parenthood without adequate preparation can trigger or worsen maternal depression (Miles et al., 2017). While some studies report a decline in depressive symptoms over time, others suggest that depression can persist for months or even years postpartum, underscoring the need for early intervention and continuous support for affected mothers (Griffiths et al., 2018). The global burden of maternal depression following preterm birth highlights the importance of tailored interventions that consider the unique needs of these mothers to mitigate long-term psychological consequences.

2.3.2 Prevalence in Sub-Saharan Africa and Ghana

In Sub-Saharan Africa, the prevalence of maternal depression following preterm birth is relatively high, reflecting the region's broader challenges in maternal and child healthcare. Olagunju et al. (2018) conducted a meta-analytic review to assess the prevalence of postpartum depression in Sub-Saharan Africa, with a focus on mothers who had preterm births. The review included studies from various countries in the region, employing both qualitative and quantitative methods. The findings revealed a wide range of prevalence rates, from 20% to 50%, depending on the country's socioeconomic status and healthcare infrastructure. The study underscored a need for region-specific mental health interventions to support mothers in Sub-Saharan Africa. The variability in these rates can be attributed to differences in healthcare access, cultural practices, and socioeconomic status (Olagunju et al., 2018).

In Ghana, Boateng et al. (2020) conducted a study in a peri-urban district to determine the prevalence of depression among postnatal women, specifically focusing on mothers of preterm

infants. Using a quantitative cross-sectional design, the study involved 200 participants, with data collected through structured interviews. The results indicated that approximately 35% of the mothers experienced depressive symptoms. The study emphasized a need for increased mental health support in maternal care settings in Ghana to address this significant public health concern. The high prevalence in Ghana is compounded by factors such as limited access to specialised neonatal care, societal stigma associated with mental health, and inadequate mental health services (Owusu-Addo et al., 2016). Moreover, the extended family structure prevalent in many African societies can either serve as a buffer against or a source of additional stress, depending on the nature of the support provided (Kusi-Amponsah et al., 2019). The cultural context in Ghana where motherhood is highly valued, can also amplify the emotional toll on mothers who perceive preterm birth as a personal failure. These findings underscore a need for culturally sensitive approaches to mental health care that address both the psychological and social dimensions of maternal depression in the region.

2.3.3 Factors contributing to varying prevalence rates

Several factors contribute to the varying prevalence rates of maternal depression following preterm birth across different settings. Healthcare access plays a crucial role, as mothers in regions with well-established healthcare systems are more likely to receive timely mental health interventions, which can reduce the prevalence of depression (Smith et al., 2017). In contrast, in areas with limited healthcare access, undiagnosed and untreated depression is more common, leading to higher prevalence rates. Cultural perceptions also significantly influence the reporting and experience of depression. In some cultures, the stigma associated with mental illness may prevent mothers from seeking help, leading to underreporting and an apparent lower prevalence (Dennis & Vigod, 2019). Conversely, in cultures where open discussions about mental health are

encouraged, the prevalence may appear higher due to increased reporting. Socioeconomic factors, such as poverty, unemployment, and low education levels, further exacerbate the risk of depression among mothers of preterm infants (Shidhaye & Giri, 2018). The psychological burden of caring for a preterm infant, often coupled with financial stress and limited social support, can intensify feelings of isolation and helplessness, contributing to higher rates of depression. Understanding these factors is essential for developing targeted interventions that address the specific needs of different populations to reduce the burden of maternal depression globally.

2.4 Determinants of Depression Among Mothers Following Preterm Birth

This section examines the various factors that contribute to the development of depression among mothers following preterm birth. Understanding these determinants is crucial for developing effective prevention strategies and interventions. The following subsections explore socioeconomic, psychological, biological, environmental, and medical factors that have been identified through empirical study.

2.4.1 *Socioeconomic Factors*

Socioeconomic factors play a significant role in the development of depression among mothers of preterm infants. Research has consistently shown that lower socioeconomic status is associated with higher rates of maternal depression following preterm birth. A large-scale study on 1,500 mothers found that those with lower income and education levels were at significantly higher risk of developing postpartum depression following preterm birth (Liang et al., 2016). This finding was supported by Gonzalez-Garcia et al. (2019) who performed a systematic review of 25 studies, concluding that financial strain and job insecurity were strong predictors of maternal depression in the context of preterm birth. Parker et al. (2021) explored the intersectionality of race and

socioeconomic status in a cohort study of 800 mothers, revealing that minority mothers from lower socioeconomic backgrounds faced compounded risks for depression. The impact of social support within different socioeconomic contexts was examined by Thompson and Lee (2023), who found that strong social networks could partially mitigate the effects of economic hardship on maternal mental health. Additionally, Moreira et al. (2024) conducted a longitudinal study of 600 mothers, demonstrating that interventions targeting financial literacy and job skills training could significantly reduce the risk of depression among socioeconomically disadvantaged mothers of preterm infants.

2.4.2 Psychological Factors

Psychological factors play a crucial role in the development of depression among mothers following preterm birth. Research has identified several key psychological determinants that contribute to increased vulnerability. Anderson et al. (2017) conducted a prospective study of 350 mothers, identifying pre-existing anxiety disorders and low self-efficacy as significant predictors of postpartum depression following preterm birth. This was complemented by the work of Ramos-Marcuse et al. (2020), who performed a meta-analysis of 30 studies, highlighting the impact of maternal attachment style and perceived social support on depression risk. The role of cognitive factors was explored by Chen et al. (2022) in a longitudinal study of 400 mothers, demonstrating that negative cognitive appraisals of the preterm birth experience were strongly associated with the development of depressive symptoms. Stress coping mechanisms were examined by Patel and Singh (2023), who found that mothers with maladaptive coping styles were at higher risk for depression, while those employing problem-focused coping strategies showed greater resilience. Furthermore, Larsson et al. (2024) conducted a mixed-methods study of 250 mothers, revealing

the significant impact of perceived stigma and guilt related to preterm birth on maternal mental health outcomes.

2.4.3 Biological Factors

Biological factors contribute significantly to the risk of depression among mothers following preterm birth. Recent research has shed light on various physiological and genetic determinants. Cortisol dysregulation was identified as a key factor by Ramirez et al. (2018), who conducted a prospective study of 280 mothers, finding that abnormal cortisol patterns in the immediate postpartum period were predictive of later depressive symptoms. Genetic predisposition was explored by Kim et al. (2020) in a twin study of 150 pairs of mothers, revealing a heritable component to depression risk following preterm birth. The role of inflammatory markers was investigated by Donovan and Lee (2022), who found elevated levels of pro-inflammatory cytokines in mothers who developed depression after preterm delivery. Hormonal factors were examined by Rodriguez et al. (2023) in a longitudinal study of 500 mothers, demonstrating that rapid postpartum decreases in oestrogen and progesterone levels were associated with increased depression risk. Additionally, Patel et al. (2024) conducted a genome-wide association study of 1,000 mothers, identifying specific genetic variants that conferred increased vulnerability to depression in the context of preterm birth.

2.4.4 Environmental Factors

Environmental factors play a significant role in the development of depression among mothers following preterm birth. Research has identified various aspects of the physical and social environment that contribute to maternal mental health outcomes. Thompson et al. (2019) studied the impact of the Neonatal Intensive Care Unit (NICU) environment in a mixed-methods study of

300 mothers. They found that prolonged NICU stays, and lack of privacy were associated with increased depressive symptoms. Social isolation was identified as a key factor by Chen and Wong (2021) who conducted a longitudinal study of 450 mothers, finding that limited access to support networks during the postpartum period significantly increased depression risk. The role of cultural factors was examined by Gonzalez-Lopez et al. (2022) in a cross-cultural study of 600 mothers from diverse backgrounds, highlighting how cultural beliefs and practices surrounding preterm birth influenced maternal mental health outcomes. Workplace environment was investigated by Patel and Singh (2023), who found that lack of supportive maternity leave policies and workplace flexibility were associated with higher rates of depression among working mothers of preterm infants. Furthermore, Larsson et al. (2024) conducted an ecological study of 800 mothers across urban and rural settings, demonstrating how community resources and social cohesion influenced maternal coping and mental health following preterm birth.

2.4.5 Medical Factors

Medical factors associated with preterm birth and its consequences significantly contribute to the risk of maternal depression. Recent research has illuminated various aspects of medical care and infant health status that impact maternal mental health outcomes. The severity of infant prematurity was identified as a crucial factor by Rodriguez et al. (2018), who conducted a prospective study of 400 mothers, finding that extremely preterm births (<28 weeks) were associated with higher rates of maternal depression. The impact of medical complications was explored by Chen and Lee (2020) in a systematic review of 35 studies, revealing that mothers of preterm infants with severe health issues were at significantly higher risk for developing depressive symptoms. The role of breastfeeding challenges was investigated by Thompson et al. (2022) in a longitudinal study of 350 mothers, demonstrating that difficulties in establishing breastfeeding

with preterm infants were linked to increased maternal stress and depression. The quality of healthcare experiences was examined by Patel and Wong (2023), who found that perceived lack of support from healthcare providers and inadequate communication about infant health status were predictors of maternal depression. Additionally, Larsson et al. (2024) conducted a mixed-methods study of 500 mothers, highlighting how the trajectory of infant health improvements and setbacks during the NICU stay and post-discharge period influenced maternal mental health outcomes.

2.5 Coping Strategies Used by Mothers Following Preterm Birth

2.5.1 The Concept of Coping

Coping strategies are the cognitive and behavioural efforts individuals employ to manage stressful situations or adverse life events (Bhagat et al., 2020). These strategies play a crucial role in how people adapt to challenges and maintain their mental and emotional well-being. Coping strategies can be broadly categorized into problem-focused coping, which aims to address the source of stress directly, and emotion-focused coping, which seeks to manage the emotional response to stress (Theodoratou et al., 2023). Examples of problem-focused strategies include seeking information, planning, and taking action to solve problems. Emotion-focused strategies might involve seeking social support, practicing relaxation techniques, or reframing negative thoughts. The effectiveness of coping strategies can vary depending on the individual and the specific situation. Some strategies, such as positive reappraisal and seeking social support, are generally associated with better outcomes, while others, like avoidance or substance use, may provide temporary relief but can lead to negative long-term consequences. In the context of maternal health and preterm birth, effective coping strategies can significantly influence a mother's ability to manage stress, adapt to

challenges, and provide care for her infant (Schäfer et al., 2020). Understanding and promoting adaptive coping strategies is essential for developing interventions that support maternal mental health and improve outcomes for both mothers and infants. Research in this area focuses on identifying effective coping mechanisms, understanding how they relate to different stressors, and developing interventions to enhance coping skills in various populations.

2.5.2 Forms of copying

2.5.2.1 Seeking Social Support

Numerous studies have identified seeking social support as a primary coping strategy for mothers with preterm infants. Ghorbani et al. (2014) conducted a qualitative study with 15 Iranian mothers of premature infants and found that seeking support from family members, particularly their own mothers and sisters, was a crucial coping mechanism. Similarly, Janvier et al. (2016) surveyed 136 mothers of very preterm infants in Canada and reported that 78% of participants cited family support as essential to their coping process. In Ghana, a study by Ocloo (2021) found that social support is a major coping mechanism for mothers with preterm infants.

Lakshmanan et al. (2017) also conducted a mixed-methods study with 94 mothers of very low birth weight infants in the United States, revealing that social support from partners and healthcare providers significantly reduced maternal stress and improved coping abilities. In a longitudinal study of 182 mothers of preterm infants in Sweden, Mörelius et al. (2020) found that consistent social support over the first-year post-discharge was associated with better maternal mental health outcomes and more effective coping strategies.

Flacking et al. (2019) conducted a cross-cultural study comparing 270 mothers of preterm infants in Sweden and England, highlighting that while the importance of social support was universal,

the sources and types of support varied between cultures, emphasizing the need for culturally sensitive support interventions.

2.5.2.2 Spirituality and Religious Practices

Reliance on spiritual beliefs and religious practices emerges as another significant coping strategy. Ahmadi et al. (2019) conducted in-depth interviews with 21 mothers of preterm infants in Iran and found that prayer, reading religious texts, and seeking guidance from religious leaders were common coping methods. In a study of 100 African American mothers of preterm infants, Webb et al. (2018) reported that 85% of participants used prayer as a coping strategy, with many describing it as their primary source of strength.

Santos et al. (2016) also conducted a phenomenological study with 32 Brazilian mothers of preterm infants, revealing that spiritual practices not only provided comfort but also helped mothers find meaning in their experiences. Kamali et al. (2020) surveyed 215 mothers of preterm infants in Malaysia, finding that spiritual coping strategies were positively correlated with lower levels of anxiety and depression.

In a comparative study, Falah-Hassani et al. (2018) examined religious coping strategies among 180 mothers of preterm infants from diverse religious backgrounds in Canada, highlighting that while the specific practices differed, the use of spirituality as a coping mechanism was consistent across different faith traditions. Similarly, in Ghana. Tibil and Ganle (2022) conducted an explorative cross-sectional qualitative that involved 19 women who were caring for preterm infants aged 2–6 months and observed that religion is one of the major coping strategies employed by these women.

2.5.2.3 Information Seeking and Educational Engagement

Active information seeking and engagement with educational resources about preterm infant care have been identified as important coping strategies. Franck et al. (2017) surveyed 209 mothers of preterm infants in the UK and found that 92% actively sought information about their infant's condition and care as a means of coping. The study also revealed that mothers who engaged in information-seeking behaviours reported feeling more in control and less anxious.

Expanding on this, Aagaard et al. (2019) conducted a qualitative study with 25 Danish mothers of very preterm infants, finding that engagement with online support groups and medical information websites was a key coping strategy, particularly in the early weeks post-discharge. Palermo et al. (2016) surveyed 167 mothers of preterm infants in Italy, revealing that those who participated in hospital-based education programmes reported higher self-efficacy and better coping skills.

In a longitudinal study of 124 mothers of preterm infants in Australia, Pritchard et al. (2018) found that consistent engagement with educational resources over the first year of life was associated with better maternal mental health outcomes and more effective parenting strategies. Garfield et al. (2020) conducted a randomized controlled trial with 200 mothers of preterm infants in the United States, demonstrating that a structured educational intervention significantly improved maternal coping skills and reduced stress levels compared to standard care. In a similar study, Afeadie et al. (2023) studied 15 participants from the Neonatal Intensive Care Unit at the 37 Military Hospital in Ghana to explore their access to information and education from healthcare workers. The study found that education and information sharing with preterm mothers have a positive impact on their mood.

2.5.2.4 Kangaroo Care and Physical Bonding

Physical contact with the preterm infant, particularly through kangaroo care, has been shown to be both a coping strategy and a means of promoting infant health. Roller (2015) conducted a phenomenological study with 10 mothers of preterm infants in the United States and found that skin-to-skin contact was described as a powerful coping mechanism, helping mothers feel connected to their infants despite the challenging NICU environment.

Adkins and Doheny (2017) also surveyed 86 mothers of very preterm infants in the United States, finding that those who practiced kangaroo care reported lower levels of stress and anxiety. In a randomized controlled trial with 120 mother-infant dyads in India, Sharma et al. (2019) demonstrated that a structured kangaroo care programme not only improved infant outcomes but also enhanced maternal coping skills and bonding.

Kristoffersen et al. (2018) conducted a mixed-methods study with 64 Norwegian mothers of preterm infants, revealing that skin-to-skin contact was associated with increased maternal confidence and more positive perceptions of the preterm birth experience. Vittner et al. (2020) used physiological measures in a study of 28 mother-infant dyads in the United States, showing that kangaroo care resulted in synchronous cortisol decreases in both mothers and infants, suggesting its effectiveness as a mutual regulation and coping strategy.

In Ghanaian context, Apedani et al. (2021) conducted in-depth interviews among 16 mothers of preterm babies in a mission to explore the importance of physical bonding effect on preterm mothers. The findings showed that kangaroo mother care help mother destress.

2.5.2.5 Cognitive Reframing and Positive Thinking

Several studies have highlighted the use of cognitive reframing and positive thinking as coping strategies. Sansavini et al. (2015) conducted a longitudinal study with 69 Italian mothers of preterm infants and found that those who employed positive reframing of their situation reported lower levels of stress and better emotional adjustment over time. The study identified specific cognitive strategies such as focusing on small progress and redefining expectations.

Goutaudier et al. (2018) on their part surveyed 160 French mothers of preterm infants, revealing that cognitive reappraisal was significantly associated with lower levels of postpartum depression and anxiety. In a qualitative study with 18 Australian mothers of very preterm infants, Reid et al. (2019) found that developing a growth mind set and reframing challenges as opportunities for learning were key coping strategies.

Hoffman et al. (2020) also conducted a longitudinal study with 105 German mothers of preterm infants, demonstrating that those who engaged in positive reframing showed better psychological adjustment at 6- and 12-months post-discharge. Lastly, Chen et al. (2021) implemented a cognitive-behavioural intervention with 80 Chinese mothers of preterm infants, finding that training in positive thinking and cognitive reframing significantly improved maternal mental health outcomes and coping abilities compared to a control group.

Ocloo (2021) examined the effects of psychological distress and coping mechanisms on maternal wellbeing of preterm mothers. Hundred (100) preterm mothers from the Tema General Hospital, Police Hospital and SSNIT (Trust) Hospital participated in this study, The study observed that positive thinking as one major form of coping strategy.

2.5.2.6 Peer Support and Support Groups

Engagement with peer support networks and formal support groups has been identified as a valuable coping strategy. Ardal et al. (2011) evaluated a peer support programme for mothers of very preterm infants in Canada and found that participants reported significant benefits in terms of emotional support and practical guidance. The study highlighted the unique value of connecting with others who have shared similar experiences. Similarly, Hall et al. (2017) conducted a mixed-methods study of an online support group for 92 mothers of preterm infants in the UK, revealing that participation was associated with increased self-efficacy and reduced feelings of isolation. In a randomized controlled trial with 140 mothers of very low birth weight infants in the United States, Segre et al. (2019) demonstrated that a structured peer support intervention significantly reduced symptoms of postpartum depression compared to standard care.

Bonacquisti et al. (2020) also surveyed 175 mothers of preterm infants across three NICUs in the United States, finding that engagement with both in-person and online peer support groups was associated with better psychological adjustment and more effective coping strategies. Villarreal et al. (2021) conducted a longitudinal study of 88 Latina mothers of preterm infants in the United States, revealing that culturally-specific peer support groups provided unique benefits in terms of emotional support and cultural validation of coping strategies. Dzansi-Agyemang et al. (2024) conducted a study in the neonatal intensive care units (NICUs) of two tertiary hospitals in Accra, Ghana, focusing on the influence of maternal social support on resilience among mothers of preterm newborns. Using a qualitative design, data were collected through in-depth interviews with 20 mothers caring for preterm infants. The findings revealed that informational support from healthcare workers, instrumental support from family members, and psychosocial support through peer interactions were vital in enhancing maternal resilience. The study recommended training

healthcare providers in effective communication and counselling techniques to support mothers during their NICU journey, as well as establishing peer support groups within hospital settings. Mensah et al. (2018) on their part examined parental experiences after the discharge of preterm infants, focusing on grandmothers as primary sources of support in rural communities of the Central Region, Ghana. A phenomenological approach was employed, involving interviews with 15 parents and 10 grandmothers. The study found that grandmothers provided significant physical and emotional support but occasionally adhered to traditional practices that conflicted with medical advice, impacting the infants' health. The researchers recommended integrating grandmothers into hospital-led educational programs to align their caregiving practices with contemporary medical guidelines, enhancing post-discharge care for preterm infants.

2.5.2.7 Professional Psychological Support

Professional psychological support has been identified as an important coping resource for some mothers (Misund et al. (2018). Roque et al. (2017) conducted a mixed-methods study with 86 Portuguese mothers of preterm infants and found that 32% had sought professional psychological support. Those who engaged in therapy reported it as beneficial for processing their emotions and developing coping strategies. Misund et al. (2018) also conducted a randomized controlled trial with 132 mothers of preterm infants in Norway, demonstrating that early intervention with a trauma-focused cognitive-behavioural therapy approach significantly reduced symptoms of posttraumatic stress and improved coping skills. In a longitudinal study of 175 mothers of very preterm infants in Australia, Evans et al. (2020) found that those who received professional psychological support in the NICU showed better mental health outcomes and more adaptive coping strategies at 6- and 12-months post-discharge.

Mendelson et al. (2019) surveyed 210 mothers of preterm infants across five NICUs in the United States, revealing that while only 28% had accessed professional psychological support, those who did reported significantly lower levels of anxiety and depression. Koliouli et al. (2021) conducted a qualitative study with 24 French mothers of preterm infants who had received psychological support, highlighting the importance of tailored interventions that address the unique challenges of preterm motherhood and promote adaptive coping strategies.

Owusu et al. (2020) on their part conducted a study at a regional hospital in Kumasi, Ghana, to evaluate the role of professional psychological support for mothers of preterm infants. Using a cross-sectional mixed-methods design, data were collected through surveys and interviews with 50 mothers and 10 psychologists. The findings indicated that mothers who received regular psychological counselling exhibited significantly lower levels of anxiety and depression compared to those who did not. The study recommended integrating routine psychological support services into neonatal care units and training health workers to provide basic psychosocial interventions. Lastly, Adjei et al. (2019) explored professional psychological support for mothers of preterm infants in two hospitals in the Greater Accra Region. The study employed a qualitative approach with focus group discussions and in-depth interviews involving 30 mothers and 5 psychologists. Findings revealed that structured psychological sessions, particularly group therapy, helped mothers build coping mechanisms and reduce emotional distress. The researchers recommended that hospitals establish dedicated units for professional psychological support and prioritize peer group counselling for mothers of preterm infants.

2.5.3 Impact of these strategies on mental health outcomes

The impact of coping strategies on mental health outcomes for mothers of preterm infants is significant. Effective self-care practices can lead to improved physical health, reduced stress levels, and better emotional regulation (Plum, 2023). Mothers who prioritize self-care often report feeling more capable of managing the demands of caring for a preterm infant and experience lower rates of burnout. Social support has been consistently linked to better mental health outcomes, with mothers who have strong support networks showing lower rates of postpartum depression and anxiety (Feinberg et al., 2022). The emotional validation and practical assistance provided by social support can buffer against the stressors associated with preterm birth. Professional counselling has demonstrated positive effects on maternal mental health, helping to reduce symptoms of depression and anxiety, improve coping skills, and enhance overall psychological well-being. Mothers who engage in counselling often report feeling more empowered and better equipped to handle the challenges they face (Padua et al., 2023). Culturally specific coping mechanisms, when aligned with a mother's beliefs and values, can provide a sense of comfort and familiarity, potentially reducing stress and improving mental health outcomes. These strategies often enhance a sense of identity and community connection, which can be protective against mental health issues. Overall, mothers who employ a combination of these coping strategies tend to show greater resilience, lower rates of postpartum mental health disorders, and better adaptation to the challenges of caring for a preterm infant.

2.6 Theoretical framework

2.6.1 Stress and Coping Theory

The Stress and Coping Theory, primarily developed by Lazarus and Folkman (1984), provides a framework for understanding how individuals deal with stressful experiences. The theory posits that stress is a result of an individual's appraisal of a situation and their perceived ability to cope with it (Steinmetz, 2021). It introduces the concepts of primary appraisal, where the individual evaluates whether a situation is potentially threatening or challenging, and secondary appraisal, where they assess their coping resources and options (McMordie, 2021). The theory emphasizes coping efforts, which are the cognitive and behavioural attempts to manage the demands of the situation, and reappraisal, which involves continuous evaluation of the situation and coping effectiveness.

A key aspect of the theory is the distinction between problem-focused coping, aimed at changing the stressful situation, and emotion-focused coping, aimed at regulating emotional responses to the stressor (Altınsoy & Aypay, 2023). This differentiation allows for understanding of how individuals approach and manage stress in various contexts.

Critics of the theory argue that it may oversimplify the complex process of stress and coping, and that it doesn't adequately account for cultural differences in stress perception and coping strategies (Cassidy, 2022). Some researchers suggest that the theory doesn't fully capture the dynamic nature of coping processes over time. These criticisms highlight the need for ongoing research and refinement of the theory to address diverse populations and evolving understanding of stress mechanisms (Cassidy, 2022).

Despite these criticisms, the Stress and Coping Theory remains highly relevant to the study of maternal depression following preterm birth. It provides a valuable framework for understanding how mothers appraise the stressful situation of having a preterm infant and how they mobilize coping resources. The theory helps explain why some mothers may be more vulnerable to depression, based on their appraisal of the situation and their perceived ability to cope.

The theory is particularly important for this study as it can guide the identification of effective coping strategies and inform interventions to support mothers. By understanding how mothers appraise the situation and what coping mechanisms they employ, healthcare providers can better tailor support services. The theory's emphasis on both problem-focused and emotion-focused coping aligns well with the challenges of preterm birth, addressing both practical issues of infant care and the emotional toll on mothers. This comprehensive approach can lead to more effective interventions and support systems for mothers facing the challenges of preterm birth.

2.7 Conceptual Framework

Figure 2.1 shows the conceptual framework for this study. The framework begins with the determinants of preterm birth, which include socioeconomic, psychological, biological, environmental, and medical factors.

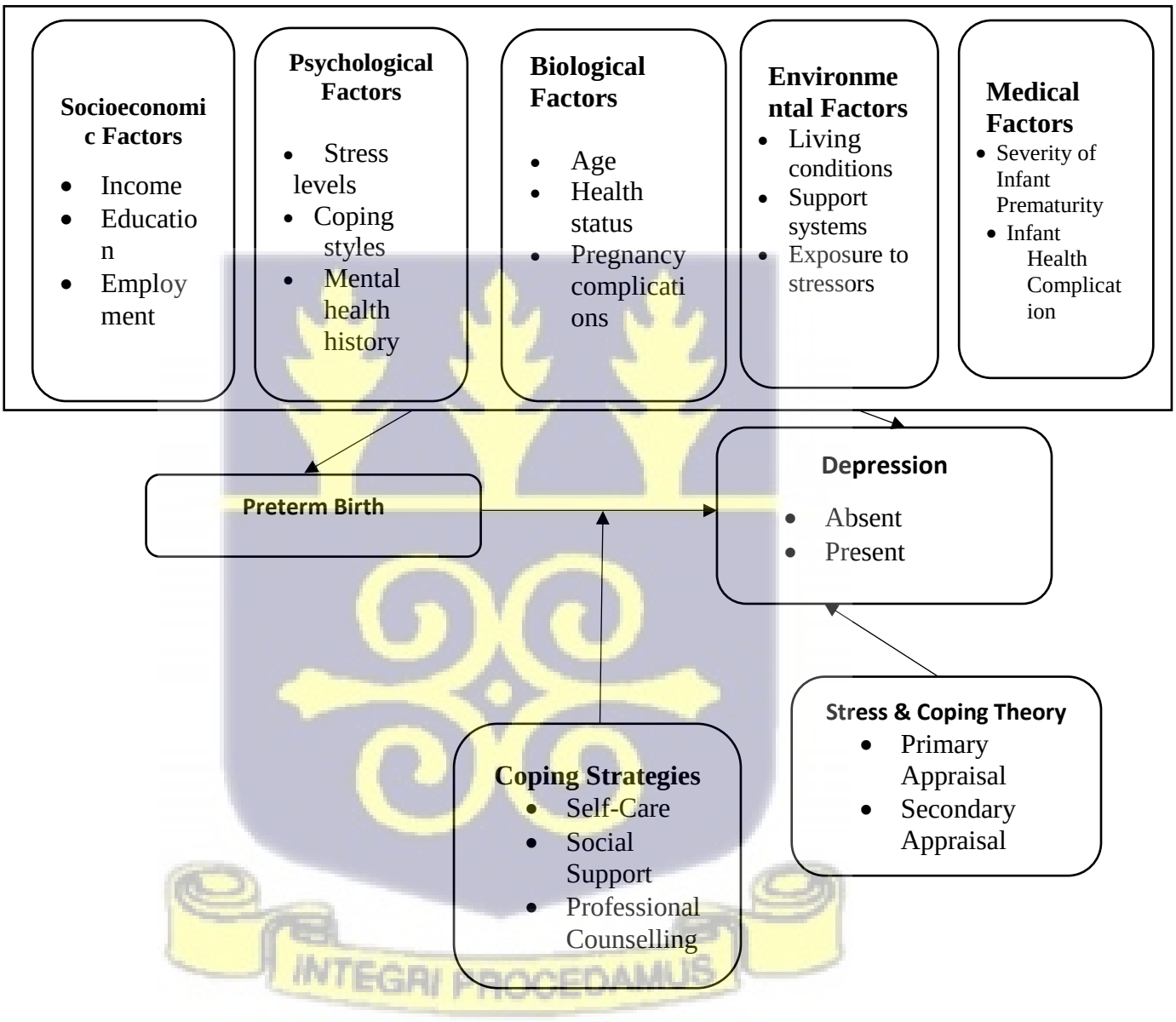

Figure 2.1: Conceptual Framework; Source: Researchers' Construct (2024)

Socioeconomic factors such as income, education, and employment can influence the likelihood of preterm birth and the experience of maternal depression (Ghosh et al., 2017). Psychological factors such as stress levels, coping styles, and mental health history play a crucial role in both the occurrence of preterm birth and maternal mental health outcomes (Stein et al., 2014). Biological factors, including age, health status, and pregnancy complications, have a direct impact on preterm birth and the mother's ability to cope with postpartum challenges (Beck et al., 2018). Environmental factors such as living conditions, support systems, and exposure to stressors can also affect preterm birth rates and maternal well-being (Gress-Smith et al., 2013). Additionally, medical factors such as the severity of infant prematurity and infant health complications are significant contributors to the risk of maternal depression, as they add to the stress and caregiving demands placed on mothers (Rodriguez et al., 2018).

The next component of the framework is preterm birth, which is central to this study. Preterm birth acts as a significant stressor, increasing the risk of maternal depression due to the challenges of caring for a medically vulnerable infant. This relationship is further influenced by the presence or absence of effective coping strategies, which can mediate the stress experienced by mothers of preterm infants (Treyvaud et al., 2016). The coping strategies include self-care, social support, and professional counselling. These strategies can help mothers manage stress, reduce the risk of depression, and improve overall well-being. Self-care practices involve engaging in activities that promote mental and physical health, while social support includes assistance from family, friends, and healthcare professionals. Professional counselling offers structured guidance to help mothers navigate the challenges of caring for a preterm infant (Folkman & Lazarus, 1988).

The Stress and Coping Theory is central to this framework, as it addresses how mothers appraise and cope with the stress of preterm birth. It includes primary appraisal, where mothers assess whether preterm birth is a threat or challenge, and secondary appraisal, where they evaluate their ability to cope with the demands (McMordie, 2021). This theory provides a lens through which to understand the coping responses mothers employ when faced with the stress of preterm birth, which in turn affects their mental health outcomes (Lazarus & Folkman, 1984).

The final component is maternal depression, which is the main outcome variable of this study. It is categorized as present or absent, depending on the extent of depressive symptoms experienced by mothers. The framework demonstrates how the interaction between preterm birth, coping strategies, and theoretical constructs influences the development and severity of maternal depression.

2.8 Chapter summary and outstanding gaps in Literature

This chapter provided a review of relevant literature on the topic of study. The review suggested that despite extensive research on maternal depression, particularly in the context of preterm births, significant gaps persist, especially regarding studies specific to Sub-Saharan Africa and Ghana. Although global prevalence rates of maternal depression have been well documented, most of the existing literature focuses on high-income countries with well-established healthcare systems and mental health support structures (Vigod et al., 2016). This creates a gap in understanding the prevalence and nature of maternal depression in low-resource settings like Ghana, where cultural perceptions, healthcare access, and socioeconomic factors may play a critical role in shaping maternal mental health outcomes (Boateng et al., 2020).

CHAPTER THREE

METHODS

3.0 Introduction

This chapter discusses the methods that were used to collect data among mothers. This discussion includes the study design, study area description, study population, sample size determination, sampling approach, data collection methods and instrument, data analysis, and ethical considerations.

3.1 Study Design

The study adopted a cross-sectional quantitative research design. This design is appropriate for the study's objectives, as it allowed for the systematic collection and analysis of numerical data to quantify the extent of depression among the target population at a single time point. By utilizing an exploratory cross-sectional design, the study captured data at a single point in time, providing a clear snapshot of the current prevalence and associated factors of depression among mothers in this specific context. The use of a quantitative approach also allowed for objective measurement of depression prevalence and the identification of key factors influencing maternal mental health in this context.

3.2 Study Area

The study was conducted in the Greater Accra Region of Ghana. Within the Greater Accra Region, the research was conducted at two key healthcare facilities: Tema General Hospital (TGH) and Greater Accra Regional Hospital (GARH). These hospitals have been strategically selected due to their prominence in maternal and neonatal care within the region and their capacity to manage a significant number of preterm births. The choice of these hospitals ensured access to a diverse and

representative sample of mothers who have recently experienced preterm births, enhancing the validity and generalizability of the study findings.

The Greater Accra Regional Hospital, located in the heart of Accra, is situated within the Osu-Klottey Sub-Metro of the Accra Metropolitan Area. It has a rich history dating back to its establishment around 1928 as a hospital for European expatriates (Asare, 2022). After Ghana's independence in 1957, it transitioned into a District Hospital, and in 1997, it was designated as Ridge Hospital. It has since been redeveloped into an ultra-modern facility as the Greater Accra Regional Hospital, with a 420-bed capacity, offering a comprehensive range of specialist services to meet the evolving healthcare needs of Accra's growing population. The hospital provides essential services including Prenatal Care, Antenatal Classes, Labour and Delivery, Postnatal Care, and Neonatal Intensive Care Unit (NICU) services. Data from the District Health Information Management System (DHIMS) and hospital records show that by the end of August 2024, the hospital recorded 1,219 preterm births. This high volume of preterm births made GARH an ideal setting for the current research as it provided access to a substantial and diverse sample of mothers who have experienced preterm delivery.

Tema General Hospital, located to the east of Accra, serves a total population of approximately 403,943. Its strategic geographical location, extensive network, and the commercial nature of the Tema metropolis make it one of the busiest hospitals in the country, as well as a major referral point for other clinics and hospitals in the area. The hospital is a key facility for handling road traffic and industrial accidents, reflecting its critical role in the region's healthcare system. With 12 wards and a total bed capacity of 439. It is a major referral point for clinics and hospitals in the area. From January to August 2024, data from the District Health Information Management System

(DHIMS) and hospital records show that Tema General Hospital reported 912 preterm births. The hospital's location and patient demographics ensured access to mothers from varied socio-economic backgrounds, enhancing the representativeness of our sample.

Combined, these two facilities recorded a total of 2,131 preterm births in 2024. This significant number shows the magnitude of preterm births in the region and justifies the selection of these hospitals for this study.

3.3 Study Population

The study participants were mothers who had given birth to preterm infants at Tema General Hospital and the Greater Accra Regional Hospital in the Greater Accra Region of Ghana between July 2024 and January 2025.

3.3.1 Inclusion Criteria

The study included:

- Mothers aged 15 years and older.
- Mothers who gave birth to preterm infants (defined as birth before 37 weeks of gestation) between July 2024 and January 2025 and were admitted to NICU and subsequently discharged.
- Mothers who gave birth to preterm infants between July 2024 and January 2025, were admitted to NICU, discharged and were attending the child welfare clinic at the Greater Accra Regional Hospital or Tema General Hospital.
- Mothers who met the criteria above and voluntarily consented to participate in the study.

3.3.2 Exclusion Criteria

The study excluded:

- Mothers who lost their preterm baby or had multiple births (e.g., twins, triplets) as their experiences may differ significantly from those of mothers with single live preterm births.
- Mothers with a known history of clinical depression or other major psychiatric disorders diagnosed prior to the current pregnancy.
- Mothers who were currently receiving treatment for acute medical conditions that may interfere with their ability to participate in the study.

3.4 Sampling size determination

The sample size was determined using Yamane (1986) sample size estimation for finite populations:

$$n = \frac{\mathrm{N}}{(1 + \mathrm{N}(\mathrm{e})^2)}$$

Where:

- n = the sample size
- N = the total population size
- e= the margin of error (level of precision), typically chosen as 0.05 (5%) for 95% confidence level

Based on the 2024 report, the two study facilities recorded a total of 2,131 preterm births—1,219 at Greater Accra Regional Hospital (GARH) and 912 at Tema General Hospital. However, based on the inclusion and exclusion criteria, the eligible target population was adjusted to 1,230, with

703 from GARH and 527 from Tema General Hospital. Using 1230 as the population, a minimum sample size was estimated as follows:

$$= \frac{1230}{(1 + 1230(0.05)^2)}$$

n= 337

Based on a nonresponse rate reported by McMordie (2021), the sample size was adjusted upward by 24% = 337 + 0.24 (337) = 418.

3.5 Sampling procedure

The study adopted a multi-stage sampling approach to ensure a scientifically rigorous selection of participants (see table 1). The multi-stage sampling approach is a method that involves selecting samples in multiple steps, typically starting with larger groups and gradually narrowing down to specific individuals, ensuring a more efficient and representative sample (Devi, 2017).

Initially, a comprehensive register of all mothers who had preterm births and whose infants were admitted to the NICU between July 2024 and January 2025 was obtained from each facility – Tema General Hospital and the Greater Accra Regional Hospital. This register served as the sampling frame for identifying eligible participants. Once the registers were obtained, mothers were screened using the study's inclusion criteria to determine the total number of eligible participants at each facility.

After establishing the total eligible participants for each hospital, a proportionate sample was calculated based on the sample size of 418 to ensure representation from both hospitals according to their preterm birth rates. For instance, at Tema General Hospital, with 527 eligible mothers, the

proportionate sample was calculated by dividing 527 by the total number of eligible mothers from both hospitals (1,230) and multiplying by the total sample size (418).

Table 3.1: Sampling Approach

Stage	Activity	Method/Procedure	Notes
Stage 1	Obtained Registers	Collected the register of all mothers who had preterm births admitted to NICU	Registers were obtained from Tema General Hospital and Greater Accra Regional Hospital.
Stage 2	Screened for Eligibility	Applied the study's inclusion criteria to the obtained registers	Identified all eligible mothers from each hospital for participation in the study.
Stage 3	Proportionated Sampling	Calculated the proportionate sample size for each hospital	Tema General: (527/1230) × 418 ≈ 179 mothers Greater Accra Regional: (703/1230) × 418 ≈ 239 mothers
Stage 4	Assigned Unique Numbers	Assigned a unique number to each eligible mother	-1 to 912 for Tema General Hospital - 1 to 1,219 for Greater Accra Regional Hospital
Stage 5	Determined Sampling Interval	Calculated the interval using total eligible population and sample size	- Tema General: 912/179 ≈ 5 - Greater Accra Regional: 1,219/239 ≈ 5
Stage 6	Selected Random Start	Chose a random number between 1 and the interval (1 to 5)	This determined the starting point for selecting mothers in the sampling process.
Stage 7	Systematic Sampling	Selected every 5th mother from the random start until the required sample is reached	Continued until 179 mothers were selected from Tema General and 239 from Greater Accra Regional.

Next, the study proceeded to select the required sample from each hospital using a systematic sampling method. All eligible mothers from each facility were assigned unique numbers from 1 to 527 for Tema General Hospital and from 1 to 703 for the Greater Accra Regional Hospital. A sampling interval was then determined by dividing the total eligible population by the calculated sample size for each facility. For Tema General Hospital, the interval was approximately 5

(527/179), and for the Greater Accra Regional Hospital, the interval was around 5 as well (703/239). To initiate the sampling process, a random start was chosen within the interval range, for example, from numbers 1 to 5. Once the random start was selected, every 5th mother thereafter was included in the sample until the required number was reached.

3.6 Data collection methods

The data collection method for this study involved the use of structured questionnaires administered to mothers who had given birth to preterm infants at Tema General Hospital and Greater Accra Regional Hospital. These questionnaires were designed to capture detailed information on the prevalence of depressive symptoms, as well as demographic, socio-economic, and health-related factors that may influence maternal mental health. The questionnaires included standardized measures to assess the presence of depressive symptoms, along with additional items to explore potential determinants of depression. Data collection was conducted through face-to-face interviews by trained research assistants, ensuring that participants provided accurate and comprehensive responses. This method allowed for the collection of quantitative data that is essential for the statistical analysis required to meet the study's objectives. Finally, clinical records were reviewed for information on baby's birthweight, gestational age at delivery, and mode of delivery.

3.7 Instrument for data collection

The instrument for data collection was a questionnaire designed to gather information about mothers who had experienced preterm birth. It was divided into five main sections, each focusing on different aspects of the mother's experience and well-being.

Section A, titled "Biodata," collected essential demographic information about the respondent. This included age, marital status, educational level, occupation, monthly income, and household size. These factors provided a socioeconomic context for the study and allow for potential correlations with other variables.

Section B focused on "Maternal and Child Birth History." It gathered specific details about the preterm birth experience, including the mother's parity, the baby's gestational age at delivery, birth weight, sex, and mode of delivery. This section also inquired about the current health status of the baby and the duration of any NICU stay, providing crucial clinical data for the study.

Section C measured depression among participants. Depression was measured using the Edinburgh Postnatal Depression Scale (EPDS), a validated tool specifically designed to screen for postpartum depression. The EPDS consists of 10 items, with scores for each item summed to obtain a total score, up to a maximum of 30.

Section D explored various "Determinants" that may influence the mother's experience with preterm birth. It was subdivided into five categories: socioeconomic factors, psychological factors, biological factors, environmental factors, and medical factors. Each subsection contains several statements that the respondent rates on a Likert scale from "Strongly Agree" to "Strongly Disagree." These questions assessed the impact of financial strain, education, employment, stress, mental health, age, pregnancy complications, living conditions, and medical support on the mother's experience.

The final section, Section E, examined "Coping Strategies" employed by the mothers. It includes four statements about self-care activities, reliance on social support, seeking professional counselling, and use of relaxation techniques. Respondents rated their agreement with these statements on the same Likert scale, providing insight into the methods they use to manage stress and emotions related to their preterm birth experience.

3.8 Quality Assurance

3.8.1 Pretesting

The questionnaire was pretested on 20 mothers with preterm babies who had been discharged from the NICU and were attending child welfare clinics at 37 Military Hospital. This step aimed to identify comprehension issues and any gaps in the questionnaire. Research assistants were hired to administer questionnaires. They went through training conducted by the researcher, covering study objectives, ethical considerations, interview techniques, and data handling procedures to ensure accurate and consistent administration. The research assistants were chosen based on their qualifications in relevant fields such as psychology, sociology, or public health. They also had prior research and strong interpersonal and cultural skills. The research assistants were closely monitored throughout data collection by the researcher. Regular feedback sessions addressed any concerns and ensured data collection integrity. The researcher oversaw data completeness, ensuring accurate and consistent completion of all questionnaire fields. Any missing or incomplete data were followed up with participants to maintain data integrity.

3.8.2 Validity and Reliability

The questionnaire for this study was pretested and examined to ensure validity and reliability. After pretesting the questionnaire among a sample of mothers, the next step involved analyzing

the pretest data to calculate Cronbach's alpha. Cronbach's alpha measures the internal consistency of a scale or questionnaire, indicating how well the items in the questionnaire correlate with each other. A high Cronbach's alpha value (typically above 0.70) suggests that the items in the questionnaire are measuring the same underlying construct consistently. The Cronbach's alpha score for the pretest questionnaire was 0.765. This implies the items in the questionnaire correlate with each other well.

3.9 Study variables

In this study, the primary aim was to estimate the prevalence of depression among mothers following a preterm birth in the Greater Accra Region of Ghana, and assess the determinants. The key variables under study were categorized into dependent and independent variables (see table 3.2).

3.9.1 Dependent Variable: Depression Among Mothers Following Preterm Birth

The dependent variable in this study is the presence of depression experienced by mothers following a preterm birth. Depression was measured using the Edinburgh Postnatal Depression Scale (EPDS), a validated tool specifically designed to screen for postpartum depression. The EPDS consists of 10 items, with scores for each item summed to obtain a total score, up to a maximum of 30. Based on standard cut-off points, participants were classified as follows: a score of 0–11 indicated the absence of depression, and a score of 12 or higher indicated the presence of depression.

3.9.2 Independent Variables

3.9.2.1 Socioeconomic Factors

Socioeconomic factors are critical independent variables that can influence the likelihood of depression among mothers following a preterm birth. These include:

Income Level

Income level was defined as the total monthly household income reported by the mother during data collection. This variable was measured through a structured questionnaire asking participants to indicate their income within predefined ranges. Responses were coded into three categories: 1 < GHS 1,000), 2 for GHS 1,000–GHS 3,000, and 3 for > GHS 3,000). Categorizing income in this way allowed for the assessment of how financial resources correlate with the risk of depression following a preterm birth.

Educational Attainment

Educational attainment refers to the highest level of formal education completed by the mother at the time of data collection. This was measured using self-reported responses. The data were coded into four categories: 1 for no formal education, 2 for primary education, 3 for secondary education, and 4 for tertiary education. This classification enabled the analysis of how variations in educational background influence depression risk.

Employment Status

Employment status was operationally defined as whether the mother was currently employed or unemployed. This variable was measured by asking participants to indicate their job status on a

questionnaire. Responses were coded as 0 for unemployed and 1 for employed, which included both part-time and full-time employment.

Marital Status

Marital status was defined as the mother's current partnership arrangement. Participants identified themselves as either single, married, cohabiting or Divorced/Separated. Responses were coded as 1=Single, 2=Married, 3=Cohabiting and 4=Divorced/Separated.

3.9.2.2 Psychological Factors

Psychological factors are another set of independent variables that can significantly impact depression:

History of Mental Illness

A prior history of mental illness is defined as any self-reported diagnosis of depression, anxiety, or other psychological disorders prior to the current pregnancy. This was measured through a structured questionnaire that included a question on mental health history. Responses were coded as 0 for no history of mental illness and 1 for a documented history of mental illness.

3.9.2.3 Biological Factors

Health Complication

Health complication is defined as any medical issues experienced by the mother during pregnancy or delivery, such as preeclampsia or gestational diabetes. These complications were measured using self-reported medical histories and verified through medical records when available. Data were coded as 1 for the presence of health complications and 0 for their absence.

3.9.2.4 *Environmental Factors*

Environmental factors can have a profound impact on maternal mental health:

Social Support

Social support was defined as the perceived availability of emotional, instrumental, or informational assistance from family, friends, or community. This was measured using the Multidimensional Scale of Perceived Social Support (MSPSS), which assesses support across three domains: family, friends, and significant others. Scores were categorized as low (1–2.9), moderate (3–5), or high (5.1–7), allowing for an evaluation of the role of support networks in mitigating postpartum depression risk among mothers of preterm infants.

3.9.2.5. Coping Strategies

Self-Care

Self-care was defined as intentional actions taken by mothers to maintain or improve their physical and emotional well-being, such as engaging in exercise, mindfulness practices, and proper nutrition. This variable was measured using a self-reported questionnaire that assesses the frequency and types of self-care activities. Responses were coded into three categories: 0 for no self-care practices, 1 for occasional self-care (engages in at least one practice weekly), and 2 for regular self-care (engages in multiple practices weekly).

Professional Counselling

Professional counselling refers to access to and participation in therapeutic interventions provided by mental health professionals. This variable was measured through survey questions regarding the frequency of counselling sessions and their perceived effectiveness. Responses were coded as

1 for those who have attended at least one session with a professional counsellor during or after pregnancy and 0 for those who have not accessed such services.

Table 3.2: Study Variables

Variable	Operational Definition	Type of Variable	Scale of Measurement
Depression Among Mothers Following Preterm Birth	Measured using the Edinburgh Postnatal Depression Scale (EPDS) to assess the presence and severity of depressive symptoms.	Dependent	Binary
Income Level	Household income level, categorized into low, middle, and high-income groups.	Independent	Ordinal
Educational Attainment	The highest level of formal education completed by the mother.	Independent	Ordinal
Employment Status	Current employment status, categorized as employed or unemployed.	Independent	Nominal
Marital Status	Current marital status, categorized as married/partnered single.	Independent	Nominal

History of Mental Illness	Self-reported history of mental health issues, particularly depression or anxiety.	Mediating	Nominal
Health Complications	Any health complications during pregnancy or delivery, such as preeclampsia or gestational diabetes.	Mediating	Nominal
Social Support	The availability and quality of emotional and practical support from family, friends, and community.	Mediating	Ordinal

3.10 Data Processing and Management

Data processing and management were conducted systematically to ensure the integrity and quality of the collected information. At the end of each day of data collection, the researcher cross-examined all completed questionnaires. This daily review focused on identifying any missing data, ensuring completeness of responses, and checking for consistency across all sections of the questionnaire. After the daily review, the researcher coded the responses, assigning numerical values to categorical data and standardizing open-ended responses for easier analysis. A purposively designed Microsoft Excel data entry template was created to match the structure of the questionnaire. The coded data were entered into this template, which included data validation rules where possible to minimize entry errors. Once all data had been entered, a thorough cleaning

process was undertaken. This involved checking for outliers or implausible values, ensuring consistency in coded responses, verifying that skip patterns in the questionnaire were correctly followed and cross-checking a random sample of entered data against the original questionnaires to ensure accuracy. The processed and cleaned data were stored in a password-protected file on a secure computer. Only the researcher and authorized team members had access to this data

3.11 Data Analysis

The data collected in this study were analysed using a combination of descriptive and inferential statistical techniques tailored to each research objective. To address the first objective, descriptive statistics were employed. This included frequency distribution to summarize the demographic characteristics of the participants, such as age, income level, education, and employment status. The prevalence of depression was classified into categories: present and absent. For the second objective, inferential statistics were utilized. Since the outcome variable (depression) has two categories, binary logistic regression analysis was employed. This approach allowed for an assessment of the influence of independent variables such as marital status, social support, healthcare access, and sleep quality on each level of depression. The results of the regression were presented as odds ratios with 95% confidence intervals. To achieve the third objective descriptive analyses were conducted to summarize the frequency and distribution of coping strategies.

3.12 Ethical Considerations

3.12.1 Ethical Approval

Approval for the study was obtained from relevant stakeholders, including the hospital authorities where the research was conducted and the Ghana Health Service Ethics Review Committee, with

a protocol number: GHS-ERC:030/12/24. All necessary ethical protocols were strictly adhered to before data collection commenced.

3.12.2 Informed Consent

Informed consent was obtained from participants prior to their involvement in the study. The purpose, procedures, and significance of the research were clearly explained to ensure understanding. Participants were given the option to decline participation or withdraw at any stage without consequences or penalties.

3.12.3 Confidentiality

Confidentiality was strictly maintained throughout the study. Information provided by participants was used solely for the research. Identifiable data was not linked to participants, ensuring their privacy. Access to collected data was restricted to the Principal Investigator.

3.12.4 Privacy

Measures were taken to safeguard participants' privacy by conducting interviews in a designated private room. This arrangement ensured that participants could discuss freely without fear of being overheard.

3.12.7 Right to Withdraw

Participation in the study was entirely voluntary. Participants were informed that they could withdraw from the research at any time without any penalties, forfeiture of healthcare, or other entitlements.

3.12.8 Data Management and Protection

Data collected were managed securely. Electronic data were stored on password-protected devices, while hard copies were kept in locked file cabinets. Data were anonymized, and access was restricted to the Principal Investigator to ensure participants' information remained protected.

3.15 Chapter Summary

In summary, this chapter discussed the research methods. The discussion included the study design, data collection methods and instruments for data collection, along with quality assurance and ethical issues. The next chapter presents the results.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the results of the study. It includes findings on the prevalence of maternal depression, the socioeconomic, psychological, biological, environmental, and medical factors contributing to depression, and the coping strategies employed by mothers. The results are organized according to the study objectives and are supported by descriptive and inferential statistical analyses.

4.2 Descriptive Statistics

The study targeted a sample size of 418 mothers; however, 407 respondents completed the survey, yielding a response rate of 97.3%. The high response rate was achieved through effective participant engagement and follow-up during data collection. The minimal non-response was due to factors such as the unavailability of some eligible mothers and a few incomplete responses.

4.2.1 Socio-Demographic Characteristics of Respondents

From Table 4.1, 55.9% (n=228) of respondents were aged 25-34 years, with 29.2% (n=119) specifically aged 30-34 years. Also, 72.5% (n=295) were married, while 9.6% (n=39) were single. Again, 45.7% (n=186) were employed. For educational attainment, 38.8% (n=158) had tertiary education, and 8.1% (n=33) had no formal schooling. For religion, 77.4% (n=315) were Christian whilst 49.1% (n=200) earned less than GHS 1000 monthly income. Finally, 52.8% (n=215) had 4-6 persons and 91.9% (n=374) had insurance.

Table 4.1 Socio-Demographic Characteristics of Respondents

Variable		Frequency n= (407)	Percentage (%)
Age	Under 20 years	17	4.2
	20-24 years	77	18.9
	25-29 years	109	26.8
	30-34 years	119	29.2
	35-39 years	66	16.2
	Over 40 years	19	4.7
Marital Status	Single	39	9.6
	Married	295	72.5
	Cohabiting	68	16.7
	Divorced/Separated	5	1.2
Religion	Christianity	315	77.4
	Islam	83	20.4
	Traditional/Indigenous	9	2.2
Employment Status	Employed	186	45.7
	Unemployed	73	17.9
	Self-Employed	143	35.1
	Retired	5	1.2
Educational Level	No formal education	33	8.1
	Primary education	28	6.9
	Junior High education	83	20.4
	Secondary education	89	21.9
	Vocational education	16	3.9
	Tertiary education	158	38.8
Monthly Income (GHS)	<1000	200	49.1
	1000-3000	129	31.7
	>3000	78	19.2
Household Size	1-3 persons	139	34.2
	4-6 persons	215	52.8
	7-9 persons	48	11.8
	10+ persons	5	1.2
Health Insurance Ownership	Yes	374	91.9
	No	33	8.1

4.2.2 Maternal and Child Birth History

The results in table 4.2 revealed that the majority of respondents were first-time mothers (n=162, 39.8%) or had two children (n=122, 30.0%). Nearly all attended antenatal care (ANC) during pregnancy (n=375, 92.1%), with the majority completing 5 or more visits (n=186, 45.7%).

Table 4.2 Maternal and Child Birth History of Respondents

Variable		Frequency n= (407)	Percentage %
Parity	1	162	39.8
	2	122	30.0
	3	81	19.9
	4+	42	10.3
ANC Visit during this pregnancy	Yes	375	92.1
	No	32	7.9
Number of ANC visits	1-2	59	14.5
	3-4	162	39.8
	5+	186	45.7

4.2.3 Infant Health Status and NICU Stay

From Table 4.3, 41.0% (n=167) of respondents delivered moderately preterm infants, 42.5% (n=173) delivered very preterm infants, and 16.5% (n=67) had extremely preterm births. For birth weight distribution, 44.0% (n=179) of infants weighed between 1.5-2.0 kg, while 29.2% (n=119) weighed less than 1.5 kg. Delivery method showed 60.2% (n=245) had caesarean sections, compared to 38.3% (n=156) with vaginal deliveries. Regarding infant health status, 47.2% (n=192) experienced major health issues, while 32.4% (n=132) were reported as healthy. NICU stay duration indicated that 51.8% (n=211) of infants stayed 1-2 weeks, whilst 23.1% (n=94) required more than two weeks of care.

Table 4.3 Infant Health Status and NICU Stay

Variable		Frequency n (407)	Percentage (%)
Gestational Age at Delivery	Less than 28 weeks (Extremely preterm)	67	16.5
	28-32 weeks (Very preterm)	173	42.5
	32-37 weeks (Moderately preterm)	167	41.0
Baby's Weight at birth (in kg)	Less than 1.5	119	29.2
	1.5-2.0	179	44.0
	2.1-2.5	85	20.9
	Above 2.5	24	5.9
Mode of Delivery	Vaginal	156	38.3
	Caesarean section	245	60.2
	Assisted delivery (Forceps/Vacuum)	6	1.5
Current Health Status of Baby	Healthy	132	32.4
	Minor health issues	77	18.9
	Major health issues	192	47.2
	Chronic illness	6	1.5
Duration of NICU Stay	Less than 1 week	102	25.1
	1-2 weeks	211	51.8
	More than 2 weeks	94	23.1

4.3 Prevalence of Depression Among Mothers

The results in Figure 4.1 revealed that 62.9% (n=256) of respondents experienced depressive symptoms following preterm birth, while 37.1% (n=151) reported no depressive symptoms. The high prevalence suggests that postpartum depression is a significant issue among this population.

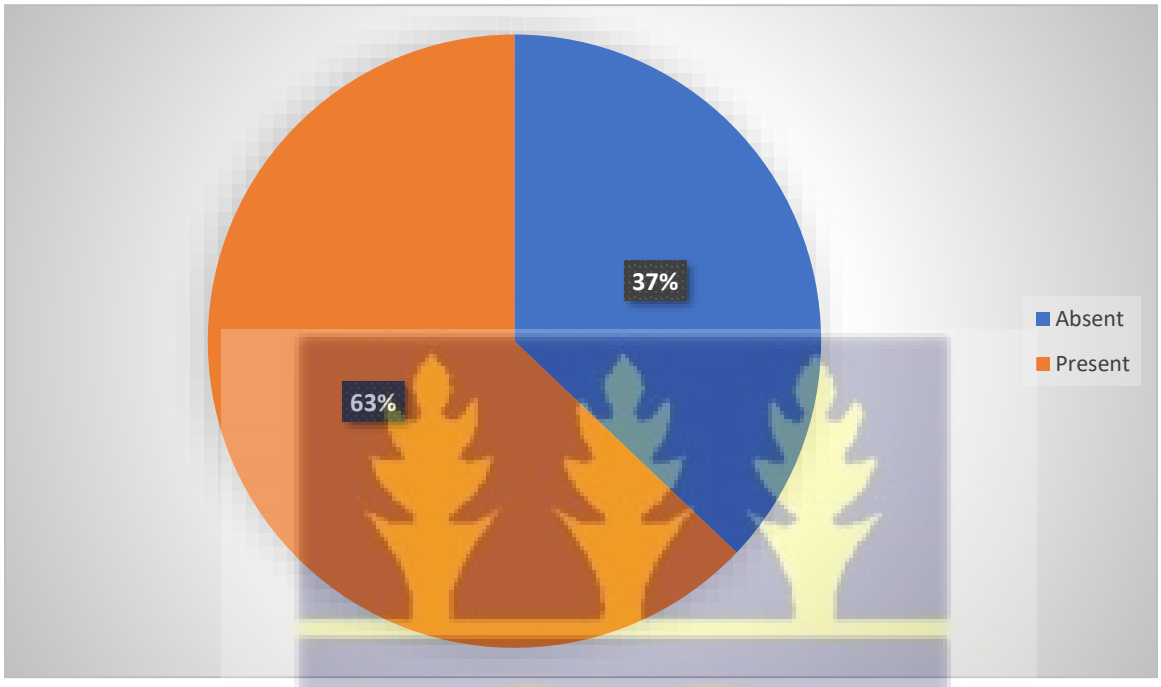

Figure 4.1 Prevalence of Depression Among Mothers Following a Preterm Birth

4.4 Factors associated with Depression Following a Preterm Birth

4.4.1 Socio-demographic factors associated with Depression Following a Preterm Birth

Table 4.4a shows the distribution of depressive symptoms across socio-demographic groups. For example, 62.7% (179/285) of married mothers reported depressive symptoms compared to 69.0% (29/42) of cohabiting mothers; age was associated with depressive symptoms (χ^2=13.34, p=0.020), with the highest proportions observed among mothers aged 20–34. Employment status was also associated with depression (χ^2=11.17, p=0.004), where unemployed mothers had a higher

proportion of depressive symptoms (79.5%) compared to employed mothers (58.9%)." (see table 4.4a).

Table 4.4a: Association between socio-demographic characteristics and Depression

Variables	Depressive symptoms		X^2	p-value
	Absent	Present		
Age of Respondent			13.341	**0.020**
<20 years	7	10		
20-24	19	58		
25-29	35	74		
30-34	47	72		
35-39	33	33		
40+	10	9		
Marital Status			6.897	0.075
Married	116	179		
Cohabiting	26	42		
Single	9	30		
Divorced/Separated	0	5		
Religion			2.698	0.260
Christianity	118	197		
Islam	32	51		
Traditional/Indigenous	1	8		
Employment Status			11.166	**0.004**
Employed	130	185		
Unemployed	15	58		
Retired	6	13		
Education Level			17.471	**0.004**
No formal education	10	23		
Primary education	6	22		
Junior High education	42	41		
Secondary education	41	48		
Vocational education	6	10		
Tertiary education	46	112		
Income Level			3.009	0.556
< Ghs1000	73	127		
Ghs1000-Ghs3000	47	82		
>Ghs3000	31	47		
Household Size			1.249	0.741
1-3 persons	48	91		
4-6 persons	85	130		
7-9 persons	16	32		
10+ persons	2	3		

Insurance Holder			12.073	**0.001**
Yes	148	226		
No	3	30		

4.4.2 Association Between Maternal and Child Birth History and Depression

Analysis of maternal and child birth history variables revealed that Parity was associated with depressive symptoms (χ^2=10.17, p=0.017): first-time mothers comprised 39.8% of the sample and had a higher proportion of depression (107/162; 66.0%) than multiparous mothers. ANC attendance and the number of ANC visits were also associated with depressive symptom prevalence (ANC attendance χ^2=6.86, p=0.009; number of visits χ^2=7.74, p=0.021). (see table 4.4b).

Table 4.4b: Association between Maternal and Child Birth History and Depression

Variables	**Depressive Symptoms**		***X²***	**p-value**
	Absent	**Present**		
Parity			10.171	**0.017**
1	55	107		
2	42	80		
3	29	52		
4+	25	17		
ANC Visits			6.864	**0.009**
Yes	146	229		
No	5	27		
No. of ANC Visits			7.743	**0.021**
1-2 visits	16	43		
3-4 visits	53	109		
5 or more visits	82	104		

4.4.3 Association Between Infant Characteristics and Depression

Results in table 4.4c show that Gestational age was strongly associated with maternal depressive symptoms (χ^2=15.46, p<0.001), with mothers of infants born at 28–32 weeks showing the highest

proportion of depressive symptoms. Infant health status (χ^2=10.55, p=0.014) and NICU duration (χ^2=6.92, p=0.032) were also associated with depression.

Table 4.4c: Association between Infant Characteristics and Depression

Variables	Absent	Present	X^2	p-value
Gestational Age			15.460	**0.000**
<28	16	51		
28-32 weeks	55	118		
32-37 weeks	80	87		
Baby Weight			0.847	0.838
<1.5 kg	44	75		
1.5-2.0 kg	65	114		
2.1-2.5 kg	31	54		
>2.5 kg	11	13		
Delivery Mode			5.910	0.052
Vaginal	16	43		
Caesarean section	53	109		
Assisted delivery	82	104		
Baby Health			10.545	**0.014**
Healthy	41	91		
Minor health issues	21	56		
Major health issues	86	106		
Chronic illness	3	3		
NICU Duration			6.915	**0.032**
<1 week	27	75		
1-2 weeks	88	123		
>2 weeks	36	58		

4.5 Determinants of Depression Among Mothers Following a Preterm Birth

The results in table 4.5 show that compared to mothers with no formal education, mothers with basic education had lower odds of depression (AOR = 0.233; 95% CI: 0.074-0.737; p = 0.013), as did those with secondary education (AOR = 0.419; 95% CI: 0.212–0.826; p = 0.019) and tertiary education (AOR = 0.454; 95% CI: 0.245–0.840; p = 0.007). Also, unemployed mothers had lower

odds of depression compared to their employed counterparts (AOR = 0.413; 95% CI: 0.205–0.830; p = 0.005). Among clinical variables, mothers who delivered between 28–32 weeks had increased odds of depression compared to those who delivered before 28 weeks (AOR = 2.204; 95% CI: 1.023–4.747; p = 0.044). Also, lack of health insurance was associated with significantly higher odds of depression (AOR = 0.159; 95% CI: 0.039-0.650; p = 0.010). Psychosocial factors showed that women with no prior history of mental health issues were less likely to experience postnatal depression (AOR = 0.400; 95% CI: 0.167-0.959; p = 0.040). finally, the absence of a family support system markedly increased the odds of depression (AOR = 3.554; 95% CI: 1.826–6.920; p < 0.001) (see Table 4.5).

Table 4.5: Factors associated with Depression Among Mothers Following a Preterm Birth

Characteristics	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Marital Status				
Married	1.0		1.0	
Cohabiting	0.397 (0.184-0.856)	**0.018**	0.689 (0.286-1.661)	0.904
Single	0.415 (0.172-1.002)	0.051	0.838 (0.311-2.255)	0.841
Level of Income				
< Ghs 1000	1.0		1.0	
Ghs 1000-3000	1.147 (0.671-1.963)	0.616	0.861 (0.409-1.811)	0.899
> Ghs 3000	1.151 (0.646-2.051)	0.634	1.036 (0.530-2.027)	0.679
Level of Education				
No Formal Education	1.0		1.0	
Basic Education	0.945 (0.417-2.140)	0.891	0.233 (0.074-0.737)	**0.013**
Secondary Education	0.539 (0.324-0.897)	0.017	0.419 (0.212-0.826)	**0.019**
Tertiary Education	0.507 (0.303-0.849)	0.010	0.454 (0.245-0.840)	**0.007**
Employment				
Employed	1.0		1.0	
Unemployed	0.338 (0.185-0.618)	**<0.001**	0.413 (0.205-0.830)	**0.005**
Age of Respondents				
<20	1.0		1.0	
20-29	1.587 (0.424-5.945)	0.493	0.511 (0.103-2.532)	0.411
30-39	2.716 (1.046-7.055)	0.040	2.335 (0.745-7.320)	0.146
40+	1.458 (0.566-3.757)	0.435	1.618 (0.529-4.946)	0.399

Gestational Age				
<28	1.0			
28-32 weeks	2.931 (1.548-5.550)	**0.001**	2.204 (1.023-4.747)	**0.044**
32-37 weeks	1.973 (1.269-3.067)	**0.003**	1.558 (0.926-2.620)	0.095
Insurance Holder				
Yes	1.0			
No	0.153 (0.046-0.509)	**0.002**	0.159 (0.039-0.650)	**0.010**
Number of ANC visits				
< 4 times	1.0		1.0	
4 times	2.119 (1.114-4.030)	**0.022**	1.330 (0.601-2.943)	0.482
> 4 times	1.622 (1.047-2.512)	**0.030**	1.403 (0.839-2.346)	0.196
Health of Baby				
Healthy	1.0		1..0	
Minor health issues	2.220 (0.430-11.467)	0.341	1.203 (0.184-7.882)	0.847
Major health issues	2.667 (0.498-14.266)	0.252	1.431 (0.216-9.492)	0.710
Chronic illness	1.233 (0.243-6.262)	0.801	1.365 (0.225-8.287)	0.735
NICU Duration				
<1 week	1.0			
1-2 weeks	1.724 (0.941-3.158)	**0.022**	0.915 (0.415-2.013)	0.825
>2 weeks	0.868 (0.527-1.427)	**0.005**	0.942 (0.531-1.669)	0.837
History of Mental Health				
Yes	1.0		1.0	
No	0.321 (0.146-0.708)	**0.005**	0.400 (0.167-0.959)	**0.040**
Existence of Family Support System				
Yes	1.0		1.0	
No	4.611 (2.776-7.660)	**<0.001**	3.554 (1.826-6.920)	**<0.001**
Professional Counselling				
Yes	1.0			
No	1.721 (1.075-2.756)	0.024	0.985 (0.554-1.754)	0.034
Health Complication during Pregnancy				
Yes	1.0		1.0	
No	0.299 (0.864-1.953)	0.028	0.247 (0.764-1.756)	0.018

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

4.6 Coping Strategies for Depression Among Mothers Following a Preterm Birth

The analysis shows that 84.6% of participants (n=345) engaged in self-care activities to manage stress levels. Similarly, 87.0% of mothers (n=355) utilized relaxation techniques such as breathing exercises or meditation to manage stress. Regarding social support, 77.7% (n=317) of mothers relied on family and friends for emotional support. Professional counseling was the least used coping strategy, with only 27.7% (n=113) of mothers having sought professional counseling. (See Fig 4.2)

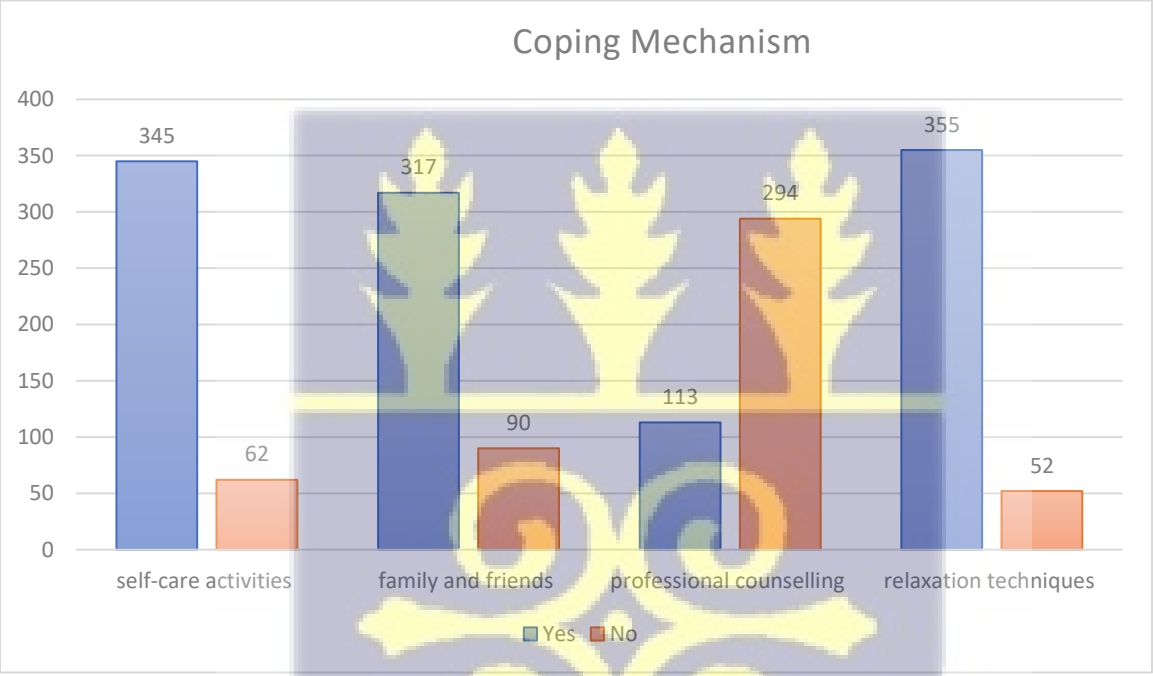

Figure 4.2 Coping Strategies Adopted by Mothers Following a Preterm Birth

4.7 Chapter Summary

This chapter presented results of primary data. The chapter revealed a high prevalence of depression (62.9%) among mothers following preterm birth in Greater Accra, Ghana. The results indicate that mothers with basic, secondary, or tertiary education, those who were unemployed, and those with no prior history of mental health issues had lower odds of experiencing postnatal

depression. In contrast, higher odds of depression were associated with delivering between 28–32 weeks of gestation, lacking health insurance, and not having a family support system. The results also showed that coping strategies were largely informal (e.g., self-care, family support), with only 27.7% accessing professional counseling. The next chapter discusses these findings.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter interprets the study's key findings in the context of existing literature. The discussion includes 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.

5.1 Prevalence of Depression Among Mothers Following Preterm Birth

The present study found a remarkably high prevalence of depression (62.9%) among mothers following preterm birth in the Greater Accra Region of Ghana. It is noteworthy that 60.2% of deliveries in our sample were by caesarean section and 47.2% of infants were reported as having major health issues. These high proportions reflect the fact that our study population comprised mothers of preterm infants admitted to neonatal care units in tertiary and secondary hospitals. Such facilities commonly receive referrals for complicated pregnancies and deliveries (including medically indicated caesarean sections for fetal distress, placental complications, or severe maternal conditions) and for infants with significant clinical needs; therefore, the caseload is expected to be skewed toward more severe obstetric and neonatal presentations. This finding represents a significant mental health burden among this vulnerable population. The prevalence of depression observed in this study substantially exceeds rates commonly reported in global literature. For example, a systematic review and meta-analysis by Vigod et al. (2010) reported that mothers of preterm infants had depression rates of approximately 40% in the immediate postpartum period, decreasing to around 25-35% at 3-6 months postpartum. Similarly, Helle et al. (2015) identified prevalence rates ranging from 20% to 40% among mothers of preterm infants in

high-income countries. In a large-scale study across 17 countries, O'Hara and Swain (2007) found a mean prevalence of 13% for postpartum depression generally, highlighting the elevated risk among mothers of preterm infants compared to the broader postpartum population. When situated within the literature from low- and middle-income countries (LMICs), the study's findings align more closely with some regional studies but still represent the upper range of reported prevalence. Bitew et al. (2019) found a comparable rate of 56% among Ethiopian mothers of preterm infants, while Stellenberg and Abrahams (2015) reported a 50.3% prevalence of postpartum depression in a South African cohort following preterm birth. A study by Adewuya et al. (2005) in Nigeria reported depression rates of approximately 23% among mothers following preterm birth, significantly lower than our findings. However, their study was conducted in a predominantly rural setting with potentially different sociocultural dynamics from our urban/peri-urban Greater Accra population. Recent work by Dadi et al. (2020) in their systematic review of postpartum depression in eastern Africa reported a pooled prevalence of 34% (95% CI: 22.9-45.8%), with significantly higher rates in mothers facing adverse birth outcomes, though still lower than our findings.

The substantially higher prevalence in our study underscores the potentially unique vulnerability of Ghanaian mothers of preterm infants. Several context-specific factors may explain the remarkably high prevalence observed in the current study. Treyvaud et al., (2019) found that depressive symptoms are often most acute during the neonatal intensive care unit (NICU) stay or immediately following discharge, when maternal stress is heightened due to infant health concerns. Since the data was collected while infants were still hospitalized or shortly after preterm birth, the observed depression rates may reflect situational distress rather than long-term prevalence. Also, despite relatively better healthcare infrastructure in Greater Accra compared to other regions in

Ghana, significant gaps exist in specialized mental health services integration within maternal and neonatal care. The National Health Insurance Scheme, despite high enrolment in this study (91.9%), provides limited coverage for mental health services (Doku et al., 2019). Also, Ghana's cultural landscape includes traditional beliefs regarding the aetiology of preterm birth that may contribute to psychological distress. Ethnographic research by Wilkinson and Callister (2010) documented that some Ghanaian communities associate preterm birth with spiritual transgressions, potentially inducing guilt, shame, and psychological distress in mothers. Additionally, the social disappointment and stigma associated with not delivering a "perfect," full-term infant may exacerbate maternal psychological burden (Alio et al., 2018). The demographic analysis of the study showed that 49.2% earned less than GHS 1000 monthly, below the living wage for urban Ghana. It can be inferred that the financial strain compounds the already significant costs of caring for a preterm infant. This aligns with findings by Surkan et al. (2011) demonstrating socioeconomic status as a significant predictor of postpartum depression in LMICs.

5.2 Determinants of Depression Among Mothers Following A Preterm Birth

Sociodemographic Factors

The results showed that mothers with basic education (AOR = 0.233; 95% CI: 0.074-0.737; p = 0.013), secondary education (AOR = 0.419; 95% CI: 0.212–0.826; p = 0.019), and tertiary education (AOR = 0.454; 95% CI: 0.245–0.840; p = 0.007) demonstrated significantly lower odds of depression compared to those without formal education. This protective effect may result from the fact that higher education typically correlates with greater health literacy which enable mothers to better access health information. These findings align with Vigod et al. (2010), who reported that higher maternal education significantly reduced postpartum depression risk following preterm

birth. Similarly, Treyvaud (2014) found that maternal education served as a protective factor against psychological distress in mothers of preterm infants.

Also, the study showed that unemployment was associated with lower odds of depression (AOR = 0.413; 95% CI: 0.205–0.830; p = 0.005) compared to employment. This result contrasts with Carson et al. (2015), who found that unemployment correlated with higher depression risk due to financial strain among mothers of preterm infants. However, Koleva et al. (2011) observed that employment during the postpartum period was associated with increased stress and depression symptoms among certain populations of new mothers. The finding in this study might be explained by unemployed mothers having more time to care for their preterm infants without the additional stressors of balancing work responsibilities. The absence of workplace pressures during the early periods of childbirth is likely to reduce overall psychological burden.

Age of respondent was associated with depressive symptoms in the bivariate analysis (χ^2=13.34, p=0.020). However, age categories did not retain independent significance in the fully adjusted logistic regression model. This pattern suggests that age may be correlated with other determinants (e.g., parity, socioeconomic status, employment, family support) that confound the crude association. For preterm birth populations specifically, some researchers have documented increased distress among younger mothers who lack coping resources, whereas other studies report greater distress in the 30–39 age range, possibly reflecting heightened expectations and role strain. The absence of an independent age effect in adjusted models in our study indicates that the raw age–depression relationship is partly mediated or confounded by related factors (for example, parity, employment status, and family support).

Clinical Factors

Also, mothers who delivered between 28–32 weeks had significantly higher odds of depression (AOR = 2.204; 95% CI: 1.023–4.747; p = 0.044) compared to those who delivered before 28 weeks. This finding partially contradicts Holditch-Davis et al. (2015), who reported a linear relationship where earlier gestational age was associated with higher maternal psychological distress. Similarly, Brandon et al. (2011) found that depression symptoms increased as gestational age at birth decreased. However, Yurdakul et al. (2009) observed a nonlinear relationship between gestational age and maternal depression. This finding could be explained by the fact that extremely preterm births (<28 weeks) often receive more intensive medical intervention and comprehensive support services and may therefore see improvement compared to their counterparts who may not be extremely preterm and may receive less attention and therefore improves rather slowly.

Then again, lack of health insurance was associated with significantly higher odds of depression (AOR = 0.159; 95% CI: 0.039-0.650; p = 0.010). This likely reflects the substantial financial burden placed on uninsured families facing extended neonatal intensive care stays and ongoing medical follow-up for preterm infants. This finding is consistent with Segre et al. (2014), who demonstrated that financial barriers to healthcare significantly increased postpartum depression risk. Similarly, Liang et al. (2019) found that inadequate insurance coverage was associated with higher depression scores among mothers of preterm infants. Petrou et al. (2017) further documented the relationship between economic hardship, including insufficient health coverage, and increased psychological distress following preterm birth.

Psychosocial Factors

Women with no prior history of mental health issues were less likely to experience postnatal depression (AOR = 0.400; 95% CI: 0.167-0.959; p = 0.040). This finding aligns firmly with O'Hara & McCabe (2013), who identified previous mental health problems as one of the strongest predictors of postpartum depression. Norhayati et al. (2015) similarly documented that pre-existing psychological conditions significantly increased depression risk following childbirth. Bergman et al. (2021) further demonstrated that prior psychiatric history predicted depression following preterm birth specifically, with effect sizes comparable to those observed in our study. Also, the absence of a family support system markedly increased the odds of depression (AOR = 3.554; 95% CI: 1.826–6.920; $p < 0.001$). This substantial effect likely reflects the critical importance of practical assistance and emotional support during the challenging period following preterm birth. Family members provide practical help with infant care, household tasks, and potentially care for other children. This finding is strongly consistent with Kowalska et al. (2014), who documented that insufficient social support was a key predictor of postpartum depression among mothers of preterm infants. Logsdon & Koniak-Griffin (2005) similarly found that family support was especially critical for mothers facing the additional challenges of preterm birth.

5.3 Coping Strategies Among Mothers Following Preterm Birth

The findings reveal widespread adoption of coping strategies among mothers following preterm birth, with self-care activities (84.6%), relaxation techniques (87.0%), and family/friend support (77.7%) showing high utilization, while professional counseling remained markedly underutilized (27.7%). Despite this high adoption of multiple coping mechanisms, the study found substantial rates of depression in this population. This contradiction may be related to poor quality and inconsistency of the strategies. As Feeley et al. (2021) noted, effectiveness of coping strategies

depends not merely on adoption but on implementation quality. Second, these strategies may represent reactive responses to already-present depressive symptoms rather than preventive measures. Third, while family support was widely utilized, reflecting Ghana's strong social networks as documented by Adama et al. (2016), this support may lack the specialized knowledge needed to address the unique psychological challenges of preterm birth. Most critically, the underutilization of professional counseling (27.7%) likely represents a key factor in persistent depression rates, as Shaw et al. (2013) demonstrated that professional psychological interventions provide unique benefits that cannot be adequately replaced by self-care or informal support.

5.4 Strengths and limitations

This study provides valuable insights into the determinants of depression and coping strategies among mothers following preterm birth in a Ghanaian context. Also, the inclusion of both sociodemographic and clinical variables allowed for comprehensive assessment of multiple factors affecting maternal mental health outcomes. The use of adjusted odds ratios with confidence intervals strengthens the statistical validity and allowed for a more reliable conclusions about the relative importance of various risk factors. However, the study's cross-sectional design limits the ability to establish causality between the identified factors and depression outcomes. Also, the study relied on self-reported coping strategy use without measuring the quality, consistency, or perceived effectiveness of these strategies. The study may have been affected by social desirability bias regarding the reporting of coping strategy adoption and mental health symptoms. Cultural factors affecting the expression and reporting of depressive symptoms were not fully accounted for in the study design. Finally, the study did not examine potential interactions between various risk factors and coping strategies that might better explain the complex relationship between coping attempts and depressive symptoms.

5.5 Chapter summary

This chapter discussed the study's findings in relation to existing literature, reinforcing that the high prevalence of postpartum depression among mothers of preterm infants in Ghana aligns with broader LMIC trends but reflects unique contextual challenges. The analysis highlighted how socioeconomic disparities, limited healthcare access, and cultural stigma exacerbate maternal distress, while protective factors like education and social support mitigate risks. Comparisons with global studies underscored the need for culturally adapted mental health interventions.

CHAPTER SIX

CONCLUSION

6.0 Summary of The Findings

This study examined depression among mothers following preterm birth in Ghana. The study's primary aim was to identify the determinants of maternal depression and assess coping strategies adopted by mothers. A cross-sectional design was employed, with structured questionnaires to collect data from participants. The study used logistic regression to analyse risk factors, while descriptive statistics evaluated coping strategy utilization. The analysis revealed that mothers with basic, secondary, and tertiary education had significantly lower odds of depression compared to those with no formal education. Also, unemployed mothers also showed lower odds of depression than their employed counterparts. Clinically, mothers who delivered between 28–32 weeks gestation were more likely to experience depression than those who delivered before 28 weeks. Additionally, lack of health insurance was associated with increased odds of depression. Also, mothers with no prior mental health history were less likely to develop postnatal depression. Finally, the absence of a family support system significantly heightened the risk of depression. Regarding coping mechanisms, informal strategies were widely adopted, while formal mental health support was notably underutilized. The persistence of high depression rates despite widespread coping strategy use suggests these approaches may lack sufficient efficacy in addressing the psychological consequences of preterm birth.

6.1 Conclusion

From this study, it can be concluded that mothers with preterm babies in Ghana face significant psychological distress. The findings reveal that these mothers experience depression not as an

isolated condition, but as a consequence of interactions between socioeconomic disadvantages, clinical challenges, and psychosocial vulnerabilities. It is evident that while individual coping strategies are commonly employed, they remain insufficient without systemic support structures. The study particularly highlights how the intersection of limited education, financial constraints through lack of health insurance, and the emotional toll of neonatal intensive care creates a perfect storm for mental health deterioration. Most crucially, the research demonstrates that the period surrounding moderately preterm births (28-32 weeks) represents a critical window for mental health intervention, and that the absence of robust family support systems more than triples the risk of depression.

6.2 Recommendations

Based on the findings of this study, the following recommendation are made;

1. With professional counselling severely underutilized despite high depression rates, the Ministry of Health, in collaboration with the Ghana Health Service (GHS), Mental Health Authority (MHA), and hospital administrators, should integrate routine mental health screening into standard follow-up care for mothers of preterm infants. These agencies should jointly establish dedicated psychological support services within neonatal units, strengthen policy and regulatory frameworks for maternal mental health, and implement community-based and mobile mental health outreach services to improve accessibility, particularly in underserved areas.
2. As higher education levels were protective against depression, the Ghana Health Service should develop tailored educational programmes for mothers with limited formal education. These could include community-based workshops that use storytelling, role-

play, and illustrated flipcharts to explain mental health concepts and coping strategies in local languages such as Twi, Ga, or Ewe.

3. While family support was widely utilized, maternal health nurses and community health workers should strengthen this resource by involving family members in structured psychoeducation sessions. These sessions could be delivered during postnatal clinic visits or community outreach and should cover topics like how to recognize signs of postnatal depression, how to provide emotional and practical support, and when and how to seek professional help.
4. Given that lack of health insurance significantly increased depression risk, the National Health Insurance Authority should advocate for policy changes to expand health insurance coverage specifically for preterm births and establish emergency financial assistance programs for uninsured families.
5. Fifth, future research should explore the long-term psychological effects of preterm birth on mothers, extending beyond the immediate postpartum period to examine the impact of maternal depression on child development and family well-being. Longitudinal studies tracking the mental health trajectories of mothers over several years would provide deeper insights into the persistence and progression of depressive symptoms.
6. Finally, further research should investigate the effectiveness of different coping strategies and mental health interventions in the Ghanaian context. Studies evaluating the impact of structured psychological support programs, such as cognitive-behavioral therapy (CBT) and peer-led support groups, would help identify the most effective interventions for reducing maternal depression.

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APPENDIX A: PARTICIPANT INFORMATION SHEET FOR LITERATES

TITLE: DETERMINANTS OF DEPRESSION AMONG MOTHERS FOLLOWING A PRETERM BIRTH IN GREATER ACCRA REGION OF GHANA

Principal investigator: Emelia Koranteng

Address: P. O. Box 14, c/o Tema General Hospital

Email: emeliakoranteng2020@gmail.com

Mobile contact: +233 20 732 8408

General Information about the Research

Background and Purpose of Research: This study aims to investigate the factors contributing to depression among mothers who have experienced preterm birth in the Greater Accra Region of Ghana. The findings will assist healthcare providers and policymakers in developing tailored interventions to support these mothers, ultimately improving maternal mental health outcomes.

Participant's Involvement: The study will require each participant to engage in an interview lasting between 30 to 45 minutes. During the interview, the principal investigator will explain the study's purpose, provide an information sheet, and answer any questions the participant may have. Data will be collected face-to-face.

Duration / What is Involved: The questionnaire is available in English and will be communicated either in English or the participant's preferred local language. Data collection will take place over the course of one month.

Potential Risks: This research poses minimal risk to participants. However, discussing experiences related to preterm birth may cause emotional discomfort for some. Support resources will be available to all participants if needed.

Benefits: Participants may gain new insights into their experiences and contribute to improving the support services available for mothers of preterm infants.

Conflict of Interest: No conflicts of interest exist in this study. Data collected will be owned by the researcher and securely stored for two years before being destroyed.

Costs: There will be no costs incurred by the participants. The principal investigator will arrange the interview at a location most convenient for the participant.

Compensation: While there is no financial compensation for participation, the investigator will acknowledge the time and contributions of the participants.

Confidentiality: The study will ensure anonymity by not collecting identifiable data. Any publications arising from this study will exclude any information that could identify individual participants.

Voluntary Participation / Withdrawal: Participation is voluntary, and participants can withdraw at any time without penalty. Participants may also decline to answer any particular question without consequences.

Feedback to Participant: Though there will be no individual feedback, a summary of the study's findings will be made available upon request.

Funding Information: This study is funded primarily by the principal investigator as part of an academic project.

Sharing of Participants' Information / Data: The data collected from this study will be owned by the principal investigator and will not be shared with any individual, organization, or institution without the explicit consent of the participants.

A copy of this information sheet and the consent form will be provided after signing or providing a thumbprint.

APPENDIX B: PARTICIPANT INFORMATION SHEET FOR NON-LITERATE PARTICIPANTS

TITLE: DETERMINANTS OF DEPRESSION AMONG MOTHERS FOLLOWING A PRETERM BIRTH IN GREATER ACCRA REGION OF GHANA

Principal Investigator: Emelia Koranteng

Address: P. O. Box 14, c/o Tema General Hospital

Email: emeliakoranteng2020@gmail.com

Mobile Contact: +233 20 732 8408

General Information about the Research

Background and Purpose of Research: This study looks into the factors that contribute to depression in mothers after having a preterm baby in the Greater Accra Region of Ghana. The findings will help doctors and health workers create better support for these mothers, leading to better mental health outcomes for them.

Participant's Involvement: You will be asked to participate in an interview that will last about 30 to 45 minutes. The researcher will explain the study and answer any questions you may have before the interview. The interview will be held face-to-face.

Duration / What is Involved: The survey is available in both English and your local language. It will take place over a month, and the researcher will help you to fill it out.

Potential Risks: There are no major risks, but talking about your experience with preterm birth might make you feel emotional. If you need help, support services will be provided.

Benefits: Taking part in this study may help you understand your own experience better. Your involvement can also help improve services for mothers with preterm babies.

Conflict of Interest: The researcher has no personal interests in this study. The information you provide will belong to the researcher and will be safely kept for two years before being destroyed.

Costs: The interview will not cost you anything, and it will take place at a place that is convenient for you.

Compensation: There will be no money given to you for taking part, but the researcher will thank you for your time.

Confidentiality: Your privacy is very important. No personal information like your name will be collected, and everything you share will stay confidential. You will never be identified in the results of this study.

Voluntary Participation / Withdrawal: You are free to choose whether you want to take part in this study. If you decide to participate, you can stop at any time without penalty. You can also skip any questions you do not want to answer.

Feedback to Participant: You will not receive personal feedback from the study, but if you want, the researcher will give you a summary of the results at the end of the study.

Funding Information: The study is paid for by the researcher. There is no outside funding.

Sharing of Participants' Information / Data: Your information will stay with the researcher and will not be shared with anyone without your permission.

A copy of this information sheet and the consent form will be given to you after you sign it or put your thumbprint.

APPENDIX C: CONSENT FORM FOR LITERATE PARTICIPANTS

TITLE: DETERMINANTS OF DEPRESSION AMONG MOTHERS FOLLOWING A PRETERM BIRTH IN GREATER ACCRA REGION OF GHAHA

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (English). I fully understand the contents and any potential implications as well as my right to change my mind (i.e., withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant……

Participants' Signature ……...

Date……

APPENDIX D: CONSENT FORM FOR NON-LITERATE PARTICIPANTS

TITLE: DETERMINANTS OF DEPRESSION AMONG MOTHERS FOLLOWING A PRETERM BIRTH IN GREATER ACCRA REGION OF GHANA

PARTICIPANT'S STATEMENT

I confirm that the purpose and contents of the Participants' Information Sheet have been read to me in a language I understand (my local language), and that all my questions have been answered. I understand the study, the potential risks and benefits, and my right to withdraw from the study at any time without any consequence.

I voluntarily agree to participate in this research.

Name of Participant: .....

Participant's Thumb Print: .....

Date: .....

APPENDIX E: QUESTIONNAIRE

Introduction

Dear Participant,

Thank you for taking part in this important study on maternal experiences following preterm birth. This survey aims to understand the prevalence of depression, its determinants, and coping strategies among mothers who have experienced preterm birth. Your honest responses will contribute significantly to our understanding of this critical issue and may help improve support for mothers in similar situations.

The survey is divided into four sections:

Section A: Biodata

1. Age:
[ ] Under 20
[ ] 20-24
[ ] 25-29
[ ] 30-34
[ ] 35-39
[ ] 40+

2. Marital Status:
[ ] Single
[ ] Married
[ ] Cohabiting
[ ] Divorced/Separated
[ ] Widowed

3. Religious Affiliation:
[ ] Christianity
[ ] Islam
[ ] Traditional/Indigenous
[ ] Other (please specify): _____

4. Employment Status:
[ ] Employed
[ ] Unemployed
[ ] Self-employed
[ ] Student
[ ] Other (please specify): _____

5. Educational Level:
[ ] No formal education
[ ] Primary education
[ ] Junior High education
[ ] Vocational education
[ ] Secondary education
[ ] Tertiary education

6. Monthly Income (GHS):
[ ] Less than 500
[ ] 500-1000
[ ] 1001-2000
[ ] 2001-3000
[ ] Above 3000

7. Household Size: [Specify the number of people living in your household]: _____

8. Health Insurance Ownership:
[ ] Yes
[ ] No

9. Spouse's Education Level:

[ ] No formal education
[ ] Primary education
[ ] Junior High education
[ ] Vocational education
[ ] Secondary education
[ ] Tertiary education

10. Spouse's Employment Status:
[ ] Employed
[ ] Unemployed
[ ] Self-employed
[ ] Retired
[ ] Other (please specify): _____

Section B: Maternal and Child Birth History

Please provide information about your recent childbirth experience, including details about your baby's birth and any time spent in the NICU.

1. **Parity (Number of times you have given birth):**
   [ ] 1
   [ ] 2
   [ ] 3
   [ ] 4 or more

2. Did you attend ANC during your pregnancy?
   [ ] Yes
   [ ] No

3. Number of ANC visits during this pregnancy:
   [ ] 1-2 visits
   [ ] 3-4 visits
   [ ] 5 or more visits

4. Did you receive the necessary antenatal services, including Iron Folate and IPT (Intermittent Preventive Treatment) during ANC?
   [ ] Yes
   [ ] No

5. **Gestational Age at Delivery (Please specify the gestational age of your most recent preterm birth):**
   [ ] Less than 28 weeks (Extremely preterm)
   [ ] 28-32 weeks (Very preterm)
   [ ] 32-37 weeks (Moderately preterm)

6. **Most recent Baby's Weight at birth (in kg):**
   [ ] Less than 1.5
   [ ] 1.5-2.0
   [ ] 2.1-2.5
   [ ] Above 2.5

7. **Most recent Baby's Sex:**
   [ ] Male
   [ ] Female

8. **Mode of Delivery of most recent baby:**
   [ ] Vaginal
   [ ] Caesarean section
   [ ] Assisted delivery (Forceps/Vacuum)

9. **Current Health Status of your most recent Baby (Please specify the most recent health status):**
   [ ] Healthy
   [ ] Minor health issues
   [ ] Major health issues
   [ ] Chronic illness

10. **Duration of NICU Stay (if applicable):**
    [ ] Less than 1 week
    [ ] 1-2 weeks
    [ ] More than 2 weeks

Section C: Edinburgh Postnatal Depression Scale (EPDS)

The EPDS is a screening tool to assess your risk of postnatal depression. Please answer these questions based on your feelings over the past 7 days.

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

- [ ] As much as I always could
- [ ] Not quite so much now
- [ ] Definitely not so much now
- [ ] Not at all

2. I have looked forward with enjoyment to things.

- [ ] As much as I ever did
- [ ] Rather less than I used to

- [ ] Definitely less than I used to

- [ ] Hardly at all

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

- [ ] Yes, most of the time

- [ ] Yes, some of the time

- [ ] Not very often

- [ ] No, never

4. I have felt anxious or worried for no good reason.

- [ ] No, not at all

- [ ] Hardly ever

- [ ] Yes, sometimes

- [ ] Yes, very often

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

- [ ] As much as I ever did

- [ ] Rather less than I used to

- [ ] Definitely less than I used to

- [ ] Hardly at all

6. Things have been getting on top of me.

- [ ] Yes, most of the time

- [ ] Yes, some of the time

- [ ] Not very often

- [ ] No, never

7. I have felt worried and anxious without any good reason.

- [ ] No, not at all
- [ ] Hardly ever
- [ ] Yes, sometimes
- [ ] Yes, very often

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

- [ ] Yes, quite a lot
- [ ] Yes, sometimes
- [ ] No, not much
- [ ] No, not at all

9. I have been so unhappy that I have had difficulty sleeping.

- [ ] Yes, most of the time
- [ ] Yes, sometimes
- [ ] Not very often
- [ ] No, not at all

10. I have felt sad or miserable.

- [ ] Yes, most of the time
- [ ] Yes, quite often
- [ ] Not very often
- [ ] No, not at all

Section D: Determinants

The following questions explore various factors that may have influenced your experience with preterm birth, including socioeconomic, psychological, biological, environmental, and medical aspects. Please rate according to the scale provided

Socioeconomic Factors

11. I felt financially strained during and after the preterm birth of my baby.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

12. I had sufficient financial resources to cater to my baby's needs.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

Psychological Factors

13. My previous mental health challenges affected how I coped with my baby's preterm birth.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

14. I felt a sense of guilt or inadequacy because of my baby's preterm birth.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

15. I had a support system that helped me cope with my stress.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

Biological Factors

16. My age during this pregnancy contributed to the preterm birth of my baby.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

17. I had existing health conditions (such as hypertension, diabetes, etc.) before this pregnancy that may have contributed to the preterm birth.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

18. I experienced pregnancy complications (such as preeclampsia, gestational diabetes, infection, etc.) that contributed to the preterm birth.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

Environmental Factors

19. I had access to a supportive environment during my pregnancy and after my baby's birth.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

20. My living conditions affected my ability to take care of my preterm baby.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

21. I was exposed to high levels of stress in my immediate environment during my pregnancy.

- [ ] Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree

Medical Factors

22. Did your baby experience any health complications after birth?

[ ] Yes [ ] No

23. Did you receive sufficient medical support and information about managing your baby's condition after birth?

[ ] Yes [ ] No

24. Was the medical care provided to your baby in the NICU adequate to manage their condition?

[ ] Yes [ ] No

25. Were there any delays in your baby's medical treatment after birth that impacted your well-being?

[ ] Yes [ ] No

26. Did healthcare providers explain the potential outcomes of your baby's health condition adequately?

[ ] Yes [ ] No

Section D: Coping Strategies

This section aims to understand the methods you use to manage stress and emotions related to your preterm birth experience.

1. Do you engage in self-care activities to manage your stress levels?

[ ] Yes [ ] No

2. Do you rely on family and friends for emotional support?

[ ] Yes [ ] No

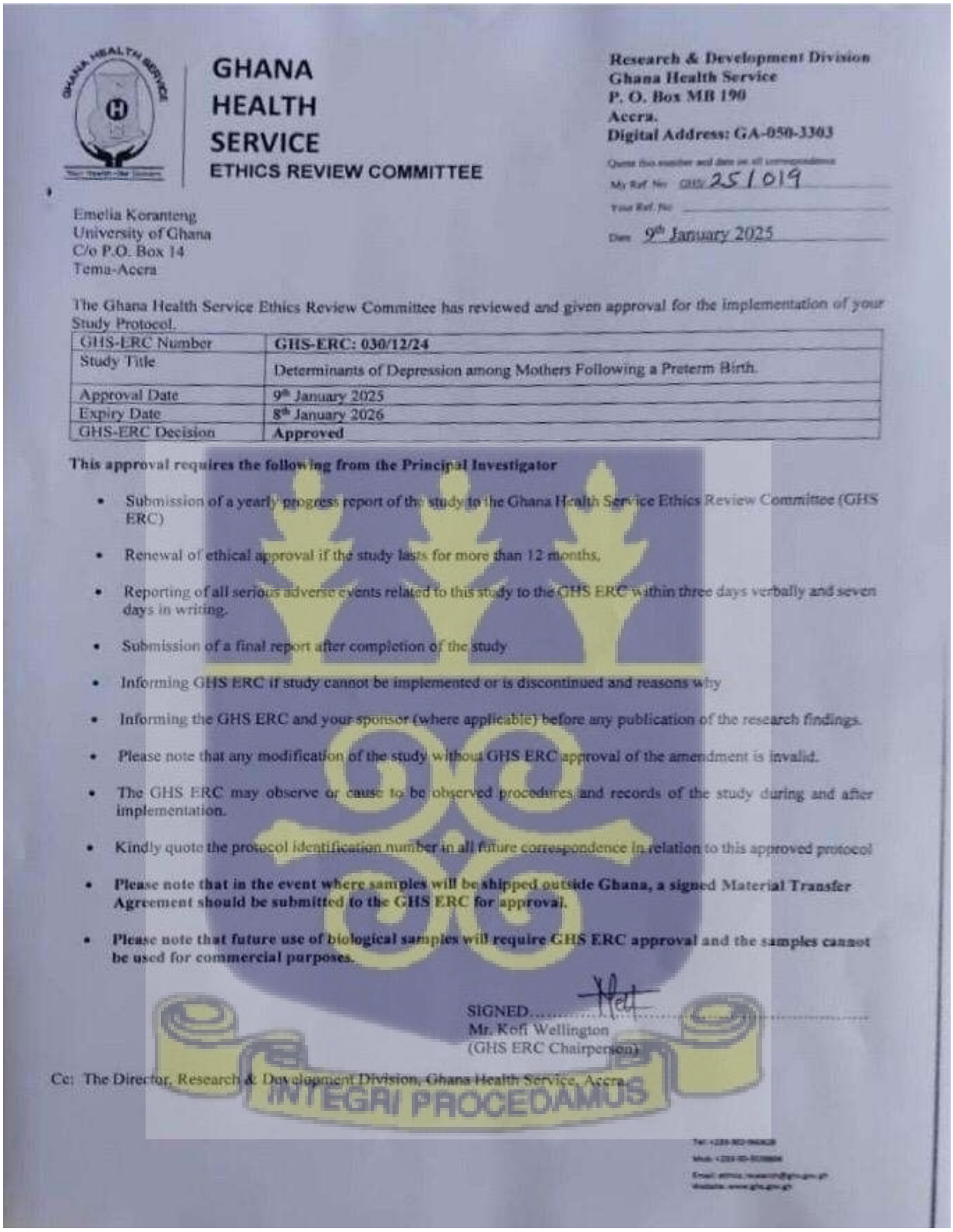
3. Have you sought professional counselling to help cope with your emotions?

[ ] Yes [ ] No

4. Do you use relaxation techniques (e.g., breathing exercises, meditation) to manage stress?

[ ] Yes [ ] No

APPENDIX F: ETHICAL CLEARANCE FROM GHANA HEALTH SERVICE



GHANA HEALTH SERVICE
ETHICS REVIEW COMMITTEE

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra.
Digital Address: GA-050-3303

My Ref. No: GHS 25/019
Your Ref. No:
Date: 9th January 2025

Emelia Koranteng
University of Ghana
C/o P.O. Box 14
Tema-Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC: 030/12/24**
Study Title	Determinants of Depression among Mothers Following a Preterm Birth.
Approval Date	9th January 2025
Expiry Date	8th January 2026
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ghana Health Service Ethics Review Committee (GHS ERC)
- Renewal of ethical approval if the study lasts for more than 12 months.
- Reporting of all serious adverse events related to this study to the GHS ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing GHS ERC if study cannot be implemented or is discontinued and reasons why
- Informing the GHS ERC and your sponsor (where applicable) before any publication of the research findings.
- Please note that any modification of the study without GHS ERC approval of the amendment is invalid.
- The GHS ERC may observe or cause to be observed procedures and records of the study during and after implementation.
- Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol
- **Please note that in the event where samples will be shipped outside Ghana, a signed Material Transfer Agreement should be submitted to the GHS ERC for approval.**
- **Please note that future use of biological samples will require GHS ERC approval and the samples cannot be used for commercial purposes.**

SIGNED.....
Mr. Kofi Wellington
(GHS ERC Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra.

INTEGRI PROCEDAMUS