Module Name: Public Health and Social Care Dissertation.

Module Number: LCHS7004.

Assessment: Dissertation.

Word Count: 15,000.

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Dissertation Topic: Examining the factors or aspects associated with perinatal depression and anxiety among pregnant women.

DECLARATION

My name is Arifa Dewan Mili, and I hereby confirm that this dissertation was written entirely by me, unless otherwise noted in the text, and that it has not been submitted in whole or in part for consideration towards another degree or qualification other than those listed.

Signature.....**Arifa Dewan Mili**.....

Date……**08-09-2025**……

Acknowledgement

I want to sincerely thank everyone who played a part in making this research possible. My experience at Trinity Saint David University has been substantially improved by the consistent support and inspiration that I experienced there.

In the beginning, I would want to express my gratitude to Dr. Hamdi Hussain, whose advice and expertise have been extremely helpful throughout this process. Her guidance enhanced my academic endeavours and instilled in me a passion for learning and a commitment to achievement. Her invaluable counsel and encouragement motivated me to take risks and challenge my limits. Her countless hours of meetings, discussions, and assessments have had a significant impact on the findings of this study as well as my future problem-solving techniques, for which I am immensely grateful.

I am so incredibly grateful to my family for their everlasting affection, encouragement, and understanding. I have the foundation I need to pursue my academic goals with unshakeable commitment because of their unflinching faith in my talents and their selfless efforts. My dear friends, whose company and support have been a continual source of joy and strength, receive my sincere gratitude as well. Whether we are collaborating on initiatives or just hanging out, your presence has truly made my stay at university extraordinary.

Last but not least, I would like to express my sincere gratitude to everyone whose contributions even if they are not specifically listed here have helped to influence the results of this research project. Your combined efforts, no matter how small, have had a lasting impact on this research, and I genuinely appreciate that.

Abstract

Background

15–25% of pregnant and postpartum women have perinatal depression and anxiety, which is a serious public health issue with substantial effects on the health of both the mother and the unborn child. The perinatal period is a period of significant psychophysiological change that makes people more susceptible to mental health issues. The purpose of this systematic literature review was to examine the variables related to pregnancy, psychosocial influences, and sociodemographic traits that are linked to perinatal depression and anxiety in pregnant women.

Methods

Following PRISMA criteria, a systematic literature review was carried out, looking for papers published between 2014 and 2024 in a number of databases, including MEDLINE (PubMed), Google Scholar, and University of Wales Trinity Saint David resources. The PEO framework (Population: pregnant women; Exposure: associated risks and variables; Outcome: perinatal depression and anxiety) was employed in the search method. Studies that employed quantitative and qualitative, methods, were published in English, and looked at variables linked to perinatal depression and/or anxiety in expectant mothers were all included. 28 studies that satisfied the inclusion criteria after analysing 2,105 records were subjected to data extraction and thorough assessment utilising pre-existing frameworks. The findings were synthesised using thematic analysis in accordance with Braun and Clarke's six-phase approach.

Results

The research revealed five main themes: (4) external stressors, such as work-related stress, pandemic-related distress, and traumatic life events; (5) pregnancy-related factors, such as unintended pregnancy, obstetric complications, and trimester-specific symptom variations; (3) psychosocial variables, including partner relationship dynamics, mental health history, and social support quality; (5) sociodemographic determinants, such as lower educational attainment, joblessness, socioeconomic deprivation, and rural-urban disparities; and (5) predictive patterns demonstrating continuity between antenatal and postpartum symptoms. Throughout all trials, the Edinburgh Postnatal Depression Scale (EPDS); the Hospital Anxiety and Depression Scale (HADS) and The State-Trait Anxiety Inventory (STAI) were the most widely used screening instrument.

Conclusion

Because perinatal depression and anxiety are complex disorders, they call for all-encompassing, culturally aware treatments that consider social, psychological, and biological factors. The results lend support to the implementation of integrated care pathways, trimester-specific monitoring, and universal screening programs using validated instruments. Socioeconomic disparities must be addressed, social support systems must be reinforced, and crisis-resilient services must be developed by healthcare systems. In order to influence evidence-driven practice and policy improvements, future research should concentrate on longitudinal studies, culturally tailored interventions, and economic assessments of screening programs.

Keywords: perinatal depression, perinatal anxiety, pregnancy, maternal mental health, risk factors, systematic review.

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Abbreviations

CASP - Critical Appraisal Skills Programme

CES-D - Centre for Epidemiologic Studies Depression Scale

CIDI-V - Composite International Diagnostic Interview (Version 5)

COREQ - Consolidated Criteria for Reporting Qualitative Research

COVID-19 - Coronavirus Disease 2019

DASS-21 - Depression, Anxiety, and Stress Scales-21

DSM-IV - Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition

EDEN - (French cohort study name)

EPDS - Edinburgh Postnatal Depression Scale

GAD - Generalised Anxiety Disorder

GAD-7 - Generalised Anxiety Disorder Scale-7

HADS - Hospital Anxiety and Depression Scale

JBI - Joanna Briggs Institute

J-SSQ - Japanese Social Support Questionnaire

MARI - (Study name - specific research project)

MeSH - Medical Subject Headings.

MKSSI - Modified Kendler Social Support Inventory

MoBa - Norwegian Mother, Father and Child Cohort Study

NOS - Newcastle-Ottawa Scale

OR - Odds Ratio

PASS - Perinatal Anxiety Screening Scale

PEO - Population, Exposure, Outcome (framework)

PICO - Population, Intervention, Comparison, Outcome (framework)

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PTSD - Post-Traumatic Stress Disorder

RANZCOG - The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

RCPsych - Royal College of Psychiatrists

Rhea - (Greek cohort study name)

SAS - Zung Self-rating Anxiety Scale

SCID-I - Structured Clinical Interview for DSM-IV

SLR: Systematic literature review.

STAI - State-Trait Anxiety Inventory

UK - United Kingdom

US - United States

XGBoost - Extreme Gradient Boosting (machine learning algorithm)

CHAPTER 1: Introduction and Background

1.1 Introduction to the topic

As a period of profound psychophysiological change that affects a woman's development, relationships, and self-perceptions, the perinatal stage has become recognised worldwide (American College of Obstetricians and Gynaecologists, 2018; Dickens and Pawluski, 2018; The Royal Australian and New Zealand College of Obstetricians and Gynaecologists [RANZCOG], 2020). During this period, women's bodies undergo significant hormonal changes that are necessary for the continued existence of their pregnancy, the onset and course of labour and delivery, the recovery period following childbirth, and the beginning and continuation of medical treatment (Dickens and Pawluski, 2018). Women are more vulnerable to the onset or aggravation of underlying mental problems during the perinatal period, as well (American College of Obstetricians and Gynaecologists, 2018; He et al., 2018; Dowse et al., 2020).

A considerable percentage of mental health difficulties during the perinatal period are related to depression and anxiety disorders, with over 15% of people (16.2%) experiencing a mood disorder and nearly 30% of people (28.8%) experiencing an anxiety disorder at some point in their lives (Fairbrother et al., 2015; Kessler et al., 2005a). According to Fairbrother et al. (2015), half of all patients with depression demonstrate symptoms that fit the requirements for multiple anxiety disorders. Anxiety and depressive disorders are 1.6–1.7 times more common in women than in males, and depression is the primary cause of disease-related disability in women (Kessler et al., 2005b; Schneider et al., 2002).

1.2 Background and Current Context

A continuous sense of dissatisfaction and feeling abandoned is a symptom of depression, according to Chand and Arif (2022). Bernard (2018) explains that depression can be anything from a normal, short-lived low mood in daily life to a severe, chronic clinical disorder with consequences and visible signs that are not typical of daily life. According to Bernard (2018), the Latin term "depressio," referring to "being sunk," is the basis of the modern English term "depression," that refers to a situation in which people experience as though their lives have been affected by a great burden. O'Neill and Sorochan (2014) and Szuhany and Simon (2022) define anxiety as a persistent, unpleasant, and undesirable negative influence that is typified by physiological signs of stress, a persistently elevated state of consciousness, and an overwhelming expectation of unanticipated and detrimental incidents in the future.

Anxiety and depression disorders are among the most prevalent mental health conditions; they are categorised as internalising disorders because of their strong comorbidity (Kalin, 2020). The prevalence of anxiety and depression disorders during pregnancy is almost twice as high for women as for men (Substance Abuse and Mental Health Services Administration, 2019; Kessler et al., 2005a).

45.7% of people with serious depression had no less than one anxiety disorder over their lives, according to an across the globe survey concerning major depression (Kessler et al., 2015). To illustrate how frequently these issues co-occur, 41.6 percent of people who experienced serious depressive symptoms throughout an extended period also had several anxiety-related problems at that time (Kalin, 2020). Between 20% and 70% of persons with social anxiousness disorder, 50% among individuals experiencing severe panic disorder, 48% of individuals with PTSD, and 43% of individuals with comprehensive anxiety disorder have a long-term combination amongst depression and anxiety disorders, according to Kalin (2020).

Combining depression with anxiety disorder is one of the greatest markers of major depressive disorder severity, as determined by Wu and Fang (2014) and Kessler et al. (2015). Epidemiological studies have shown that major depressive illness and several anxiety disorders are highly comorbid (Kessler, Petukhova, and Zaslavsky, 2011; Lamers et al., 2011). When major depressive illness and concurrent anxiety disorders coexist, the symptoms of the former become more prevalent and persist longer (Fichter et al., 2010; Kessler et al., 2015).

1.2.1 Circumstances within the present subject area

Internationally, perinatal depression and anxiety affect a significant portion of expectant mothers and are increasingly recognised as major public health concerns. These conditions not only endanger the mother's health but also raise the possibility of deadly development and long-term child consequences (Dowse et al., 2020). Recent studies have identified a number of contributing factors, including exposure to intimate partner violence, poor social support, financial stress, and past mental health conditions (Jimènez-Barragan et al., 2024). The COVID-19 pandemic has raised these risks, and pregnant women's psychological suffering has been exacerbated by heightened isolation and uncertainty (Tauqeer et al., 2023).

Moreover, increased vulnerability has been linked to sociodemographic characteristics as age, education, employment status, and unplanned pregnancy (Cristea Răchită et al., 2023). Inequalities in access to mental health care persist despite the effectiveness of screening tools like the Edinburgh Postnatal Depression Scale (EPDS) and the Generalised Anxiety Disorder Scale (GAD-7) in early detection (Simpson et al., 2014). The dynamic nature of prenatal anxiety and depression variables highlights the need for comprehensive, culturally sensitive interventions that address the clinical and social components of perinatal depression

and anxiety (Tilden, Hunte, and Caughey, 2025). A thorough evaluation of how well digital health platforms serve pregnant women in providing tools and assistance is necessary due to their growing ubiquity in order to ensure that they lessen psychological suffering rather than raise it (Fonseca, Mancinelli, & Branquinho, 2025).

1.3 Rationale for research

Research indicates that a number of sociodemographic traits, including age, income, employment position, and level of education, are associated with a higher prevalence of perinatal anxiety and depression in pregnant mothers (Jimènez-Barragan et al., 2024). A higher prevalence of anxiety and depression is also linked to pregnancy-related events, such as unintended pregnancies, past pregnancy losses, and pregnancy difficulties. These events also significantly affect the risk of developing perinatal depression and anxiety (Yeşilçınar, Acavut, and Güvenç, 2023). The quality of relationships, frequent stressful events, and a lack of social support are examples of psychosocial factors that significantly affect depression and anxiety throughout pregnancy (Geraghty, 2019).

Knowing the factors that contribute to perinatal anxiety and depressive symptoms in pregnant women allows researchers to develop targeted interventions to reduce their occurrence and impact. Knowing concerning risk factors for different mental health conditions and putting early interventions in place can help doctors enhance the health of moms and their kids. In order to ensure that pregnant women receive the support and care they need during this crucial time, policymakers can use the data aimed at creating and implementing programs that are specifically suited to their needs.

1.4 Research Questions

1. In pregnant women, which sociodemographic characteristics are associated with an increased risk of nervousness and perinatal depression?

2. How does the likelihood of experiencing anxiety and depression symptoms during pregnancy depend on factors associated to pregnancy?

3. How does the occurrence of perinatal anxiety and depression during pregnancy relate to psychosocial aspects?

1.5 Aim of this research

In aim of better understand the mechanisms causing these mental health conditions and to investigate the factors associated with perinatal depression and anxiety among pregnant.

1.6 Research objectives

1. To determine which sociodemographic characteristics are linked to increased anxiety and depression rates in expectant mothers.

2. To investigate how pregnancy-related factors affect anxiety and depression risk in different ways.

3. To investigate how psychosocial factors contribute to the development of anxiety and depression during pregnancy.

1.7 Chapter Summary

This chapter presents the major mental health issues that pregnant women worldwide encounter throughout the perinatal period, with anxiety impacting 22.9% of women and depression affecting 20.7%. About 12–13% of expecting moms in the UK suffer from these issues. Three main areas will be examined in this study: pregnancy-associated factors (unwanted pregnancies, complications), psychosocial factors (relationship quality, social support), and sociodemographic factors (age, income, education) that contribute to perinatal anxiety and depression in pregnant women in the United Kingdom.

It is essential to comprehend these risk variables in order to create focused interventions and enhance the health of mothers and infants. The material that has already been written about the socioeconomic, pregnancy-associated, and psychosocial contributing components for perinatal anxiety and depression will be critically reviewed in Chapter 2.

Chapter 2: Literature Review

2.1 Introduction to the Chapter

This chapter provides a thorough analysis of the body of research on perinatal anxiety and depression in expectant mothers. It looks at important research, conceptual models, and new developments that have influenced our understanding of the subject today. The review will assess study findings critically, point out methodological flaws and strengths, and draw attention to knowledge gaps. This basis will support the current study's direction and applicability, resulting in a better comprehension of prenatal mental health issues.

2.2 Epidemiological survey of perinatal mental health

2.2.1 Definition of Perinatal mental health, depression and anxiety

The psychological health of people throughout pregnancy and for up to a year after giving birth is referred to as perinatal mental health (Garthus-Niegel, Benyamini, and Horsch, 2021). It includes a variety of mental health issues, chief among them the extremely common and frequently co-occurring diseases of anxiety and depression (Verhelst et al., 2024). Hormonal changes, psychological pressures, and modifications to identity accompany the sensitive period of becoming a parent, all of which can exacerbate mental health issues (Parfitt and Ayers, 2014).

While, according to Bränn, Shen, and Lu (2024), perinatal depression is characterised as a significant depressive episode that happens either during pregnancy (antenatal) or within the first year following childbirth (postpartum). Feelings of shame or worthlessness, exhaustion, loss of interest, and ongoing unhappiness are some of the symptoms (Toledo, 2024). Although four weeks postpartum is frequently the focus of diagnostic criteria, several professionals expand this window to include the entire first year (Verhelst et al., 2024). According to Bränn, Shen, and Lu (2024), the syndrome can have major effects on mother functioning and newborn development, and it affects up to 20% of women worldwide.

However, perinatal anxiety encompasses a variety of anxiety disorders that manifest during the perinatal period, including panic disorder, generalised anxiety disorder (GAD), and particular phobias (Silverwood et al., 2022).). According to Verhelst et al. (2024), it is typified by excessive concern, restlessness, impatience, and physical symptoms such palpitations or irregular sleep patterns. Depression and anxiety can coexist, and if left untreated, anxiety can have a detrimental effect on the health of the mother and the unborn child (Dowse et al., 2020).

2.2.2 Global prevalence or rates of anxiety and depression in perinatal women

Perinatal mental disorders are the most common health issues that women experience while they are pregnant or in the first year following childbirth globally (O'Hara and Wisner, 2014). In nations with low or moderate incomes, they are especially common (Fisher et al., 2012; Gelaye et al., 2016). Rasmussen et al. (2017) state that major depression is probably the most prevalent mental illness affecting expectant mothers. According to Mateus et al. (2022), it is categorised as a major depressive disorder and begins in the following months and weeks after delivery. Furthermore, according to Cheng et al. (2021), the average proportion of women who experience perinatal depression is 20.7% during pregnancy, 7.4%, 12.8%, and 12.0% during the three trimesters of pregnancy, and 17.7% during the postpartum phase (Hahn-Holbrook, Cornwell-Hinrichs, and Anaya, 2018; Shorey et al., 2018).

The American College of Obstetricians and Gynaecologists (2018) states that anxiety is another important perinatal mood issue that needs to be addressed, with approximately one in five women meeting the criteria for diagnosis for more than one anxiety disorder (Fawcett et al., 2019). Moreover, depression and it co-occur (Kuehner, 2017; Barker et al., 2011). The overall prevalence of perceived anxiety symptoms is 22.9% during pregnancy, 14.8% after delivery, and 15.8% during the first 24 weeks of pregnancy, according to Dennis, Falah-Hassani, and Shiri (2017). According to Falah-Hassani, Shiri, and Dennis (2017), it is also anticipated that 5.7% of women from conception to 24 weeks postpartum and 6.3% of pregnant women have moderate to severe symptoms of both depression and anxiety concurrently.

2.2.3 Prevalence of perinatal depression and anxiety in UK

About 12% and 13% of expecting mothers in the UK suffer from anxiety and depression, the two most prevalent psychiatric conditions during pregnancy (National Institute for Health and Care Excellence, 2023). According to the National Institute for Health and Care Excellence (2023), 15–25% of moms experience anxiety and sadness in the initial months following childbirth. According to the Royal College of Psychiatrists (RCPsych) and the UK Parliament (2018), between ten and fifteen out of every hundred pregnant women have anxiety and depression, and an identical percentage experience depression after giving birth.

A cross-sectional study was conducted by Meltzer-Brody (2013) on 116,457 women aged 15 to 45 who had live deliveries. In the nine months prior to pregnancy, 9.3% of patients had depression, 5.1% had perinatal depression, and 13.3% had postpartum depression, the study found. Meltzer-Brody (2013) also found that anxiety was present in 3.7% of women following giving birth, 2.6% during the prenatal period, and 4.1% within the nine months prior to pregnancy.

2.2.4 Exposure or risk factors of depression and anxiety

Numerous biopsychosocial risk factors have an impact on prenatal anxiety and depression. Financial stress, intimate partner violence, limited social support, and a history of mental illness are important indicators (Jimènez-Barragan et al., 2024). Vulnerability is further increased by other factors such unintended pregnancies, sleep issues, and strained relationships (Garthus-Niegel, Radoš, and Horsch, 2022). Higher symptom prevalence is also associated with sociodemographic characteristics such as unemployment, poorer education, and younger age (Gopalan et al., 2022). For prompt intervention and better maternal outcomes, these hazards must be identified early.

2.2.5 Consequences and expenses of depression and anxiety among pregnant women

Pregnancy-related depression and anxiety have detrimental effects on both the mother and the unborn child (Dowse et al., 2020). These women are more likely to have poor self-care, obstetric problems, and a decreased ability to bond with their babies (Dowse et al., 2020). According to estimates, prenatal mental health issues cost the world economy billions of dollars per year in missed productivity, medical expenses, and long-term effects on children (Howard et al., 2014). Moreover, Due to healthcare utilisation and long-term effects on children, perinatal depression and anxiety cost the United States about $14 billion per newborn population each year (Pollack et al., 2022).

According to the Centre for Mental Health (2014), perinatal mental health issues in the UK cost society around £8.1 billion annually, with 72% of those costs being attributable to negative impacts on children rather than mothers. According to the Centre for Mental Health (2014), despite the magnitude of this burden, only a small portion of the money is spent on proper care; just £337 million would be required each year to achieve national care standards. These numbers demonstrate the critical necessity for early risk factor assessment in order to lower financial and human expenses.

2.2.6 Critical Relationship Between Anxiety and Depression

As internalising disorders, anxiety and depression are among the majority of prominent mental health conditions. They are highly comorbid (Kalin, 2020). During pregnancy, women are about twice as likely as men to suffer from anxiety and depression disorders (Substance Abuse and Mental Health Services Administration, 2019; Kessler et al., 2005). Forty-five percent of individuals with severe depression have experienced a minimum one anxiety disorder in their lifetime, according to a global survey of major depression conducted by Kessler et al. (2015).

For instance, 41.6 percentages of those who had serious depressive symptoms for a full twelve months also had numerous anxiety disorders at that same period, demonstrating how commonly these problems co-occur (Kalin, 2020). According to Kalin (2020), there is a lifelong association within depression and anxiety syndromes in between 20% and 70% of people with anxiety about social situations disorder, 50% of those diagnosed with panic attack disorder, 48% of persons having PTSD, and 43% of individuals with generalised anxiety disorder.

Kessler et al. (2015) and Wu and Fang (2014) claim that one of the most effective indicators of the seriousness of serious depression is its connection to anxiety disorder. According to epidemiological research, major depressive illness is highly comorbid with several anxiety disorders (Kessler, Petukhova, and Zaslavsky, 2011; Lamers et al., 2011). The severity and duration of major depressive disorder increase when it coexists with concomitant anxiety disorders (Fichter et al., 2010; Kessler et al., 2015).

2.2.7 Summary and Synthesise key findings from relevant studies

Over the past few years, a lot of study has been done on the prevalence and complexity of perinatal depression and anxiety among pregnant women. According to foundational studies like those by O'Hara and McCabe (2013), Fisher et al. (2012), Lancaster et al. (2010) and Gavin et al. (2005), perinatal mood disorders are not only common but also influenced by a variety of biological, psychological, and environmental factors. These studies identified a number of contributing factors, such as previous mental health history, insufficient community support, and lower socioeconomic status. In a similar vein, Lancaster et al. (2010) emphasised that intimate partner abuse, stress, and unplanned pregnancy all considerably raise the risk of prenatal and postpartum depression.

All these studies have shown complex trends, with sociodemographic factors including age, education, and work status altering the intensity and durability of symptoms. When taken as a whole, these studies highlight the significance of early screening to take contextual and individual aspects into account when addressing prenatal mental health and focused therapies.

2.2.8 Strengths and weaknesses of previous research

Together, the research by Gavin et al. (2005), Lancaster et al. (2010), Fisher et al. (2012), and O'Hara and McCabe (2013) provide important information about perinatal mental health in a variety of demographics. Strong methodological rigour and sizable sample sizes are provided by Gavin et al. (2005) and Lancaster et al. (2010), which improve reliability. By concentrating on low- and lower-middle-income nations, Fisher et al. (2012) closes a significant gap and increases their worldwide

significance. Fisher et al. (2012) studied low- and middle-income situations, providing complementary viewpoints to Gavin et al. (2005)'s focus on high-income settings. Future research initiatives and a comprehensive summary of postpartum depression are provided by O'Hara and McCabe (2013).

All of these research publications have drawbacks, though, such as the use of self-reported data and variable diagnostic standards among studies, which could compromise comparability. Some evaluations lack contextual complexity by minimising cultural and socioeconomic aspects. Notwithstanding these drawbacks, taken as a whole, the research improves knowledge of perinatal mental health prevalence, risk factors, and worldwide disparities, providing a basis for focused interventions and the creation of policies.

2.2.9 Limitations in existing research

These studies have a number of things in common. A lot of them use self-reported data, which might lead to underreporting and bias (Lancaster et al., 2010). Generalisability is limited by frequently small sample numbers (Gavin et al., 2005). Comparisons become more difficult because different research use different diagnostic instruments and cut-off scores (O'Hara & McCabe, 2013). Particularly in low-income environments, cultural and socioeconomic diversity is under-represented (Fisher et al., 2012). Furthermore, not much research uses longitudinal designs, which limits understanding of long-term effects. These drawbacks show that in order to better understand and treat perinatal mental health issues, standardised approaches, wider population inclusion, and longer follow-up are required.

2.3 Chapter Summary

This chapter examines the evidence on perinatal anxiety and depression, describing the conditions and looking at their prevalence in worldwide and UK. Socioeconomic deprivation, a history of mental illness, and a lack of social support are important risk factors. Standardised procedures are necessary due to methodological constraints in previous studies, such as self-reported data and variable diagnostic criteria. It concluded by examining the connection between risk factors and mental health outcomes, highlighting important discoveries, evaluating the advantages and disadvantages of earlier research, and pointing out gaps and restrictions in the body of current work. The systematic technique used, including the databases, search strategy, PICO framework, inclusion/exclusion criteria, and PRISMA results for thorough literature identification, will be presented in Chapter 3.

Chapter 3: Methodology

3.1 Introduction to chapter

This chapter offers a methodical approach to carrying out an extensive literature analysis on the variables associated with perinatal anxiety and depression in expectant mothers. In order to guarantee openness, accuracy, and repeatability while assessing sociodemographic, pregnancy-related, and psychological risk variables, it uses organised frameworks. Define the SLR approach, apply the PICO/PEO framework, use Boolean search strategies, choose keywords, justify the database, include/exclude criteria, analyse the PRISMA flow chart, discuss ethical issues, and conclude with a summary of methodological accomplishments and the direction of the following chapter.

3.2 Systematic Literature Review (SLR)

A thorough, methodical strategy to locating, assessing, and synthesising the body of research information on a particular subject is represented by a systematic literature review (Aveyard, 2019; Bashir and Conlon, 2018). SLRs, as opposed to typical narrative reviews, use predefined, explicit techniques to reduce bias and guarantee thorough coverage of the body of existing literature (Moher et al., 2015; Atkinson and Cipriani, 2018). Standardised data extraction techniques, specific selection criteria, systematic search tactics, and well-defined research questions are all components of the systematic approach (Davies, 2019).

Formulating targeted research questions, creating thorough search strategies, methodically searching several databases, applying preset inclusion and exclusion criteria, evaluating the quality of included studies, methodically extracting pertinent data, and synthesising findings using narrative or statistical techniques are all essential steps in the comprehensive SLR process (Cooper et al., 2018; Davies, 2019; Moher et al., 2015; Bashir and Conlon, 2018). To guarantee openness and repeatability, each step needs to be meticulously documented (Cooper et al., 2018; Moher et al., 2015).

From developing research questions to synthesising findings, conducting a systematic literature review (SLR) necessitates a significant investment of time and energy. Additionally, variations in methodologies, populations, and outcomes among studies can complicate synthesis and lower the reliability of findings (Doleman et al., 2021; Owens, 2021). Furthermore, despite having strict inclusion criteria, SLRs may miss pertinent studies because of technological shortcomings or search strategy constraints (Bramer et al., 2017; Bashir and Conlon, 2018). Additionally, SLRs rely

on published studies, which may exclude negative or inconclusive results, resulting in biassed conclusions (Ayorinde et al., 2020).

This study's SLR aims to methodically review and synthesise the body of knowledge about the variables linked to perinatal anxiety and depression in expectant mothers. This strategy will guarantee thorough identification of pertinent research, lessen selection bias, and offer a strong body of evidence for comprehending risk factors and guiding future actions and policy choices (Lame, 2019).

3.3 Search Strategy

According to Atkinson and Cipriani (2018), a search strategy is a methodical approach to finding pertinent literature using organised database searches that make use of preset keywords, restricted vocabularies, and selection criteria. Multiple database searches were used to accomplish the thorough search, utilising different keyword, synonym, and Boolean operator combinations to enhance the retrieval of pertinent papers while preserving search accuracy. The research topic was structured using the PEO framework (Population, Exposure, Outcome), and targeted search phrases were created especially for primary research articles that looked at vulnerability factors (Bettany-Saltikov, 2024; Aboagye et al., 2021).

The population (pregnant women), exposure (different risk factors and determinants), and outcome (perinatal depression and anxiety) are the three main concepts that are systematically identified by this framework. Because the PEO framework focusses on discovering characteristics linked to health issues rather than evaluating therapies, it is especially suitable for this study (Bettany-Saltikov, 2024; Aboagye et al., 2021). To capture up-to-date information reflecting current understanding of perinatal mental health issues and their influences on pregnant women, the search was restricted to publications published between 2014 and 2024.

3.4 Search Terms

The basis for thorough evidence retrieval, search terms are particular words, phrases, or concepts that are utilised in database searches to find pertinent material pertaining to the study topic (Lefebvre, Manheimer, and Glanville, 2008; Bramer et al., 2017). To achieve thorough literature retrieval while preserving search precision and preventing information overload, it is imperative to carefully choose and combine search words (Sampson et al., 2009; Adam and Paynter, 2023; Bramer et al., 2017). Although medical disorders might have several names, databases may index articles using different restricted vocabularies, and different authors may use different terminology to explain comparable topics, synonyms are essential when searching databases (Bramer et al., 2016; Cooper et al., 2018). In mental health studies, where diseases like depression may be defined using a variety of clinical and colloquial

terminology, the significance of synonyms is especially pertinent. The methodical creation of search terms for this research focus's three main domains was directed by the PEO framework.

Table 3.1. PEO Framework

Component	PEO Element
Population	Pregnant Women
Exposure	Risk factors and determinants
Outcome	Depression and anxiety

Table 3.2. Synonyms used for Key words

Population	Exposure/Issue	Outcome
Pregnant women expectant mothers pregnancy prenatal women antenatal women	Risk factors social factors demographic factors socioeconomic status social support partner support or relationships with partner unplanned pregnancy pregnancy complications previous mental health life events stress employment status education level age factors stages of pregnancy	Perinatal depression antenatal depression postnatal depression pregnancy depression maternal depression perinatal anxiety antenatal anxiety pregnancy anxiety maternal anxiety mental health disorders psychological distress mood disorders

Based on the PEO framework, the research question was formulated as:

1. Which sociodemographic traits are linked to a higher prevalence of perinatal depression and anxiety in pregnant mothers?

2. What effects do pregnancy-related variables including an unintended pregnancy, problems, and stage have on the possibility of developing signs of depression and anxiety throughout pregnancy?

3. What role do psychosocial elements including partner relationships, social support, and past mental health conditions have in the development of anxiety and perinatal depression during pregnancy?

The database search approach created thorough search strings by systematically combining keywords using Boolean operators.

- Search 1 used "OR" operators to aggregate all population-related synonyms: (pregnancy OR prenatal women OR antenatal women OR pregnant women OR expectant moms).

- Search 2 incorporated by exposure and factors: (risk factors OR social factors OR demographic factors OR economic circumstance OR "community assistant" OR "spouse assistant " OR " connection with partner" OR "perinatal difficulties" OR "existing psychological condition" OR "life situations" OR stressful circumstances OR unexpected pregnancy OR occupation OR educational background OR age OR the phases of pregnancy).

- The third search was centred on outcome terms: "mental health disorders" OR "psychological distress" OR "mood disorders" OR "perinatal depression OR antenatal depression OR postnatal depression OR "pregnancy depression" OR "maternal depression" OR "perinatal anxiety OR antenatal anxiety OR "pregnancy anxiety" OR "maternal anxiety].

- Search 4 paired with search 1 and search 2 and search 3.

In order to construct comprehensive search strings that were customised to each database's unique requirements and restricted vocabularies, these searches were methodically merged using "AND" operators: (Population terms) AND (Exposure terms) AND (Outcome words).

3.5 Key Words

In order to facilitate efficient literature searching and retrieval using database indexing systems, keywords are crucial descriptive terms that embody the primary concepts and themes of research investigations (Grant and Booth, 2009; Bramer et al., 2017). In order to achieve thorough database searches and make sure that pertinent studies are not missed because of differences in terminology, clinical classifications, or indexing practices between databases, it is imperative that

appropriate keywords be strategically used (Bramer et al., 2017; Atkinson and Cipriani, 2018; Grant and Booth, 2009). Perinatal depression and anxiety, pregnant women, pregnancy in the United Kingdom, maternal mental health, exposure components, socioeconomic determinants, pregnancy outcomes, and perinatal psychology were the primary search terms utilised in this study.

3.6 Databases

To ensure thorough coverage of pertinent literature, information was gathered by methodically exploring a number of electronic databases, augmented by institutional library resources and sophisticated search engines. Peer-reviewed databases, institutional repositories, government papers, and publications from professional mental health organisations were used to find academic sources. Research shows that only 50–80% of pertinent papers are usually returned by a single database search, and that coverage varies significantly among subject areas and geographical locations (Sampson et al., 2009; Goossen et al., 2020; Bramer et al., 2017; Vassar et al., 2017).

However, because different databases have varying coverage areas, subject specialisations, indexing procedures, and search interfaces, searching numerous databases is necessary for thorough literature assessments (Bramer et al., 2016; Zhao, 2014; Betrán et al., 2005; Hartling et al., 2016). Additionally, because of variances in regional coverage, publication trends, indexing, and database-specific restrictions, multi-database searching lowers the chance of overlooking significant studies (Wright et al., 2013).

The following databases and resources were searched: Google Scholar Advanced Search for broader academic coverage and supplementary sources such as thesis, conference proceedings, and institutional publications that may not be indexed in traditional databases; MEDLINE (via PubMed) for comprehensive biomedical and mental health literature, offering access to over 30 million citations with strong coverage of peer-reviewed medical journals; and University of Wales Trinity Saint David Library database collections, providing accessibility to institutional subscriptions, specialised health databases, and UK-specific academic resources.

3.7 Inclusion/Exclusion criteria

A systematic review's inclusion and exclusion criteria are preset guidelines that specify which studies will be considered or eliminated (Aveyard, 2018; Meline, 2006; Tod, 2019). These standards are necessary to ensure methodological consistency, minimise selection bias, and keep the research issue front and centre (Moher et al., 2015; Meline, 2006; Tod, 2019). By making the selection process easier for other researchers to comprehend and possibly duplicate, clearly specified criteria improve the systematic review method's reproducibility and transparency (Okoli, 2015; Pieper, Hess, and Faggion, 2021; Shokraneh, 2019). Preventing immediately

following the fact decisions that could add bias into the review process and preserving impartiality are two benefits of establishing explicit criteria prior to the selection process (Whysall, 2018; Infante-Rivard & Cusson, 2018).

3.7.1. Inclusion criteria

To ensure that the included studies are pertinent to the research objectives, the inclusion criteria for this study were carefully established. Studies were included if they looked at risk factors, protective factors, or determinants of perinatal mental health; were published in peer-reviewed journals; used qualitative and quantitative method designs followed by cross-sectional, cohort, and longitudinal studies; and included pregnant women as participants. They also had to be published in English and examine factors associated with perinatal depression and/or anxiety among pregnant women. In order to obtain a thorough grasp of the factors influencing perinatal mental health, studies that addressed both anxiety and depression were given special priority.

3.7.2. Exclusion criteria

The subsequent exclusion criteria were created for this review in order to guarantee a targeted and suitable synthesis of the evidence. Studies that were published in languages other than English, included only non-pregnant populations, were published before 2014, contained case reports, editorials, or opinion pieces, lacked original research data, only examined treatment interventions without looking at related factors, or were conference abstracts without full-text availability were all disqualified. To keep the focus on common perinatal mental health issues, studies that solely looked at severe mental illness or psychosis were also disqualified.

3.8. Search Results

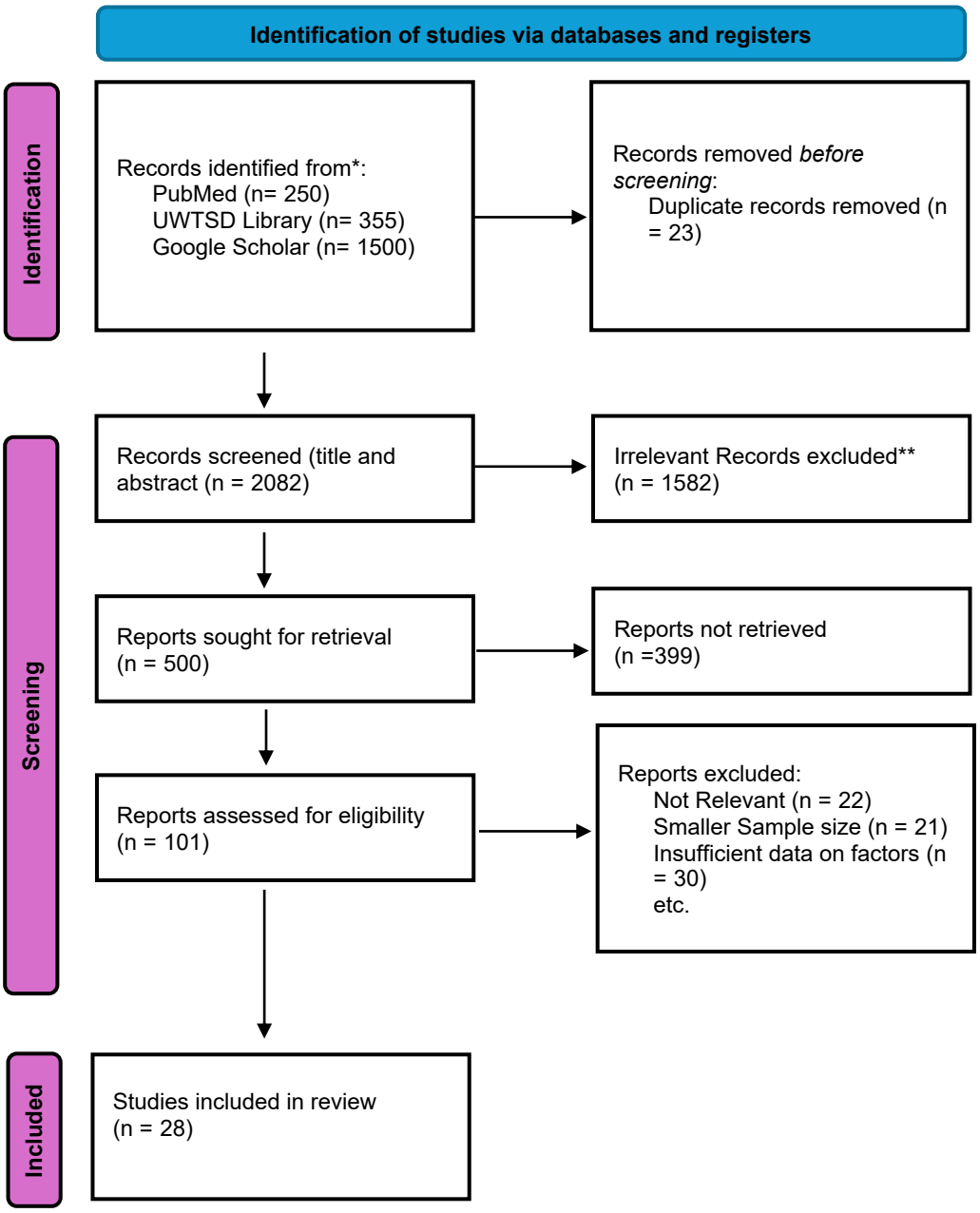
A total of 2,105 conceivably pertinent articles were found after a thorough search across several databases. After 23 duplicates were eliminated, 2,082 papers were screened through titles and abstracts. Because they either did not fit the inclusion criteria or were obviously unrelated to the research subject, 1,582 of these papers were disqualified after conducting title and abstract reviews. 500 records were left for further evaluation after 1,582 of the 2,082 articles that were reviewed were disqualified for having content unrelated to the research questions.

399 reports were not obtained out of the 500 records that were requested because the entire text was not available. The admissibility of the remaining 101 reports was evaluated using predetermined inclusion criteria. A reduced sample size, insufficient factor data, and an irrelevant population led to the exclusion of 73 reports from this assessment. In the end, 28 papers were included in the final review after meeting all

inclusion criteria. Through a methodical two-stage screening procedure, first at the title and abstract level and then a thorough full-text review, irrelevant research was eliminated. This procedure reduced selection bias, preserved reliability, and guaranteed thorough study selection.

The systematic recording of the progression of documents from identification to inclusion was made possible by the use of the PRISMA flowchart, which offered an organised and visible framework for handling the search results (Page et al., 2021). By giving readers, a clear picture of how the final set of papers was chosen, this visual depiction improves the systematic review's transparency and reproducibility.

Figure. 3.1: PRISMA flow chart (Constructed from Page et al., 2021).



3.9. Ethical Consideration

The moral standards and guidelines that direct research activities and guarantee the preservation of participants' rights, welfare, and dignity are referred to as ethics in research (Beauchamp and Childress, 2019; Vanclay, Baines, and Taylor, 2013; Bachynski and McKee, 2025). Making sure that all included research has had the proper ethical permission from pertinent institutional review boards or ethics committees is one ethical issue when choosing literature for systematic reviews (Weber et al., 2025; Wu et al., 2019; Suri, 2020). Only studies that specifically declared receiving ethical permission or that were carried out in compliance with accepted ethical standards for research with pregnant women were included in this review in order to take ethics into account.

The ethical ramifications of the research findings were also considered, guaranteeing that the synthesis of the evidence would favourably advance knowledge and enhance perinatal mental health services while preventing the stigmatisation of expectant mothers who are dealing with mental health issues (De Wet et al., 2023). Additionally, by confirming that no sensitive or personal information is present and reaffirming a commitment to keeping any proprietary information or unpublished works found during the literature search confidential, the evaluation will prioritise data security and confidentiality (Borgman, 2018).

3.10. Chapter Summary

This chapter describes a methodical approach to performing a comprehensive review of the variables affecting pregnant women's perinatal anxiety and depression. It goes into detail about the inclusion and exclusion criteria, database selection, search methodology, and ethical considerations. Using open, repeatable procedures, 28 studies were methodically chosen from 2,105 preliminary findings under the direction of the PEO framework (Moher et al., 2015). Data extraction and evaluation will be covered in the upcoming chapter 4. Using instruments appropriate for quantitative designs, it will critically evaluate the included studies' methodological quality and evaluate the validity and rigour of the results to facilitate further synthesis and analysis.

Chapter 4: Data extraction and evaluation

4.1 Introduction to the chapter

By carefully analysing the selected studies, the data extraction and evaluation chapter seeks to ascertain their calibre, dependability, and applicability. The validity and reliability of the synthesised evidence are guaranteed by this important procedure. Using the proper tools, this chapter will examine the critical appraisal process, which includes evaluating every research article that was discovered using qualitative, quantitative, and mixed methods. By a thorough assessment of study designs, methodologies, strengths, and limits, this chapter ensures the reliability of the review's conclusions. Lastly, this chapter will bolster the review's legitimacy and validate the results of the literature analysis.

4.2 Data Extraction

For additional analysis or synthesis, data extraction is the systematic gathering of relevant information from certain studies or sources (Büchter, Weise, and Pieper, 2020; Cooper et al., 2019; Mathes, Klaßen, and Pieper, 2017). Additionally, it is described as "the systematic approach to evaluating, gathering, and summarising the pertinent details from primary research investigations in order to tackle specific research questions" (Shokraneh and Adams, 2017; Taylor, Mahtani, and Aronson, 2021; Mathes, Klaßen, and Pieper, 2017).

Gathering certain data points or variables from each included study using a predefined data extraction form is known as data extraction in the context of a systematic literature review (Jonnalagadda, Goyal, and Huffman, 2015; Büchter, Weise, and Pieper, 2020). This form typically summarises the key features or significant information that will be gathered from every study, including the study title, author(s), year of publication, study design, sample size, exposure or intervention, outcome measures, findings, and any other relevant data (Büchter, Weise, and Pieper, 2020).Afifi, Stryhn, and Sanchez (2023); Taylor et al. (2022); Munn, Tufanaru, and Aromataris (2014); and others cite the retrieved data as the foundation for the synthesis and analysis of findings in the review. The comprehensive data extraction table of the included qualitative and quantitative research can be found in Appendices 1.

4.3 Concise introduction to critical appraisal and paper quality assessment

The methodical evaluation of the reliability, validity, and utility of research papers is known as critical appraisal (Munn, Tufanaru, and Aromataris, 2014; Dodd et al., 2020; Tod, Booth, and Smith, 2022). It comprises analysing a number of study components, including the design, methodology, sample size, data analysis, and interpretation of the findings (Dodd et al., 2020; Young and Solomon, 2009; Tod, Booth, and Smith, 2022).

To guarantee the validity and dependability of study findings, critical evaluation is crucial (Purssell and McCrae, 2024; Tod, Booth, and Smith, 2022; Dobreva, 2011). By thoroughly analysing a study's strengths and limitations, researchers can assess how much of its findings can be applied to enhance practice, policy, or future research (Shaheen et al., 2023; Noble and Smith, 2015; Milzow et al., 2019). Because there is a chance of adopting biassed or inaccurate research if it is not carefully evaluated. This could result in incorrect interpretations and have serious repercussions for people, organisations, and society at large (Crombie, 2022; Luijendijk et al., 2020).

4.4 Critical Appraisal Tools

Critical appraisal tools are methodical frameworks for evaluating research publications' quality, applicability, and reliability, particularly in qualitative and quantitative studies (Tod, Booth, and Smith, 2022; Munthe-Kaas et al., 2019; Long, French, and Brooks, 2020). It is essential to select the appropriate critical appraisal approach since it guarantees a thorough and consistent assessment of research papers, supporting informed choices and research interpretation (Hong et al., 2019).

Components of qualitative research methodology, data collection techniques, analytical strategies, interpretation of findings, and reflexivity are all assessed by the Critical Appraisal Skills Programme (CASP) (Long, French, and Brooks, 2020). On the other hand, methods like the Joanna Briggs Institute (JBI), which offers particular instruments for evaluating the reliability, applicability, and outcomes of both qualitative and quantitative research (Barker et al., 2023).

These techniques support methodological rigour and boost confidence in study results by helping investigators and experts recognise the advantages and disadvantages of research articles (Ciubotariu and Bosch, 2022; Synowiec et al., 2023; Marra and Nielsen, 2025). A comprehensive assessment is made possible by the appropriate use of these methods, which permits well-informed choices regarding the reliability and validity of study results (Noble and Smith, 2015; Elo et al., 2014; Stahl and King, 2020; Heale and Twycross, 2015; Thomas et al., 2020).

4.5 Evaluation of Qualitative Studies

Evaluating qualitative research is essential when performing a systematic literature review on the impact of various risk factors of depression and anxiety on pregnant women's mental health in order to gain understanding of people's experiences, attitudes, and actions about perinatal mental health. Given its reliability in assessing the calibre of qualitative research investigations, the Critical Appraisal Skills Programme (CASP) tool stands out as an appropriate option for this purpose (Maeda et al., 2023). According to Long, French, and Brooks (2020), the CASP instrument offers a thorough framework for evaluating several aspects of qualitative analysis techniques, which is in line with the goal of elucidating the intricacies of prenatal depression and anxiety's impact on mental health. A systematic examination of important components, including research design, data collection methods, analytical methodologies, findings interpretation, and researcher reflexivity, is made possible by its structured methodology (Darawsheh et al., 2014).

One of the CASP tool's advantages is its easy-to-use style, which encourages rigorous and consistent evaluation across several qualitative investigations (Long, French, and Brooks, 2020). According to Long, French, and Brooks (2020), CASP's emphasis on methodological transparency and rigour makes it easier to identify the advantages and disadvantages of study design and execution, which improves the dependability and credibility of research findings. Contrary to this, recognising the CASP tool's limits is crucial, though. It may not adequately capture the subtleties of new or creative approaches, even while it provides an effective basis for evaluating qualitative research (Noyes et al., 2018). Moreover, it may introduce heterogeneity in evaluation outcomes among reviewers due to its reliance on individual judgement in scoring standards. Furthermore, Long, French, and Brooks (2020) note that although CASP directs the evaluation of methodological quality, it could ignore more extensive contextual elements that affect how study findings are interpreted and applied.

There are differences when comparing CASP to other qualitative appraisal instruments that are currently in use, such as the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (De Jong et al., 2021; Williams, Boylan, and Nunan, 2020). Although CASP is notable for being straightforward and flexible enough to accommodate different qualitative research designs, it could not have the depth or specificity offered by more specialised tools made for certain qualitative methodology or research contexts (Long, French, and Brooks, 2020).

To sum up, the Critical Appraisal Skills Programme (CASP) instrument is a useful tool for assessing qualitative research on the influence of risk factors on pregnant women's perinatal mental health.

4.6 Critical Appraisal for Relevant Qualitative Study

Exploring the emotional experiences of pregnant women in the UK during the first national lockdown is the clearly stated research goal of the Jones et al. (2022) study on perinatal distress during the COVID-19 pandemic. Given the study's emphasis on subjective emotions and lived experiences, the use of qualitative technique is suitable, and this goal is successfully supported by the design of an inductive thematic analysis of open-ended survey responses. In order to ensure relevance to the research topic and capture a wide range of experiences, the recruiting technique comprised inviting individuals from a wider survey cohort. The strategy was appropriate for the exploratory nature of the study and permitted a sizable, varied sample, but not being as focused as purposive or snowball sampling.

Due to the delicate and emotionally complicated nature of perinatal distress, open-ended survey questions made it possible for participants to describe their experiences in their own words. Although this approach is not as thorough as semi-structured interviews, it was sensible and morally right in a pandemic situation. By recognising the constraints of remote, anonymous data collecting, the researchers showed that they were cognisant of their interaction with the participants. The study approach minimised intrusion and honoured participants' emotional boundaries, despite the fact that direct rapport-building was not feasible. All ethical issues, including informed permission, anonymity, and ethical approval, were covered in detail. The vulnerable population was taken into consideration when conducting the study.

All things considered, Jones et al. (2022) provide a pertinent and significant addition to knowledge of perinatal mental health in the context of a worldwide emergency. With ramifications for future healthcare policy and support services, their findings provide light on important emotional themes like worry, interrupted treatment, and solitude.

4.7 Evaluation of Quantitative Studies

The chosen quantitative studies include a wide range of empirical research with the goal of clarifying the complex factors influencing perinatal anxiety and depression in pregnant women from various backgrounds and populations. The appraisal framework created by Coughlan, Cronin, and Ryan (2007) has been modified as a strong methodological instrument for evaluating the calibre and validity of quantitative research in order to guarantee a thorough and methodical assessment of these studies. A systematic evaluation of crucial elements such study design, sampling, tactics, data collection techniques, statistical analyses, and result interpretation is made possible by this framework (Cronin et al., 2007).

A thorough grasp of the methodological advantages and disadvantages present in research on perinatal mental health is made easier by the application of this

framework. It enables researchers to investigate the relationship between depressive and anxiety symptoms during pregnancy and factors like socioeconomic status, obstetric history, social support, and psychological resilience (Biaggi et al., 2016; Best et al., 2024; Bina et al., 2025; Shorey et al., 2018). By following this methodical process, researchers can improve the evaluations' transparency, dependability, and relevance, which will ultimately lead to better clinical procedures and public health initiatives that focus on maternal mental health (Howard et al., 2018; Shorey et al., 2018).

When used across a variety of study types, the Coughlan, Cronin, and Ryan (2007) framework offers a well-organised and generally recognised way for assessing the methodological rigour of quantitative research; nonetheless, it is crucial to be aware of its limits. Coughlan, Cronin, and Ryan (2007) suggest that although the framework is systematic, it might not adequately capture the nuances or context-specific criteria needed to evaluate various study types. Conversely, more specialised instruments like the Newcastle-Ottawa Scale (NOS) for cohort and case-control studies and the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies provide customised criteria that improve the accuracy and applicability of the appraisal process (Moola et al., 2020; Zeng et al., 2015). These tools offer extra features that are especially appropriate for their individual study designs, like comparability, bias assessment, and outcome evaluation. The comprehensive critical evaluation of the included qualitative and quantitative research can be found in Appendices 2, Tables 4.7.1 through 4.7.10.

4.8 Critical Appraisal of Relevant Quantitative Studies

Of the 28 papers chosen for the systemic literature review, 27 were employed as quantitative approaches. A wide variety of reporting techniques were used to evaluate mental health outcomes pertaining to elements or characteristics linked to prenatal anxiety and depression.

Among the studies assessed, 13 of the evaluated studies used a cross-sectional design. These studies include research by Jimènez-Barragan et al. (2024), deMontigny et al. (2020), Ginja et al. (2020), Waqas et al. (2015), Wang et al. (2025), Barton et al. (2017), Umuziga, Adejumo, and Hynie (2020), Cena et al. (2020), Cena et al. (2021), Ramohlola, Maimela, and Ntuli (2022); Davis et al., 2023; Jing et al., 2016; and Akçali Aslan et al. (2014). In addition, 12 cohort studies were carried out by Verbeek et al. (2019), Clayborne et al. (2022), Matsumura et al. (2019), van de Loo et al. (2018), Van der Waerden et al. (2015), Verreault et al. (2014), Martini et al. (2015), Morikawa et al. (2015), Gariepy et al. (2016), Mainali et al. (2023), Koutra et al. (2018), and Best et al. (2024). Furthermore, Cheng et al. (2021) and Zhu et al. (2024) conducted two prospective longitudinal studies.

Finding and comprehending the multiple contributing factors of perinatal depression and anxiety in expectant mothers is the main goal of the chosen studies. The associations between several sociodemographic, clinical, and psychosocial factors and mental health outcomes during the perinatal period have been methodically measured and analysed using a quantitative research technique. The purpose of these studies is to determine statistical correlations and, if feasible, to deduce causal relationships between the beginning or intensity of anxiety and depression symptoms and risk factors such low socioeconomic status, a lack of social support, obstetric problems, and a history of mental illness.

The quantitative methodology enables the objective evaluation of symptom prevalence and the strength of relationships across broad and different groups through the use of established screening tools and organised survey instruments (Thomas et al., 2021). Targeted therapies and public health policies can be informed by this method, which is especially appropriate for detecting patterns and predictors of perinatal mental health issues (Tauqeer et al., 2023; Liu et al., 2025). In this crucial area of maternal health research, the consistent application of quantitative approaches in all of these studies guarantees comparability and improves the credibility of findings (Smorti et al., 2023).

Research objectives were well-defined and in line with study designs in all 27 of the assessed papers. To enable temporal examination of mental health trajectories, the majority of research utilised cross-sectional or cohort techniques, with a small number using longitudinal designs such as (Martini et al., 2015; Van der Waerden et al., 2015). Reviews of the literature were organised properly and included pertinent research over the previous ten years. Every study included comprehensive sociodemographic information, such as age, education, income, parity, and marital status, along with a full description of the sample characteristics.

18 studies (e.g., Barton et al., 2017; Cena et al., 2021; Cheng et al., 2021; Gariepy et al., 2016; Jiménez-Barragan et al., 2024; Zhu et al., 2024) explicitly stated inclusion and exclusion criteria, whereas 7 studies (e.g., Umuziga, Adejumo, and Hynie, 2020; Davis et al., 2023; Ginja et al., 2020) only reported inclusion criteria. While 5 studies (e.g., Wang et al., 2025; demontigny et al., 2020; Morikawa et al., 2015; Mainali et al., 2023; Waqas et al., 2015) did not report either, while a few (e.g., Matsumura et al., 2019; Koutra et al., 2018) only stated exclusion criteria. The findings' comparability and repeatability may be impacted by this discrepancy in reporting.

Every study included a detailed description of data analysis methodologies, from regression modelling and statistical analysis of data to more complex approaches like logistic regression and XGBoost (Zhu et al., 2024). To find important risk variables, such as unwanted pregnancy (Wang et al., 2025; Barton et al., 2017), socioeconomic disadvantage (Best et al., 2024; Verbeek et al., 2019), and previous perinatal loss (Mainali et al., 2023; Jing et al., 2016), a number of research used

predictive modelling. With the use of instruments like the Japanese Social Support Questionnaire (J-SSQ) and the Modified Kendler Social Support Inventory (MKSSI), the function of social support was also thoroughly investigated in research like (Gariepy et al., 2016; Morikawa et al., 2015).

Numerous measurement instruments have been used to evaluate psychological outcomes and related risk variables in the enormous collection of research on prenatal mental health. The Edinburgh Postnatal Depression Scale (EPDS), the Hospital Anxiety and Depression Scale (HADS) and The State-Trait Anxiety Inventory (STAI) were the most frequently used to assess anxiety and depression. The Edinburgh Postnatal Depression Scale (EPDS) which was included in research such as Verreault et al. (2014), Umuziga, Adejumo, and Hynie (2020), Van der waerden et al. (2015), Matsumura et al. (2019), Morikawa et al. (2015), Ramohlola, Maimela, and Ntuli (2022), Jing et al. (2016), Koutra et al. (2018), Verbeek et al. (2019), Jones et al. (2022), Akçali Aslan et al. (2014), Cena et al. (2021), Ginja et al. (2020), Jiménez-Barragan et al. (2024), Zhu et al. (2024), (deMontigny et al., 2020).

Additionally, the Hospital Anxiety and Depression Scale (HADS) was widely used, particularly in (van de loo et al., 2018), (Barton et al., 2017), (Verbeek et al., 2019), (Jing et al., 2016), (Waqas et al., 2015) and (Ramohlola, Maimela, and Ntuli, 2022). The State-Trait Anxiety Inventory (STAI) (Jing et al., 2016; Koutra et al., 2018; Mainali et al., 2023; Verreault et al., 2014; Cheng et al., 2021; Cena et al., 2020; deMontigny et al., 2020; Ginja et al., 2020) and the Perinatal Anxiety Screening Scale (PASS) (Jones et al., 2022). In studies like (Gariepy et al., 2016), (Cena et al., 2020), (Verreault et al., 2014), (Martini et al., 2015) were used structured diagnostic interviews like the Composite International Diagnostic Interview (CIDI-V) and SCID-I (DSM-IV) to confirm clinical diagnoses. The Zung Self-rating Anxiety Scale (SAS) (Umuziga, Adejumo, and Hynie, 2020); the Whooley questions (Best et al., 2024 and Ginja et al., 2020); Depression, Anxiety, and Stress Scales-21 (DASS-21) used in (Wang et al., 2025 and Davis et al., 2023); the Centre for Epidemiologic Studies Depression Scale (CES-D) were used in (Waqas et al., 2015; Jing et al., 2016; Cheng et al., 2021) as other validated measures.

Surveys conducted via the web (Davis et al., 2023), socioeconomic assessments (Best et al., 2024; Van der Waerden et al., 2015), sleep and fatigue tests (Cheng et al., 2021), social support inventories such as the J-SSQ and MKSSI (Morikawa et al., 2015; Gariepy et al., 2016), and systematic interviews examining psychological stress and coping mechanisms (Jones et al., 2022). A range of tools were used to evaluate risk factors. Additionally, studies explored factors like pregnancy intention, unplanned pregnancy, perinatal loss, education level, employment, partner violence, and regional deprivation (Barton et al., 2017; Mainali et al., 2023; Matsumura et al., 2019; Verbeek et al., 2019). They also used predictive modelling techniques like XGBoost and logistic regression (Zhu et al., 2024). When combined, these resources offered a thorough foundation for comprehending the complex nature of perinatal mental health in various demographics and settings of expectant mothers.

Validated tools with established psychological reliability, including the EPDS, HADS, STAI, and CES-D were used in the majority of research. For instance, the EPDS provided standardised screening for depression-related symptoms across a range of populations and was utilised in research such as Verreault et al. (2014); Van der waerden et al. (2015) and Waqas et al. (2015). Internal validity and comparability are improved by using these technologies. Nevertheless, several studies were unclear about cutoff scores or did not provide evidence to support the choice of instruments for particular groups. For example, even though (Jones et al., 2022) used both PASS and EPDS, the reasoning behind their combination was not thoroughly explained, which could have an impact on interpretability. Numerous studies, like those that focused on Rwandan women (Umuziga, Adejumo, and Hynie, 2020) and the Norwegian MoBa cohort (Clayborne et al., 2022), showed good population coverage. This research advances our knowledge of prenatal mental health on a global scale. Others, however, limited generalisability by using convenience sampling or small sample sizes. For instance, women with past problems were the focus of (Jing et al., 2016), which might not be representative of larger maternal groups.

Pregnancy intention, relationship quality, and social support are among the psychosocial risk variables that have been robustly assessed by studies such as (Gariepy et al., 2016) and (Barton et al., 2017). These investigations gained depth through the use of structured interviews and inventories like the MKSSI and J-SSQ. However, bias may have been introduced by certain studies, such as (Mainali et al., 2023), which mostly relied on self-reported data without triangulating from clinical records. Only a small number of studies (e.g., Gariepy et al., 2016; Cena et al., 2020) used structured clinical interviews, such as SCID-I or CIDI-V, to confirm diagnosis. Although screening techniques are useful, the gold standard for validation is diagnostic interviews. Most studies lack these techniques, which reduces diagnosis accuracy and could lead to inflated prevalence estimates.

Longitudinal studies like Van der Waerden et al. (2015) and Martini et al. (2015) provided information on how anxiety and depression changed during pregnancy and after giving birth. These designs are superior for understanding causality and temporal patterns. In contrast, cross-sectional studies like (Ramohlola, Maimela, and Ntuli, 2022) and (Verbeek et al., 2019) are limited in establishing directionality of associations. Studies conducted in non-Western contexts, such as (Waqas et al., 2015) in Pakistan and (Umuziga, Adejumo, and Hynie, 2020) in Rwanda, addressed cultural dimensions of mental health. However, few studies adapted tools linguistically or culturally, which may affect validity. For example, EPDS translations were used, but psychometric properties in local contexts were not always reported. Zhu et al., (2024) incorporated predictive modelling (XGBoost, logistic regression), offering a modern approach to risk stratification. While promising, such methods require large datasets and careful validation to avoid overfitting.

Overall, the wide range of methodological approaches used in the evaluated research highlights how difficult it is to look at the variables linked to pregnant

women's anxiety and postpartum depression. Specific measurement instruments were used in each study, depending on the population demographics and research goals.

The compilation of these studies, in summary, emphasises the complexity of perinatal anxiety and depression. The requirement for a comprehensive understanding of maternal mental health is reflected in the variety of study designs, geographical locations, and assessment methods. The EPDS is still a mainstay for depression screening, but in order to advance research and guide therapeutic practice across a range of communities, it is crucial to incorporate culturally sensitive instruments and longitudinal data.

4.9 Chapter Summary

The methodical procedure of data extraction and critical evaluation utilised to assess perinatal mental health research was covered in detail in this chapter. It described how organised forms were used to gather pertinent study characteristics, including design, sample size, and findings. The CASP tool was used to evaluate qualitative research, and the Coughlan, Cronin, and Ryan (2007) framework was used to evaluate quantitative research.

After reviewing 27 papers, the Edinburgh Postnatal Depression Scale (EPDS); the Hospital Anxiety and Depression Scale (HADS) and The State-Trait Anxiety Inventory (STAI) were shown to be the most widely used instrument. Diverse sampling and the use of validated tools were among the strengths; inconsistent reporting and a lack of clinical interviews were among the drawbacks. According to the chapter's conclusion, the evidence base's credibility is increased by this meticulous approach. In order to identify trends, insights, and implications for perinatal mental health research, the following chapter 5 will provide a thorough thematic analysis of the chosen studies, define the analytical approach employed, characterise study features, and synthesise emerging themes.

Chapter 5: Data Analysis and Synthesis

5.1 Introduction to the chapter

Analysis and synthesis of data taken from the chosen studies that were part of the systematic literature review (SLR) are presented in this chapter. Thematic analysis is the main technique used since it makes it possible to find recurrent themes and patterns in the literature. The chapter opens with an explanation of the framework used and the justification for applying thematic analysis. After that, it describes the features and geographic distribution of the included studies. The chapter's main focus is the synthesis of new concepts that are backed up by literature-based data. A summary of the main conclusions and their ramifications bring the chapter to a close.

5.2 Thematic Analysis

One technique for finding, examining, and summarising patterns (themes) in qualitative data is thematic analysis (Nowell et al., 2017; Castleberry and Nolen, 2018; Joffe, 2011). Thomas and Harden (2008), Barnett-Page and Thomas (2009), Andreini and Bettinelli (2017) refer to the process of applying thematic synthesis to secondary information in systematic literature reviews (SLRs) as thematic synthesis. According to Castleberry and Nolen (2018), Thomas and Harden (2008), and Guest, MacQueen, and Namey (2011), thematic analysis is commonly linked to qualitative research, but it may also be applied to quantitative studies by detecting themes in the findings of pertinent publications to address the research question. A comprehensive examination of themes across several datasets is made possible by this method.

5.3 Data analysis tool

The six steps of the theme analysis framework familiarization, coding, topic development, review, definition, and reporting created by Braun and Clarke (2006) are used in this study. Many people acknowledge this framework's adaptability and thoroughness in assessing qualitative data (Terry et al., 2017; Maguire and Delahunt, 2017). Additionally, it facilitates the methodical extraction and arrangement of insights from intricate datasets, guaranteeing transparency and reproducibility throughout the synthesis process (Braun and Clarke, 2006; Maguire and Delahunt, 2017). Additionally, this framework offers a methodical and exacting procedure for locating and analysing patterns in the data, guaranteeing the validity of the conclusions (Nowell et al., 2017).

5.4 Features of the research that were found

28 papers from a variety of geographical locations were included in the systematic review. Numerous studies were derived from European countries such as the United Kingdom (Barton et al., 2017; Best et al., 2024; Ginja et al., 2020; Jones et al., 2022), Italy (Cena et al., 2020; Cena et al., 2021), France (van der Waerden et al., 2015), Norway (Clayborne et al., 2022), Greece (Koutra et al., 2018), Netherlands (van de Loo et al., 2018; Verbeek et al., 2019),Germany (Martini et al., 2015), Norway (Clayborne et al., 2022); Norway and Sweden (Mainali et al., 2023), and Spain (Jimènez-Barragan et al., 2024). however, others were situated in China (Jing et al., 2016; Wang et al., 2025; Zhu et al., 2024), Japan (Matsumura et al., 2019; Morikawa et al., 2015), and South Korea (Cheng et al., 2021).

Further research was carried out in the United States (Gariepy et al., 2016), Canada (Demontigny et al., 2020), Rwanda (Umuziga, Adejumo, and Hynie, 2020), South Africa (Ramohlola, Maimela, and Ntuli, 2022), Australia (Davis et al., 2023), Turkey (Akçalı Aslan et al., 2014), and Pakistan (Waqas et al., 2015). Despite differences in topic, sample size, and design, the research all added to the thematic synthesis. Appendices 1 and 2 contain comprehensive data extraction tables.

5.5 Themes that emerged from the included studies

Numerous overarching themes and sub-themes pertaining to the variables linked to perinatal depression and anxiety in pregnant women were found through the analysis of the included research. These themes cover a variety of factors, such as the correlation between the prevalence of prenatal mental health symptoms and particular sociodemographic traits like age, income, education, and work status. Furthermore, it was discovered that pregnancy-related variables such as unintended pregnancies, health issues, and gestational stage had a substantial impact on the probability of going through anxiety and sadness.

Pregnancy-related emotional distress was found to be significantly influenced by psychosocial factors, such as the level of social support, interpersonal dynamics, and a history of mental health problems. Combining these results highlights the intricate interactions between biological, psychological, and social factors, offering important new insights into the multifactorial nature of perinatal anxiety and depression. Future studies aiming at enhancing mother mental health outcomes during pregnancy will be informed by these insights, which provide a basis for creating focused interventions.

Table 5.1: Themes and Sub-Themes Associated with Perinatal Depression and Anxiety

Theme	Sub-Themes	Description	Key References
Theme 1: Sociodemographic determinants impacting the mental health of pregnant women	Age, Education, and Employment Status	Higher risk of depression is associated with younger maternal age and lower educational attainment	Matsumura et al. (2019); Cena et al. (2021)
	Socioeconomic Status and Deprivation	Anxiety and sadness are closely linked to financial stress and deprivation	Best et al. (2024); Verbeek et al. (2019)
	Cultural and Geographic Background	Inequalities in mental health has immense consequences between rural and urban areas	Ginja et al. (2020); Wang et al. (2025); Akçalı Aslan et al. (2014); Umuziga, Adejumo, and Hynie (2020)
	Neighbourhood and Cultural Environments	Stigma and cultural standards have an impact on how people seek care and express their symptoms	Waqas et al. (2015); Wang et al. (2025)
Theme 2: Aspects connected with pregnancy and obstetric history	Unplanned or Unwanted Pregnancy	Associated with heightened psychological distress	Barton et al. (2017); Gariepy et al. (2016); Wang et al. (2025)
	Pregnancy Complications and high-risk situations	Anxiety and depression susceptibility is heightened by previous	Jing et al. (2016); Koutra et al. (2018)

		experience of anxiety and depression	
	Pregnancy phase and Hormonal modifications	The signs of mental illness change with each trimester	Jiménez-Barragán et al. (2024); Cheng et al. (2021)
	History of perinatal symptoms and variability	The risk of depression varies during pregnancy and the postpartum period	Zhu et al. (2024); Verreault et al. (2014); Van der Waerden et al. (2015)
Theme 3: Relationship and Environmental Determinants	Social Support Networks or connections of societal assistance	Perinatal discomfort can be avoided by strong support	Morikawa et al. (2015); Barton et al. (2017)
	Partner Relationship Quality	Anxiety and depression are more likely to occur in relationships with poor interactions.	Barton et al. (2017); Jones et al. (2022)
	Background of Mental Health Conditions	Previous mental health issues forecast perinatal anxiety and depression	Martini et al. (2015); Van der Waerden et al. (2015); Verreault et al. (2014)
	Insufficient financial and emotional assistance	A partner's inadequate emotional and financial assistance made a person more susceptible to anxiety and depression	Ramohlola, Maimela, and Ntuli (2022)
	Stress and Mental Pressure	Prenatal and postpartum depression are predicted by high anxiety levels	Zhu et al. (2024)

Theme 4: Stressful experiences in life and outside influences	Work-Related anxiousness	Workplace stress and mental health problems during and after pregnancy	Clayborne et al. (2022)
	Pandemic-associated distress	COVID-19 made pregnancy suffering worse	Davis et al. (2023); Jones et al. (2022)
	Trauma and Bereavement	Vulnerability is increased by spontaneous abortion and perinatal death	Mainali et al. (2023); Demontigny et al. (2020)
Theme 5: Continuous Observations and Prediction Mechanisms	Postpartum Continuity	Antenatal symptoms often predict postpartum depression	Cheng et al. (2021); Cena et al. (2021)
	Potential hazards Identification Forecasting	Early detection aids in predicting postpartum difficulties	Verreault et al. (2014)

5.5.1 Theme 1: Sociodemographic determinants impacting the mental health of pregnant women

5.5.1.1 Age, Education, and Employment Status

Maternal age, education, and work position are sociodemographic characteristics that have been repeatedly associated with the incidence of prenatal depression (Cena et al., 2021; Matsumura et al., 2019). Using data from the Japan Environment and Children's Study, Matsumura et al. (2019) discovered a strong correlation between postpartum depression and lower educational attainment. This suggests that a lack of education may limit access to health literacy and coping mechanisms (Matsumura et al., 2019).

Similarly, in a multicentred Italian study, Cena et al. (2021) found that insecure work and younger maternal age were important predictors of both prenatal and postnatal depression. Pregnancy-related feelings of vulnerability can be made worse by unemployment or unstable employment, and younger moms may experience increased emotional and financial stress (Cena et al., 2021). All of these results point

to the significance of focused mental health screening and assistance for women who are younger, less educated, and experiencing financial difficulty.

5.5.1.2 Socioeconomic Status and Deprivation

One of the most important indicators of prenatal anxiety and depression is socioeconomic deprivation and financial hardship. Best et al. (2024) discovered a complicated interplay between contextual and personal deprivation, finding that women in disadvantaged UK neighbourhoods were more likely to experience anxiety, with larger impacts shown in wealthier regions.

Verbeek et al. (2019) shown that low socioeconomic position, which is characterised by low income, unemployment, and insufficient education, not only increased the likelihood of prenatal anxiety and depression but also exacerbated the psychological effects of prior traumatic events. Their cohort study from the Netherlands showed that underprivileged women had worse resilience. These two articles results highlight the value of specialised mental health treatments that deal with accumulated stressors and financial instability during pregnancy.

5.5.1.3 Cultural and Geographic Background

Geographic remoteness, cultural norms, and differential access to care all contribute to the differences in prenatal mental health between rural and urban areas. According to Ginja et al. (2020), perinatal women in rural UK regions had greater rates of anxiety and depression than those in urban areas. The trend continued even after controlling for socioeconomic characteristics, indicating that rurality itself might be a stressor, even though statistical significance decreased (Ginja et al., 2020). Long travel distances, a lack of social support, and a lack of mental health resources were all contributing causes (Ginja et al., 2020).

This vulnerability is reinforced by international studies. According to Akçalı Aslan et al. (2014), pregnant women in Eastern Turkey had a 16.8% prevalence of depressive disorders, with risk factors including violence, unintended pregnancies, and spousal unemployment. The lack of cultural stigma and inadequate infrastructure in the area exacerbated anxiety, highlighting the necessity of culturally sensitive interventions and customised screening (Akçalı Aslan et al., 2014).

Similarly, Umuziga, Adejumo, and Hynie (2020) discovered that postnatal anxiety and depression rates in Rwanda's Eastern Province were 48.1% and 63.6%, respectively. Poor spouse connections and exposure to trauma stressors, which are more prevalent in rural areas, were important predictors and according to their findings, social variables have a greater influence on mental health outcomes than clinical aspects (Umuziga, Adejumo, and Hynie, 2020).

Identically, according to Wang et al. (2025), there is strong evidence that pregnant women in rural China are more likely to experience mental health issues, particularly

if they became pregnant unintentionally. 41.44% of pregnancies in Shaanxi Province were unplanned, and they were substantially associated with higher levels of stress (OR = 2.15) and anxiety (OR = 1.96). Women without jobs and those living with their mother-in-law experienced the greatest proportion of the burden, demonstrating how conventional family roles and socioeconomic difficulties exacerbate misery (Wang et al., 2025). Limited access to mental health care, ongoing stigma, and fragmented support systems further complicate these issues unlike urban places with stronger infrastructure and knowledge, rural women typically lack professional supervision and autonomy (Wang et al., 2025).

When taken as a whole, these findings show that ingrained social and systemic injustices put rural populations at higher risk for perinatal mental health problems. Localised approaches that improve service availability, encourage community support, and eliminate stigmas associated with maternal mental health are necessary to address these inequities.

5.5.1.4 Neighbourhood and Cultural Environments

Different areas' experiences, expressions, and management of perinatal mental health problems are greatly influenced by cultural norms and stigma. Waqas et al. (2015) discovered that sociocultural elements such gender norms, family dynamics, and a lack of social support had a significant impact on prenatal anxiety and depression in Pakistan. Because of ingrained patriarchal beliefs that promote male offspring, women who had more girls reported higher levels of psychological discomfort (Waqas et al., 2015). Underreporting and a reluctance to seek help were further exacerbated by mental health stigma and low understanding, especially in rural areas where emotional support was limited and cultural norms prevented candid conversations about mental health (Waqas et al., 2015).

In a similar vein, Wang et al. (2025) looked at maternal mental health in rural China and discovered that unwanted pregnancies were substantially linked to higher levels of stress and anxiety. Emotional pressure was exacerbated by cultural norms surrounding family planning and traditional living arrangements, particularly cohabitation with in-laws. According to Wang et al. (2025), women who lived with their mother-in-law were much more vulnerable, demonstrating how inflexible gender roles and hierarchical family systems might worsen misery. Help-seeking was significantly hampered by the stigma associated with mental illness, inadequate mental health literacy, and restricted access to care (Wang et al., 2025).

In particular, in underprivileged and traditional communities, these studies collectively highlight the need for culturally responsive treatments that empower women, combat stigma, and incorporate mental health education into maternity healthcare systems.

5.5.2 Theme 2: Aspects connected with pregnancy and obstetric history

5.5.2.1 Unplanned or Unwanted Pregnancy

Increased psychological discomfort throughout the postpartum period has been repeatedly associated with unintended or unplanned pregnancies. In a cross-sectional study of partnered women conducted in the UK, Barton et al. (2017) discovered that unintended pregnancies were substantially linked to higher probabilities of psychological distress, such as anxiety and depression, nine months after giving birth. Relationship quality and social support were important moderating factors, and the effect was most noticeable among women who expressed conflicted or uncomfortable emotions upon learning they were pregnant (Barton et al., 2017).

Similarly, Gariepy et al. (2016) showed that significant depressive episodes and perceived stress during pregnancy were linked to both unintended and unexpected pregnancies. According to their U.S. cohort study, inadequate social support and general anxiety disorder were especially predicted by poorly timed births, indicating that emotional preparedness can be just as important as planning status.

Wang et al. (2025) expanded on this finding in rural China, demonstrating that unwanted pregnancies were substantially associated with higher levels of stress and anxiety symptoms, particularly among women without jobs and those in conventional household structures. In order to reduce the dangers to mental health, this studies collectively emphasise the psychological susceptibility linked to unintended pregnancies and the significance of early screening, emotional support, and culturally responsive therapies.

5.5.2.2 Pregnancy complications and high-risk situations

High-risk illnesses and pregnancy problems are important indicators of mother psychological distress, including depression and anxiety. According to a study by Jing et al. (2016), anxiety (7.18%) and depression (5.13%) were common in the second trimester among pregnant women in Shanghai. Elevated mental discomfort was associated with factors like hepatitis, haemorrhaging, glucose-positive urine, and previous miscarriage. Family strife, marital stress, and poor health are psychosocial stressors that exacerbate symptoms (Jing et al., 2016).

In their study of the Rhea cohort in Crete, Koutra et al. (2018) found that postpartum depression was influenced by gestational hypertension, preeclampsia, and breastfeeding challenges. Increased depressed symptoms were also linked to sleep problems, particularly snoring and sleep deprivation (Koutra et al., 2018). Higher depression ratings were originally associated with hospitalisation and unintended pregnancies, although these were impacted by sociodemographic factors (Koutra et al., 2018).

In order to lower long-term mental health risks, these researches emphasise the complex nature of psychological susceptibility in high-risk pregnancies and the necessity of early screening, psychosocial support, and customised therapies.

5.5.2.3 Pregnancy phase and Hormonal modifications

Pregnancy-related mental health symptoms are dynamic and alter throughout the phases of pregnancy in connection with hormonal, physiological, and psychological shifts. In a multicentre study carried out in Spain, Jiménez-Barragán et al. (2024) discovered that the symptoms of anxiety and depression differed greatly during the course of pregnancy and into the postpartum phase. According to their screening, there was increased vulnerability during the first 12 to 14 weeks of pregnancy, and risk variables like younger age, less education, and a history of psychological issues all contributed to higher scores on the Edinburgh Postnatal Depression Scale (EPDS) (Jiménez-Barragán et al., 2024). During the second and third trimesters, these symptoms continued and changed, frequently getting worse after giving birth, especially in women who had unresolved marital or psychological problems (Jiménez-Barragán et al., 2024).

In a similar vein, Cheng et al. (2021) found that anxiety and depression symptoms peaked in late pregnancy and continued to be heightened into the postpartum period in their longitudinal research in Taiwan. Stress levels rose after childbirth after declining during pregnancy, suggesting a cyclical pattern of emotional pressure. Because hormonal changes and life transitions have a distinct impact on psychological wellbeing at every stage of pregnancy, both research highlight the significance of trimester-specific mental health screening and interventions.

5.5.2.4 History of perinatal symptoms and variability

With symptoms varying throughout different phases of pregnancy and the postpartum period, the risk of depression throughout the perinatal period is dynamic. In a prospective study conducted in Canada, Verreault et al. (2014) discovered that 16.4% of women reported having depression symptoms three months after giving birth, whereas 28.3% of women reported having more severe symptoms throughout the third trimester. Because early psychological problems can predict later onset, it is crucial to monitor depressive symptoms during pregnancy. Notably, 6.6% of postpartum cases were new-onset depression, which is different from prenatal episodes (Verreault et al., 2014).

In the same way, Zhu et al. (2024) evaluated depression at six different time points three postpartum intervals and each trimester in longitudinal research carried out in China. Significant variance was seen in their results, with depression rates highest at one week postpartum (19.4%), staying high at six months (17.5%), and then falling at twelve months (8.9%). According to the study, certain risk factors like income,

work status, and unplanned pregnancy were more predictive at particular phases (Zhu et al., 2024).

Van der Waerden et al. (2015) found stable and persistent depression trajectories that continued throughout early childhood using longitudinal data from the EDEN cohort in France. According to Van der Waerden et al. (2015), prenatal anxiety, low mother education, and socioeconomic adversity were all significant predictors of persistent depressive tendencies. Combined, these studies highlight the fact that prenatal depression is an illness with a shifting progression rather than an ongoing condition, necessitating screening at different stages and customised therapies to meet changing psychological needs.

5.5.3 Theme 3: Relationship and Environmental Determinants

5.5.3.1 Social Support Networks or connections of societal assistance

Maternal mental health throughout the perinatal period is greatly influenced by the quality of the partner relationship; poor dynamics are associated with higher psychological discomfort. In UK research of 12,462 partnered women, Barton et al. (2017) discovered that unexpected pregnancies were linked to increased suffering nine months after giving birth, particularly for women who felt conflicted or unfavourable about the pregnancy. Crucially, supportive connections highlighted their protective effect by lowering the likelihood of suffering.

Similar to this, Jones et al. (2022) investigated prenatal discomfort during the COVID-19 pandemic and found that a significant cause of emotional distress was strained partner connections. Conflict, loneliness, and unfulfilled emotional needs were cited by participants as the main causes of anxiety and depression (Jones et al., 2022). Both studies demonstrated how disruptions in social support could worsen anxiety and endanger the health of mothers, particularly in times of vulnerability such as pregnancy or global emergencies.

5.5.3.2 Partner Relationship Quality

Maternal mental health within the perinatal period is significantly impacted by the quality of the partner relationship; poor dynamics are associated with higher psychological discomfort. In UK research of 12,462 partnered women, Barton et al. (2017) discovered that unexpected pregnancies were linked to increased suffering nine months after giving birth, particularly for women who felt conflicted or unfavourable about the pregnancy. Crucially, supportive connections highlighted their protective effect by lowering the likelihood of suffering.

Similar to this, Jones et al. (2022) investigated prenatal discomfort during the COVID-19 pandemic and found that a significant cause of emotional distress was

strained partner connections. Conflict, loneliness, and unfulfilled emotional needs were cited by participants as the main causes of anxiety and depression. Both this research highlighted how relational support interruptions might exacerbate distress and jeopardise maternal wellbeing, especially during vulnerable times like pregnancy or international crises. These results highlight the importance of assessing and enhancing partner connections as a fundamental aspect of perinatal mental health treatment.

5.5.3.3 Background of Mental Health Conditions

A history of mental illnesses, particularly anxiety and depression, is an effective indicator of perinatal mental health issues, according to mounting research. In their MARI study of 306 expecting mothers, Martini et al. (2015) discovered that pre-existing depression and anxiety were more important predictors of peripartum mental health problems than other psychosocial factors. Pregnant and postpartum women with previous diagnoses were more likely to have ongoing symptoms, indicating a persistent vulnerability. On the other hand five trajectories of mother depression from pregnancy to early childhood were discovered by Van der Waerden et al. (2015) using data from the EDEN cohort in France. High levels of anxiety during pregnancy and prior mental health issues were associated with the most enduring patterns (Van der Waerden et al.,2015).

In a study involving 364 women, Verreault et al. (2014) confirmed these results, demonstrating that emotional history, including anxiety and depression, was substantially linked to increased depressive symptoms while pregnant and newly diagnosed postpartum depression. Women having a history of mental health problems were more likely to experience mood disorders because they also reported simultaneous anxiety and increased stress sensitivity. Together, these investigations demonstrate that psychological past is a key factor in determining prenatal mental health rather than a secondary feature. To lessen long-term emotional suffering and enhance maternal wellbeing, proactive screening and specialised prenatal care are crucial.

5.5.3.4 Insufficient financial and emotional assistance

Ramohlola, Maimela, and Ntuli (2022) emphasise how important financial and emotional assistance are in influencing pregnant women's mental health. According to their study conducted in South Africa's Limpopo Province, one in three pregnant women suffered from prenatal depression, and a major contributing factor was shown to be a lack of partner support. Particularly at risk were women who had never married, had no financial assistance, or had experienced violence from an intimate relationship (Ramohlola, Maimela, and Ntuli, 2022). According to Ramohlola, Maimela, and Ntuli (2022), financial instability exacerbated misery by

restricting access to necessary resources and healthcare, while emotional neglect such as a lack of empathy, reassurance, or shared responsibility left many feeling alone and overwhelmed.

These results demonstrate how important a partner's financial and emotional assistance is important for a mother's overall wellbeing. It is critical to address these vulnerabilities through psychosocial interventions and routine screening. Healthcare professionals can better support pregnant moms and lower the risk of depression and anxiety during pregnancy by understanding the effects of relational and financial pressures.

5.5.3.5 Stress and Mental Pressure

Across six perinatal time periods, Zhu et al. (2024) found that high perceived stress was a significant predictor of both prenatal and postpartum depression. Stress levels were closely associated with higher levels of depression symptoms, especially in the last stages of pregnancy and shortly after delivery, according to their prospective study conducted in China (Zhu et al., 2024). Women who were dealing with troubled relationships, unplanned pregnancies, or financial instability were additionally inclined to report high levels of stress, which made them more susceptible to depression (Zhu et al., 2024). These results highlight the value of tailored therapies and early stress screening in lowering emotional burden and enhancing mother mental health outcomes during and after pregnancy.

5.5.4 Theme 4: Stressful experiences in life and outside influences

5.5.4.1 Work-Related anxiousness

Prenatal work stress dramatically raises the risk of prenatal and postnatal anxiety and depression, according to Clayborne et al. (2022). Stressors like low job autonomy, poor relationships at work, and a lack of enjoyment at work were linked to higher mental health symptoms during pregnancy and six months after giving birth, according to research based on the Norwegian Mother, Father and Child Cohort Study (MoBa), which included 78,000 working women (Clayborne et al., 2022). These findings underline the pressing requirement for workplace initiatives that support maternal mental health, stressing the significance of psychological protection and flexibility for expectant and new mothers, even after controlling for maternity leave and other work-related factors (Clayborne et al., 2022).

5.5.4.2 Pandemic- associated distress

Studies conducted in Australia and the UK have demonstrated that the COVID-19 pandemic greatly increased prenatal mental health issues. In a survey of 1,668

pregnant women in Australia, Davis et al. (2023) discovered that 15.5% of them had high levels of stress, 19% had moderate to severe anxiety, and nearly 25% tested positive for depression. Financial burden, complicated pregnancies, and pre-existing mental health conditions were also contributing causes. Emotional vulnerability was exacerbated by maternity care disruptions, such as fewer in-person appointments and less support during delivery.

Jones et al. (2022) incorporated qualitative study on 424 pregnant women in the UK to these findings. They determined that mothering difficulties, loss of control, financial strains, family well-being, and a lack of support were the five main causes of distress. Women talked about intense feelings of loneliness, worry, and tension between the realities of the pandemic and idealised parenting. When taken as a whole, these findings show how COVID-19 made perinatal misery worse and highlight the necessity of maternity care systems that are emotionally robust enough to withstand public health emergencies.

5.5.4.3 Trauma and Bereavement

Emotionally distressing events like spontaneous abortion and perinatal loss make women more susceptible to mental health problems in subsequent pregnancies. According to Mainali et al. (2023), even in stable partnerships, women in Scandinavia who had experienced a miscarriage, stillbirth, or neonatal death in the past reported far higher levels of anxiety and despair during their subsequent pregnancies. Unwanted pregnancies made the situation worse.

In a Canadian study, Demontigny et al. (2020) corroborated these findings by identifying risk variables that contribute to increased depression, anxiety, and bereavement following spontaneous abortion, including low socioeconomic position, immigrant background, and childlessness. The symptoms were worse in women who miscarried within six months. However, emotional recovery was enhanced by protective variables such as favourable healthcare experiences and supportive spouses. These studies highlight the long-lasting psychological effects of pregnancy loss and the necessity of culturally competent, trauma-informed care to help women cope with their loss and future pregnancies.

5.5.5 Theme 5: Continuous Observations and Prediction Mechanisms

5.5.5.1 Postpartum Continuity

Antenatal psychological symptoms demonstrate the persistence of maternal mental health issues throughout the perinatal period and are powerful predictors of postpartum depression. A longitudinal study in Taiwan by Cheng et al. (2021) looked at patterns in stress, anxiety, and depression from pregnancy to the postpartum

period. They discovered that postpartum depression was significantly predicted by heightened prenatal symptoms, especially anxiety and depressed states. This highlights the importance of early screening and treatments throughout pregnancy (Cheng et al., 2021).

Similarly, in a multidisciplinary Italian study, Cena et al. (2021) investigated maternal depression and found that both prenatal and postnatal depression were highly prevalent. According to their research, women who experienced depressive indicators during their pregnancy consisted more likely to experience postpartum depression, particularly if these symptoms were exacerbated due to low educational attainment, limited social support, and socioeconomic deprivation (Cena et al., 2021). Collectively, these studies highlight the value of ongoing mental health monitoring during pregnancy and beyond, supporting integrated care models that attend to the psychological needs of both pregnant and postpartum patients.

5.5.5.2 Potential hazards Identification Forecasting

Early identification of depressive indicators during pregnancy is a powerful predictor of postpartum depression, according to Verreault et al. (2014). According to Verreault et al. (2014) research, prenatal depression considerably raised the likelihood of postpartum start, particularly when paired with high levels of stress, a history of mental illness, or a lack of social support. These results lend credence to the creation of predictive risk profiles for the early detection of women who are at danger. In order to provide thorough and proactive care, the study emphasises the significance of integrated mental health screening during the prenatal period.

5.6 Chapter Summary

This chapter uses Braun and Clarke's six-phase paradigm to thematically analyse 28 research that look at perinatal depression and anxiety variables. Predictive patterns displaying symptom trajectories throughout the perinatal period, psychosocial elements (social support, partner relationships, mental health history), pregnancy-related factors (unplanned pregnancies, complications, hormonal changes), sociodemographic influences (age, education, socioeconomic status, rural-urban disparities), and external stressors (work stress, pandemic impacts, trauma) were the five main themes that surfaced. The results highlight the need for focused, culturally aware interventions and ongoing mental health monitoring during pregnancy and the postpartum period by revealing intricate relationships between biological, psychological, and social factors.

Chapter 6: Discussion

6.1 Introduction to Chapter

Five main themes that represent the various elements influencing maternal mental health are highlighted in this chapter's discussion of the main conclusions from a systematic evaluation of 28 studies on perinatal anxiety and depression. It critically assesses these results in light of current data and theoretical frameworks, emphasising both original contributions and consistency. The chapter provides a fair evaluation of the review's implications for comprehending perinatal mental health determinants while also taking methodological strengths and limitations into account.

6.2 Discussion of determining findings

Theme 1: The Core Concepts of Vulnerability: Sociodemographic Aspects

Psychiatric epidemiology's well-established theoretical frameworks are substantially supported by the finding that sociodemographic variables are the main determinants of perinatal mental health. According to the social determinants of health model, which holds that structural disparities produce distinct health outcomes, the persistent finding that depression risk is increased by younger mother age and poorer educational attainment (Matsumura et al., 2019; Cena et al., 2021) supports this theory (Ban et al., 2012). According to Ban et al. (2012), these results are especially in line with Marmot's research on health disparities, which suggests that educational attainment acts as a stand-in for social capital, coping mechanisms, and health literacy.

In line with the larger body of research on poverty and mental health, Best et al. (2024) and Verbeek et al. (2019) have shown a connection between socioeconomic hardship and prenatal anxiety and depression. An interesting paradox that merits greater research is presented by Best et al.'s (2024) observation that the consequences of deprivation were more noticeable in affluent locations. This supports Wilkinson's relative income hypothesis for mental health outcomes by indicating that relative deprivation may be just as significant as absolute poverty (Popham, 2015).

Geographic determinants of mental health are strongly supported by the rural-urban differences found in several worldwide contexts (Ginja et al., 2020; Akçalı Aslan et al., 2014; Umuziga, Adejumo, and Hynie, 2020; Wang et al., 2025). These findings cover cultural norms, social isolation, and resource availability in addition to basic access difficulties. This pattern's stability across a range of contexts, including the

UK, Turkey, Rwanda, and China, points to universal processes via which geographic isolation exacerbates other risk factors for mental health issues in perinatal period (Ginja et al., 2020).

Cultural competence is crucial in prenatal mental health care, as evidenced by the stigmatisation and cultural barriers found in rural China (Wang et al., 2025) and Pakistan (Waqas et al., 2015). The conclusion that maternal psychological wellbeing is directly impacted by gender preferences and patriarchal structures supports feminist theoretical frameworks in health research by showing how deeply ingrained social structures affect individual mental health outcomes (Tikka, Thippeswamy, and Chandra, 2022; Shai, Koffler, and Hashiloni-Dolev, 2021).

Theme 2: Aspects associated with pregnancy: the relationship of biology and psychology

Reproductive autonomy is crucial for maternal mental health, as evidenced by the high correlation between psychological discomfort and unintended births (Barton et al., 2017; Gariepy et al., 2016; Wang et al., 2025). Theoretical frameworks that highlight the psychological effects of reproductive management and planning are consistent with these findings. The universal psychological mechanism through which reproductive autonomy promotes maternal adaptability to pregnancy is suggested by the constancy of this association across cultural contexts (Redshaw and Wynter, 2022).

The reciprocal nature of mental and physical well- being during pregnancy is demonstrated by the correlation between mental health symptoms and pregnancy difficulties (Jing et al., 2016; Koutra et al., 2018). According to Roberts, Davis, and Homer (2019), this finding is consistent with biopsychosocial models of perinatal health, which highlight the interdependence of psychological vulnerability and biological risk factors. Clinically useful information for screening procedures is provided by the identification of particular problems as risk factors, such as preeclampsia and perinatal hypertension (Roberts, Davis, and Homer, 2019).

The dynamic character of pregnancy-related psychological adjustment is demonstrated by the trimester-specific differences in mental health symptoms noted by Cheng et al. (2021) and Jiménez-Barragán et al. (2024). These results cast doubt on static conceptualisations of perinatal mental health and provide credibility to developmental models that take into consideration hormonal, physiological, and psychosocial changes that occur during pregnancy. There are significant ramifications for the timing of therapies when early pregnancy (12–14 weeks) is identified as a time of high sensitivity (Truijens et al., 2017).

An important piece of data supporting the diversity of pregnancy-related mental health experiences is the variation in depression trajectories during the perinatal

period (Verreault et al., 2014; Zhu et al., 2024; Van der Waerden et al., 2015). According to Santos Jr., Tan, and Salomon (2017), the discovery that certain instances are new-onset postpartum depression that is different from perinatal episodes calls into question presumptions regarding continuity and highlights the necessity of specialised approaches to prevention and treatment.

Theme 3: The Social Perspective of Obstetric Mental Well-being: Connections and environmental variables

Social support theory and attachment frameworks are highly supported by the essential role that partner relationship quality and social support play in shaping prenatal mental health consequences (Morikawa et al., 2015; Barton et al., 2017; Jones et al., 2022). These results are in line with a wealth of research showing how social support can act as a buffer against psychological suffering. Research on intimate relationships and mental health, especially during life transitions, is consistent with the specific identification of partner relationship quality as a critical predictor.

The ability of mental health history to predict outcomes is supported by vulnerability-stress models of psychiatric disorders (Martini et al., 2015; Van der Waerden et al., 2015; Verreault et al., 2014). These models highlight the interaction between environmental stressors and pre-existing vulnerabilities to produce mental health outcomes. In addition to challenging episodic conceptualisations of perinatal depression, the detection of persistent depression trajectories throughout pregnancy to early childhood offers persuasive proof for the ongoing occurrence of some perinatal mental health issues.

The interplay of relational and economic elements in maternal mental health is highlighted by the impact of insufficient emotional and financial support, as noted by Ramohlola, Maimela, and Ntuli (2022) in South Africa. The ecological systems theory, which emphasises how various environmental systems affect individual outcomes, is supported by this research (Ramohlola, Maimela, and Ntuli, 2022). Social marginalisation exacerbates mental health risk, as evidenced by the unique susceptibility of unmarried women and victims of intimate partner abuse (Spjeldnaes, 2021).

Theme 4: Occupational stresses: Current Obstetric Psychological Issues

Contemporary difficulties in juggling maternal and professional responsibilities are reflected in the finding that work-related stress is a substantial risk factor (Clayborne et al., 2022). These results demonstrate the necessity of workplace rules that support mother mental health and are consistent with role conflict theory (Karl et al.,

2020). Long-term effects of perinatal occupational stress are suggested by the ongoing development of work-related symptoms into the postpartum phase.

The COVID-19 pandemic's significant effects on perinatal mental health (Davis et al., 2023; Jones et al., 2022) offer a natural experiment in the ways that acute social stressors impact susceptible groups. Public health emergencies can exacerbate underlying vulnerabilities, as evidenced by the discovery of certain epidemic-associated stressors, such as healthcare disruption, financial pressure, and social isolation. These results underline the significance of mental health issues in pandemic preparedness and provide credence to crisis theory (Osborne, Kimmel, and Surkan, 2021).

The long-term psychological repercussions of reproductive trauma are supported by the enduring consequences of pregnancy loss and trauma (Mainali et al., 2023; Demontigny et al., 2020). These results are consistent with trauma theory and post-traumatic stress disorder frameworks, indicating that pregnancy loss results in long-lasting vulnerabilities that call for specific intervention strategies (Farren et al., 2018).

Theme 5: Preventive Strategies: Comprehending transformation and consistency

In addition to emphasising potential for early intervention, the strong predictive link between antenatal and postpartum problems (Cheng et al., 2021; Cena et al., 2021) endorses continuity models of perinatal mental health. The basis for creating screening instruments and focused preventative initiatives is ability to recognise projected vulnerability profiles (Verreault et al., 2014).

However, the identification of new-onset postpartum depression cases distinct from prenatal episodes suggests that continuity models, while important, do not capture the full complexity of perinatal mental health trajectories (Di Florio and Meltzer-Brody, 2015). This finding supports the need for comprehensive screening throughout the perinatal period rather than relying solely on prenatal indicators.

6.3 Constraints of the Research and Methodological Issues

It is important to recognise the various limitations of this systematic review. It is difficult to make firm judgements regarding effect sizes and causal relationships because of the variation in study designs, populations, and measurement methods among the included studies. Understanding causality and temporal correlations is limited by the review's concentration of cross-sectional studies. Even while the research' geographic distribution is varied, it could not be common characteristics to identified and discuss of all cultural contexts, especially in low-income nations and among indigenous people. Given the stigma attached to perinatal mental health

issues, the fact that much research rely on self-report measures raises the possibility of reporting bias. It is challenging to determine exact prevalence estimates due to the difference in screening methods and diagnostic criteria among research, which may also contribute to the variability of results.

6.4 Strengths and Limitations

6.4.1 Strengths

There are a number of noteworthy advantages to this comprehensive literature review. A thorough search technique spanning several databases guaranteed extensive coverage of pertinent literature, and the inclusion of various geographic and cultural settings improves the findings' generalisability. While maintaining the intricacy and subtlety of each study's unique findings, the technique of thematic analysis made it possible to identify broad trends.

A complete comprehension of perinatal mental health determinants from several angles was made possible by the inclusion of both quantitative and qualitative research. The findings' validity and dependability are improved by the methodical approach to data extraction and quality assessment.

6.4.2 Limitations

There are a few limits to be aware of. The capacity to perform meta-analyses and determine accurate effect estimates is restricted by the diversity of study designs and populations. Causal inference is limited by the prevalence of observational studies, and the body of evidence may have been influenced by possible publication bias.

It's possible that pertinent research from non-English speaking nations was overlooked due to the emphasis on English-language publications. Furthermore, because the topic is developing so quickly, certain recent advancements could not be adequately covered in the literature review period.

6.5 Chapter Summary

This chapter critically explored five key themes from the systematic review, aligning them with established theories while uncovering new insights and future research directions. It emphasized the complexity of perinatal mental health, shaped by individual, relational, and societal factors. The discussion acknowledged both strengths and limitations of the review, offering a balanced evaluation of current

evidence and its implications for advancing research, informing policy, and improving perinatal mental health care practice.

CHAPTER 7: Recommendation and Conclusion

7.1 Introduction to Chapter

This last chapter summarises findings from 28 studies on anxiety and depression in perinatal and provides evidence-based suggestions for future research and clinical practice. In addition to outlining the practical consequences of the discovered themes, it identifies important topics impacting maternal mental health and underscores their importance for researchers, legislators, and healthcare practitioners. The importance of perinatal and psychosocial factors in influencing maternal healthcare outcomes is emphasised in the chapter's conclusion.

7.2 Implications of Findings

According to the results, prenatal anxiety and depression are complicated, multidimensional disorders that need for all-encompassing, customised approaches to therapy and prevention. Effective interventions must target sociodemographic disadvantages, pregnancy-related factors, psychological variables, outside influences, and predictive patterns all at once rather than separately, as evidenced by the identification of five major themes. The sociodemographic factors draw attention to enduring health disparities, as younger women, people with less education, and those living in poverty are disproportionately at risk. The cultural hurdles and rural-urban differences found in many international contexts raise the possibility that universal screening methods would not be adequate in the absence of customised, culturally sensitive adjustments.

Initial conceptions of perinatal mental health are challenged by the dynamic character of symptoms during pregnancy trimesters, which means that healthcare systems need to implement adaptable, long-term monitoring strategies. While the detection of new-onset postpartum cases highlights the necessity for ongoing vigilance beyond pregnancy, the substantial predictive association between prenatal and postpartum symptoms provides chances for early intervention.

7.3 Recommendations for Practice

With an emphasis on high-risk times like the first 14 weeks of pregnancy and the first few weeks after giving birth, healthcare systems should implement universal screening procedures utilising validated instruments like the EPDS. To allow for focused interventions, screening must evaluate relationship dynamics, social assistance, sociodemographic characteristics, and pregnancy problems. Maternity services should set up integrated treatment pathways with defined referral

procedures for high-risk patients that cover both obstetric and mental health requirements. Healthcare workers must get culturally sensitive training in order to improve access and lessen stigma, particularly in rural and traditional areas.

Given the influence of occupational stress on perinatal wellbeing, it is imperative to strengthen workplace regulations, including those pertaining to flexible scheduling and mental health resources. The impact of the COVID-19 pandemic on maternal mental health emphasises the need for systems to develop crisis-resilience. Recognising the impact of intimate partner abuse and the protective effect of support, partner and family-inclusive strategies are essential.

7.4 Challenges to implement these recommendations and overcoming strategies

However, Putting these suggestions into practice will present a number of real-world obstacles. Overburdened healthcare systems may not have the resources and continuous training needed for universal screening. Assessing intricate elements such as interpersonal dynamics and sociodemographic necessitates the use of delicate instruments and knowledgeable personnel. Often hampered by disjointed systems, integrated treatment paths require collaboration between obstetric and mental health care. Particularly in rural or traditional societies, culturally responsive training is crucial yet challenging to standardise. Perinatal wellness workplace changes might not have employer support or clash with current regulations. After COVID, crisis-resilience planning required ongoing investment. In order to address intimate partner abuse, privacy, safety, and legal issues must be navigated. Finally, stigma and ignorance still prevent people from getting care, especially those who are underprivileged.

To overcome these difficulties healthcare systems must spend money on staff development and cross-sector cooperation to address these obstacles. While outreach that is culturally appropriate enhances access in rural areas, digital tools can expedite screening and referrals. Flexible work schedules and benefits related to mental health should be encouraged by policy reform. Trauma-informed care and infrastructure that is crisis-resilient are essential. Abuse and stigma can combat through community involvement and partner-inclusive programs. Public awareness initiatives and ongoing funding can ensure long-term effects and fair treatment.

7.5 Recommendations for Future Research

To better understand the underlying associations and trajectory of development of perinatal mental health disorders, future research should concentrate on longitudinal

studies that follow women from pregnancy through early infancy. To evaluate forecasting techniques and provide assessment of risk tools that can inform clinical decision-making, enormous prospective cohort studies are required. The need for culturally appropriate and validated screening tools for a variety of groups is one of the research gaps that has been recognised, especially in low- and middle-income nations where there is an absence of existing literature. Moreover, there is an immediate need for research on the efficacy of culturally sensitive therapies and how they are applied in environments with limited resources.

Investigation is needed into the creation and assessment of telemedicine and digital health treatments for perinatal mental health support, especially in light of the lessons discovered from care adjustments connected to pandemics. Given the established significance of social support and relationship quality, research should also concentrate on partner and family-focused therapies. Policy formulation and the distribution of healthcare resources require economic analyses of screening programs and early intervention techniques. The necessity for extensive prevention and treatment programs would also be strengthened by studies looking at the long-term effects of unaddressed perinatal mental health disorders on the development of both mothers and children.

7.6 Conclusion

Under the direction of three main study topics centred on sociodemographic characteristics, pregnancy-related variables, and psychosocial impacts, this systematic literature review investigated the complex causes causing perinatal depression and anxiety in expectant mothers. Five interconnected themes emerged from the review's analysis of 28 papers, highlighting the complexity of prenatal mental health. Young maternal age, low educational attainment, unemployment, socioeconomic distress, and rural-urban inequities are examples of sociodemographic susceptibility that have emerged as critical risk factors necessitating focused public health interventions. Unplanned pregnancies, obstetric problems, and trimester-based symptom changes are examples of pregnancy-specific factors that highlighted the need for flexible, trimester-sensitive care by revealing the interaction psychological shifts that occur during gestation.

Maternal wellbeing was significantly shaped by psychosocial factors, such as the quality of relationships, social support, and past mental health history. The wider environmental constraints impacting mental health were brought to light by external stressors, which ranged from traumatic life events to pandemic-related disruptions and professional strain. Furthermore, early intervention opportunities and the need for continuous postpartum monitoring were brought about by the discovery of syndrome consistency and diagnostic trends across the perinatal timeline. The results have important ramifications for healthcare systems, supporting integrated treatment pathways that attend to obstetric and psychosocial requirements as well

as culturally sensitive, thorough screening programs. This review acknowledges the interaction between structural constraints and individual vulnerabilities and advocates for a multidisciplinary approach.

The study's global reach strengthens the adaptability of its findings and emphasises how important it is to address relationship dynamics, healthcare access, and socioeconomic disparity on a global scale. For academics, doctors, and legislators looking to lessen the prevalence of perinatal mental health issues, these discoveries provide practical advice. In the end, the analysis confirms that healthcare systems can avoid perinatal anxiety and depression by implementing prompt, tailored interventions that consider the social, psychological, and biological aspects of maternal psychological wellness.

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Appendices 1

4.2 Data Extraction Table

Study no.	First Authors name; year; country	Study Design	Aim	Participants Characteristics	Sample Size	Risk factors or aspects measurement tool	Depression and anxiety measurement tool	Findings
1.	van de Loo; 2018; Netherlands	Prospective cohort study (PRIDE)	To investigate the incidence, alterations, and maternal factors of anxiety and depression throughout pregnancy	The majority of pregnant Dutch women aged ≥18 had a range of education levels, socioeconomic backgrounds, relationship circumstances, and pregnancy backgrounds	2,897	Web-based surveys measuring lifestyle, health, behavioural and socioeconomic variables	Hospital Anxiety and Depression Scale (HADS)	From 5.4% in the early stages of pregnancy (10–12 weeks) to 10.0% in the final phase of pregnancy (34 weeks), depression symptoms significantly increased. On the other hand, indicators of anxiety decreased from 17.9% in the first trimester of pregnancy to 14.2% in the third
2.	Van der Waerden; 2015; France	Longitudinal cohort study (EDEN study)	Finding determinants of maternal depressive dynamics that remain from pregnancy to five years after giving birth	Pregnant women with varying ages, educational backgrounds, places of origin, and socioeconomic status were selected from two French maternity clinics.	1807	Self-report surveys that address neurological, emotional, and sociodemographic variables	The Edinburgh Postnatal Depression Scale (EPDS) was used to measure feelings of depression in the first year following delivery. The Centre for Epidemiological Studies	There are four distinct depression patterns; non-French origin, anxiousness throughout pregnancy, adolescent hardship, low educational attainment, and past mental health problems are important

							Depression (CES-D) questionnaire was used to measure depression indicators throughout pregnancy and at 3- and 5-year follow-ups	determinants of chronic depression
3.	Verreault; 2014; Canada	Prospective cohort study	To assess the frequency of depression symptoms throughout pregnancy and the postpartum period and determine contributing factors	Expectant mothers going to prenatal clinics or appointments for ultrasounds in Montréal, Canada	364 (pregnancy); 226 (continuing care after delivery)	Self-report survey measuring childbirth satisfaction, communal assistance, anxiousness, psychiatric history, and mistreatment	The Composite International Diagnostic Interview for Women (CIDI-V) was used to assess anxiety and depressive disorders using the DSM-IV-TR, Edinburgh Postnatal Depression Scale (EPDS) assessment of indicators of postpartum depression and the State Anxiety Inventory (STAI-S) was utilised for assessing anxiety	16.4% had depression three months after giving birth, compared to 28.3% during pregnancy. 6.6% were new postpartum cases. Sexual abuse, emotional history, chronic anxiety, hypersensitive to adverse circumstances, and non-Caucasian ethnicity were risk factors. Prenatal indications of depression, psychiatric background, a challenging delivery, and a lack of social assistance were all predictors of postpartum start

4.	Martini; 2015; Germany	Prospective-longitudinal cohort study (MARI Study)	To investigate the causes, correlations, and progression of anxiety and depression syndromes in pregnant and postpartum women	306 pregnant women who were followed from the beginning of their pregnancy to 16 months after giving birth were selected from gynaecological outpatient clinics in Dresden, Germany	306	Interviews, health information, and the Composite International Diagnostic Interview for Women (CIDI-V)	The DSM-IV-TR anxiety and depressive disorders were evaluated using the Composite International Diagnostic Interview for Women (CIDI-V)	The paths of anxiety and depression varied; some were permanent, while others saw significant shifts. Maternity anxiety/depression, inadequate self-worth, inadequate mother educational attainment, inadequate relationship contentment, and a lack of social interaction were the greatest indicators. Recurrent disturbances were prominent
5.	Akçalı Aslan; 2014; Turkey	Cross-sectional study	To ascertain the clinical features and frequency of depressive disorders during the preliminary period of pregnancy	Pregnant ladies in the heart of Erzurum, ages 16 to 45, with a range of marital situations, earnings, and educational attainments	463	Form for collecting sociodemographic information about previous experiences with domestic violence, childbearing details, and psychological condition background	Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition* (*DSM-IV*)–Clinical Version SCID-I, and Edinburgh Postnatal Depression	6.8% suffered from depressive illnesses, including 0.4% dysthymia, 1.5% double depression, 2.6% moderate depression, and 12.3% major depression. Past experiences of psychological disorders,

							Scale (EPDS)	depression during pregnancy, encounters with domestic abuse, unintended pregnancy, and partner unemployed status were all important indicators
6.	Cheng; 2021; South Korea, Taiwan	Prospective longitudinal study	to determine factors that predict postpartum depression and investigate patterns of anxiety, depression, and stressful disorders throughout pregnancy to the postpartum period	Selected from obstetric clinics in Taipei and Chiayi, these ladies were ≥18 years old, educated in Chinese, unmarried pregnant, and had no history of problems	160 between weeks 23 and 28 (T1), 147 between weeks 32 and 36 (T2), 129 beyond weeks 36 (T3), and 83 after delivery (T4)	Sociodemographic survey; evaluations of tiredness and sleeping conditions	The 10-item Perceived Stress Scale (PSS), the 20-item Centre for Epidemiologic Studies Depression (CESD) self-administered measure, and the State-Trait Anxiety Inventory (STAI)	Stress dropped during pregnancy but increased after delivery; anxiety and depression symptoms increased between 24 weeks of pregnancy and the postpartum period. More than half had signs of anxiety, particularly in the latter stages of pregnancy and after giving birth. Postpartum depression had been anticipated by prenatal anxiety. Anxiety, depression, and stress were all connected

7.	Morikawa Mako, 2015, Japan	Prospective cohort study	To investigate the connection between postpartum depression and interpersonal assistance throughout pregnancy	Japanese maternity clinics selected expectant mothers in the early stages of pregnancy	912	Japanese version of the Social Support Questionnaire (J-SSQ)	Edinburgh Postnatal Depression Scale (EPDS)	Particularly for women with prenatal depressive symptoms, a higher number of supportive people throughout pregnancy was associated with decreased postpartum depression scores. Support satisfaction did not significantly correlate with satisfaction
8.	Jing, 2016; China	Observational / Cross-sectional (likely)	To investigate the variables linked to signs of depression and anxiety in expectant mothers who have experienced previous issues	Women who have a medical background that includes complications during pregnancy and are currently pregnant	197	Presumably examinations of socioeconomic characteristics and medical conditions	Hospital Anxiety and Depression Scale (HAD), The Edinburgh Postnatal Depression Scale (EPDS)	Anxiety and depression rates were higher in women with prior problems; this could be due to specific clinical or psychological variables
9.	Davis; 2023; Australia	Cross-sectional survey	To look into factors that predict pregnant women's levels of stress, anxiety,	Between July 2020 and January 2021, women who were 18 years of age or older and in the	1668	Financial pressure, difficult pregnancy, carer continuity, and sociodemographic information	The Index of Relative Social Advantage and Disadvantage (IRSAD) was used to identify socioeconom	Twenty-five percent tested found positive for depression, 19 percent for moderate to severe anxiety, and fifteen percent for stress.

			and depression throughout COVID-19	final trimester of pregnancy were chosen through the internet		are all included in this online questionnaire	ic status, and the Depression, Anxiety and Stress Scales–short form (DASS-21) was used to measure anxiety and stress using its subscales	Important risk factors include complicated pregnancies, financial difficulty, and pre-existing mental health issues. Age, social support, and parity are protective variables
10.	Waqas, 2015; Pakistan	Cross-sectional survey	to look at the psychosocial factors of prenatal sadness and anxiety and determine how much support from others controls these associations	Five hundred pregnant patients from low- to lower-middle-class families are seen at four Lahore teaching hospitals	500	Questionnaire on demographics, encompassing previous instances of discrimination, quantity and sexual orientation of children, unintended pregnancy, abortion, surgical delivery	Hospital Anxiety and Depression Scale (HADS); Social Provisions Scale (SPS)	Unplanned pregnancies, a rural upbringing, and a lack of social support were associated with increased anxiety and depression ratings. The association between mental health and the gender of prior children was mediated by social support. More sons were protective; more daughters raised the danger
11.	Zhu; 2024; China	Prospective longitudinal study	to look into the prevalence and contributing factors of depression at six	Women with solo pregnancies who were interviewed early in pregnancy and monitored	485	Clinical factors (e.g., parity, thyroid function) and social and demographic variables	The best model was chosen after testing Edinburgh Postnatal Depression Scale (EPDS);	Rates of depression fluctuated by time point, reaching a peak of 19.4% one week after giving birth. Insufficient

			different stages of pregnancy	for a full year after giving birth		(e.g., income, occupation, marital status)	predictive modelling, Extreme Gradient Boosting (XGBoost), Logistic Regression (LR), Random Forest (RF), and Support Vector Machine (SVM).	income, being unemployed, single status, thyroid dysfunction, unplanned pregnancy, and gender disparity were important risk variables draws attention to the importance of early screening and dynamic changes
12.	Gariepy, A.M.; 2016; USA	Secondary analysis of a prospective cohort study	To determine whether maternal mental health, psychological discomfort, and interpersonal assistance throughout pregnancy are related to the chronology and management of the pregnancy	Women in their second trimester who are getting perinatal healthcare and come from a variety of social classes	2,654	Pregnancy planning anonymously ("Was this pregnancy planned?" Yes/No and scheduling ("Is this an ideal time for you to be pregnant?"	Composite International Diagnostic Interview (CIDI) for Major Depressive Episode (MDE) and Generalized Anxiety Disorder (GAD) - Cohen Perceived Stress Scale (CPSS) - Modified Kendler Social Support Inventory (MKSSI)	Increased risks of MDE (aOR 1.69) and severe stress (aOR 1.74) were linked to unintended pregnancies. Inadequate community support (aOR 1.64), high stress (aOR 5.20), GAD (aOR 1.60), and MDE (aOR 3.47) were all linked to unplanned pregnancies
13.	Mainali, A.; 2023;	Case-cohort study	To determine other	The Scandinavian	1,458	History of perinatal loss as self-	- State-Trait Anxiety Inventory	Anxiety (β = 1.22, 95% CI: 0.49–1.95) and depression (β

	Norway & Sweden		factors that influence maternal mental health and investigate the relationship between anxiety/depression symptoms during a subsequent pregnancy and prior perinatal bereavement	Successive Small-for-Gestational Age Births Study (SGA Study) included pregnant women; 401 of them had previously suffered a loss during pregnancy (miscarriage, stillbirth, or neonatal death)		identified; unwanted pregnancy	(STAI) -Centre for Epidemiological Studies Depression Scale (CES-D	= 0.90, 95% CI: 0.06–1.74) scores were considerably greater in women who had experienced prior perinatal bereavement. Deteriorating mental health consequences were also independently linked to unwanted pregnancies
14.	Wang, N.; 2025; China	Cross-sectional study	To investigate the connection between unplanned pregnancies and the mental health of mothers in Chinese rural communities	pregnant ladies from a range of socioeconomic origins living in China's rural areas	473	Demographic and socioeconomic investigations; self-reported willingness to become pregnant	Depression, Anxiety, and Stress Scales-21 (DASS-21)	Unwanted pregnancies were linked to higher levels of depression and anxiety signs in rural Chinese women, indicating that this group needs specialised mental health care
15.	Koutra, K.; 2018; Greece	Prospective cohort study	To look at the relationship	Pregnant and postpartum women who	1037	Medical documentation and standardise	Edinburgh Postnatal Depression	Preterm birth, emergency caesarean section, and

			between postpartum depression risk and pregnancy, perinatal, and postpartum problems	were part of the Rhea mother-child cohort in Crete		d surveys are used to evaluate pregnancy, delivery, and postnatal difficulties	Scale (EPDS)	postpartum health problems were among the difficulties that were substantially linked to an elevated risk of postpartum depression
16.	Barton; 2017; United Kingdom	Cross-sectional study	To investigate the relationship between unintended pregnancy and emotional distress while taking communal assistance and relationship quality into consideration	Postpartum women in the United Kingdom who are partners	12,462	Self-identified indicators of relationship satisfactory, communal assistance, and willingness to become pregnant	Measures of emotional distress using reliable scales modified 9-item Rutter Malaise Inventory, A modified Golombok-Rust Inventory of Marital State was used to evaluate the standard of the relationship	Higher emotional discomfort is associated with unintended pregnancies, particularly when relationships and societal assistance are lacking
17.	Verbeek; 2019; Netherlands	population-based cohort study	To investigate whether a low socioeconomic level exacerbates the effects of adverse	pregnancy care for expectant mothers	5398	Self-reported financial standing and exposure to adverse life experiences	The degree of anxiety was measured using the Spielberger State Trait Anxiety Inventory (STAI), Depression symptoms	When exposed to stressful life events during pregnancy, low socioeconomic position substantially raises susceptibility to depressive disorders and anxiety

			life experiences on anxiety and depression throughout pregnancy				were measured using the 10-item Edinburgh Postnatal Depression Scale (EPDS). Adverse life events before pregnancy were evaluated using the Negative Life Events Questionnaire (NLEQ)	
18.	Best, Catherine; 2024; United Kingdom	Observational cohort study	To investigate perinatal anxiety's incidence, contributing factors, and geographical differences with an emphasis on socioeconomic hardship	Women in the UK who are expecting from the West Midlands, London North Thames, and Northeast England & North Cumbria	Three regions of the United Kingdom were represented among the participants: Northeast England and North Cumbria (n = 512) make up Region 1; London	Regional deprivation indexes and sociodemographic surveys	This study's main outcome was measured using the Stirling Antenatal Anxiety Scale, the Clinical Outcomes in Routine Evaluation (CORE-10) was used to measure general psychological distress, and the Whooley questionnaire questions which are used to screen for potential depression	In wealthy areas, anxiety was more strongly correlated with community impoverishment; different ethnic backgrounds and physiological health problems were also associated with increased anxiety; inadequate behaviour for seeking medical treatment was observed

					North Thames (n = 665) makes up Region 2; and West Midlands (n = 705) makes up Region 3			
19.	Umuziga, Marie Providence; 2020; Rwanda	Cross-sectional study	To ascertain the frequency and contributing variables of perinatal anxiety and depression symptoms in Rwandan women	Rwandan pregnant and postpartum women accessing healthcare organisations	165	An organised questionnaire that addresses mental health, maternity, and sociodemographic aspects	Zung Self-rating Anxiety Scale (SAS); Edinburgh Postnatal Depression Scale (EPDS)	Significant levels of anxiety and depression during pregnancy and the postpartum period were linked to having four or more children, having a bad relationship with partner, and having experienced difficult circumstances throughout their life
20.	Cena, Loredana; 2021; Italy	Multicentre cross-sectional study	To determine how common prenatal and postpartum depression is and how sociode	Women who are pregnant or just gave birth in 11 medical facilities in Italy	1471	Well-organised survey for sociodemographic and socioeconomic information	Edinburgh Postnatal Depression Scale (EPDS)	Prevalence of prenatal depression: 6.4%; postnatal depression: 19.9%; probabilities of developing prenatal (OR: 0.23) and postnatal (OR:

			mographic and socioeconomic variables relate to it					0.15) depression were considerably lowered by high economic status
21.	Jimènez-Barragan; 2024; Spain	Prospective cross-sectional descriptive multicentred study	To determine the frequency of anxiety and depression and the adverse indicators that are linked to them throughout pregnancy and after giving birth	3 periods in time were used to evaluate pregnant women who attended 7 primary care facilities in Spain: early stages of pregnancy, later stages of pregnancy, and postpartum	335	factors such as age, smoking, education, employment, mental health status, pregnancy preparation, spouse financial status, domestic violence, and relationship problems are all included in this sociodemographic and medical assessment	Whooley questions, the Edinburgh Postnatal Depression Scale (EPDS), and the Generalised Anxiety Disorder Scale (GAD-2)	Symptoms of depression and anxiety were common at every stage. Important risk variables differed by stage: postpartum (e.g., abuse, past mental disorders), late pregnancy (e.g., family issues), and early pregnancy (e.g., smoking, neuropsychiatric background). Early screening is crucial
22.	Cena; 2020; Italy	Multicentre cross-sectional study	To determine how common maternal prenatal anxiety is and how demographics and socioeconomic variables relate to it	Pregnant woman attending antenatal checkups at nine Italian hospital facilities	1,142	A comprehensive sociodemographic survey that evaluates variables like education, work, earnings, quantity of children, abortion background, and	Psychotherapy assessments and the State-Trait Anxiety Inventory (STAI)	Anxiety during pregnancy affected 24.3% of individuals. Insufficient levels of education, being unemployed, financial difficulties, unintended pregnancies, prior abortions, and having children while pregnant were

						pregnancy anticipation		all major contributors to risk
23.	Clayborne; 2022; Norway	Longitudinal cohort study (MoBa)	To investigate the relationship amongst maternal anxiety and depression and occupational stress prior to and following pregnancy	Participants in the the Norwegian Mother, Father and Child Cohort Study (MoBa) study who were pregnant, a range of work backgrounds	77,999	Self-identified indicators of pregnancy-related occupational stress	An 8-item scale designed for the MoBa study was used to measure work stress at 17 weeks of pregnancy. The Hopkins Symptom Checklist-25 (SCL-25) short 5-item (17 weeks; SCL-5) and 8-item (30 weeks, 6 months; SCL-8) versions were used to assess symptoms of anxiety and depression at 17 weeks, 30 weeks, and 6 months postpartum	Stress at work during pregnancy was substantially linked to a higher risk of anxiety and depression during pregnancy and after delivery
24.	Matsumura; 2019; Japan	Prospective cohort study	To investigate the relationship amongst postpartum depression and maternal educational attainment	Pregnant women enrolled in Japan Environment and Children's Study (JECS) diverse educational backgrounds	90,194	Self-identified educational attainment (e.g., high school, junior high school, university, vocational)	Edinburgh Postnatal Depression Scale (EPDS) Scale score of ≥9	A substantial correlation was found between a lower level of education and a higher incidence of postpartum depression. Even after controlling for uncertainties, the connection persisted

25.	deMontigny; 2020; Canada	Cross-sectional study	To determine potential hazards and preventative variables affecting women's mental health following a spontaneous abortion	Women from a variety of backgrounds who had spontaneous abortions	231	standardised surveys that evaluate coping mechanisms, individual experiences, societal assistance, the standard of the marriage and the degree of contentment with medical care	The 20 items of the state subscale of the French version of the State–Trait Anxiety Inventory (STAI-S) were used to measure anxiety, while the French version of the Edinburgh Postnatal Depression Scale was used to measure depressive symptoms. Four items from the French version of the Dyadic Adjustment Scale were utilised for evaluating the quality of the marital relationship, and the French version of the Perinatal sadness Scale was used to measure perinatal sadness. The Institutional Support Evaluation Scale was	Low social support, inadequate coping strategies, and past mental health conditions all had an impact on emotional distress. Adaptive coping and robust support systems were protective variables

							used for measuring patient satisfaction with healthcare	
26.	Ramohlola, 2022, South Africa	Cross-sectional survey	To find out how common prenatal depression is in the province of Limpopo and what sociodemographic characteristics are linked to it	Pregnant women in the municipality of Limpopo accessing prenatal clinics	336	Sociodemographic information is collected by a methodical survey utilised components married status, smoking, financial assistance, assault by spouse, educational status, drinking alcohol level	Edinburgh Postnatal Depression Scale (EPDS)	31% predominance of depression throughout pregnancy had been identified. High correlations with low partner education, domestic violence, smoking, being single, and not having enough money are the contributing variables
27.	Ginja; 2020; UK	Cross-sectional study	To investigate the disparities in prenatal mental health outcomes between rural and urban areas	Women in the UK, from both rural and urban areas, who are pregnant or have recently given birth	357	Questionnaire on socioeconomic variables; differentiation between rural and urban area	The Generalised Anxiety Disorder Scale (GAD-7), the Edinburgh Postnatal Depression Scale (EPDS), and the Whooley questions (a depression assessment)	reported feeling more depressed; urban women scored slightly higher on anxiety tests where g geographical location significantly influenced the results for mental health
28.	Jones; 2022; United Kingdom	Qualitative (Thematic Analysis)	To investigate perinatal suffering emotions and	A wide range of pregnant and postpartum women in the United	456	Online semi-structured interviews examined topics such as usage of	The Perinatal Anxiety Screening Scale (PASS) is a 31-item assessment of perinatal	Disrupted conceptions regarding nurturing and parenting, social isolation and loss,

			sensations during the COVID-19 pandemic	Kingdom throughout COVID-19		technology, physiological distress, loneliness, and interrupted care	anxiety symptoms, and the Edinburgh Postnatal Depression Scale (EPDS) is a 10-item self-reported assessment of perinatal depression symptoms	emotional pain and anxiety associated with ambiguity, and coping mechanisms and resilience were the four main themes that surfaced. Disruptions brought on by the pandemic exacerbated depressive and anxious symptoms

Appendices 2

Table 4.7.1: Quality Assessment of Quantitative studies

	Van de Loo et al., (2018)	**Van der Waerden et al., (2015)**	**Verreault et al., (2014)**
Purpose of Research	Well-presented	Well-presented	Well-presented
Problem Identification	Effortlessly recognised	Swiftly recognised	Effectively recognised
Logical Presentation	Logically organised	Strategically organised	Coherently constructed
Literature Review	Comprehensive	Comprehensive	Comprehensive
Theoretical Framework	Not specifically mentioned	Well-established	Not specifically mentioned
Aims and Objectives	Clearly expressed	Clearly expressed	Properly expressed
Research Question or Hypotheses	Summarised yet not explicitly stated	Clearly articulated	Precisely mentioned
Sample	Appropriately explained	Effectively explained and meticulously chosen	Comprehensively explained
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Precisely mentioned	Precisely mentioned	Comprehensively elaborated
Methodology	Properly presented and appropriate	Properly portrayed and relevant	Properly represented and relevant
Data Analysis / Results	Properly carried out	Adequately performed	Properly implemented
Discussion	Thorough and precise	Thorough and knowledgeable	Comprehensive and Knowledgeable

Table 4.7.2: Quality Assessment of Quantitative studies

	Martini et al., (2015)	**Akçalı Aslan et al., (2014)**	**Cheng et al., (2021)**
Purpose/Research	Precisely expressed	Well-presented	Precisely mentioned
Problem Identification	Strongly specified	Extremely recognised	Effectively identified
Logical Presentation	Cohesive structure	Consistent framework	Well-constructed

Literature Review	Comprehensive	Informational and pertinent	Comprehensive
Theoretical Framework	Inferred	Not specifically mentioned	Inferred
Aims / Objectives	Properly expressed	Properly expressed	Effectively expressed
Research Question / Hypotheses	Precisely mentioned	Valid and implied	Reliable and implied
Sample	Effectively explained	Sufficiently explained	Appropriately explained
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Properly articulated	Precisely mentioned	Evidently mentioned
Methodology	Suitable and well-explained	Suitable and well-explained	Relevant and accurate
Data Analysis / Results	Reliable and suitable	Properly performed	Robust and transparent
Discussion	Exhaustive and comprehensive	Contextualised and thoughtful	Knowledgeable and well-rounded

Table 4.7.3: Quality Assessment of Quantitative studies

	Morikawa et al., (2015)	**Jing et al., (2016)**	**Davis et al., (2023)**
Purpose/Research	Precisely demonstrated	Well Presented	Precisely mentioned
Problem Identification	Evidently indicated	Precisely demonstrated	Comprehensively mentioned
Logical Presentation	Well-constructed	Consistent and organised	Well-constructed
Literature Review	Compatible and pertinent	Pertinent and targeted	Current and pertinent
Theoretical Framework	Inferred	Unstated	Not specifically mentioned
Aims / Objectives	Comprehensively expressed	Exclusively formulated	Evidently expressed
Research Question / Hypotheses	Explicit, testable, and well-defined	Both measurable and untested	Valid and implied
Sample	Massive and detailed	Comprehensively and explained	Effectively explained
Ethical Considerations	Addressed	Addressed	Addressed

Operational Definitions	Perfectly articulated	Well-established	Precisely articulated
Methodology	Relevant and precise	Properly determined and pertinent	Properly prepared and transparent
Data Analysis / Results	Powerful and transparent	Powerful and transparent	Effective and thorough
Discussion	Exhaustive and considerate	Considerate and contextualized	Contextualised and thoughtful

Table 4.7.4: Quality Assessment of Quantitative studies

	Ahmed Waqas et al., (2015)	**Zhu et al., (2024)**	**Gariepy et al., (2016)**
Purpose/Research	Excellent presentation	Strongly expressed	Explicit and pertinent
Problem Identification	Thoroughly expressed	Thoroughly defined	Thoroughly clarified
Logical Presentation	Systematic and cohesive	Perfectly expressed	Well-constructed
Literature Review	Informational and pertinent	Informational and pertinent	Appropriate
Theoretical Framework	Inferred	Implied	Implied
Aims / Objectives	Strongly expressed	Properly expressed	Properly expressed
Research Question / Hypotheses	Perfectly mentioned	Precisely stated	Comprehensive
Sample	Effectively explained	Appropriately explained	Effectively articulated
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Comprehensively demonstrated	Evidently stated	Simple and useful
Methodology	Relevant and well-explained	Thorough and suitable	Suitable and accurate
Data Analysis / Results	Massive and flexible	Robust and transparent	Robust
Discussion	Meaningful and insightful	Enlightening and relevant	Balanced and reasonable

Table 4.7.5: Quality Assessment of Quantitative studies

	Mainali et al., (2023)	**Wang et al., (2025)**	**Koutra et al., (2028)**
Purpose/Research	Properly expressed	Perfectly expressed	Strongly expressed
Problem Identification	Fully specified	Thoroughly defined	Fully defined
Logical Presentation	Consistent and organised	Consistent and organised	Consistent and organised
Literature Review	Informational and pertinent	Contextual and pertinent	Thorough and pertinent
Theoretical Framework	Inferred	Inferred	Implicit
Aims / Objectives	Perfectly expressed	Properly expressed	Perfectly expressed
Research Question / Hypotheses	Precisely stated	Described	Described
Sample	Effectively explained	Effectively explained	Appropriately explained
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Well mentioned	Transparent and legitimate	Transparent and legitimate
Methodology	Appropriate and rigorous	Relevant and accurate	Thorough and practical
Data Analysis / Results	Robust and transparent	Accurate and powerful	Robust and transparent
Discussion	Insightful and contextualized	Reasonable and insightful	Knowledgeable and well-rounded

Table 4.7.6: Quality Assessment of Quantitative studies

	Barton et al., (2017)	**Verbeek et al., (2019)**	**Best et al., (2024)**
Purpose/Research	Strongly expressed	Clearly expressed	Thoroughly expressed
Problem Identification	Completely clarified	Clearly described	Evidently defined
Logical Presentation	Coordinated and organised	Coherent and organised	Consistent and organised
Literature Review	Meaningful and significant	Regional and pertinent	Informational and pertinent
Theoretical Framework	Inferred	Implicit	Inferred
Aims / Objectives	Properly expressed	Perfectly expressed	Strongly expressed

Research Question / Hypotheses	Described	Precisely articulated	Clearly outlined and measurable
Sample	Properly explained	Properly explained	Effectively explained
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Transparent and legitimate	Accurate and legitimate	Accurate and legitimate
Methodology	Reasonable and precise	Appropriate and rigorous	Suitable and precise
Data Analysis / Results	Vibrant and accessible	Robust and transparent	Reliable and transparent
Discussion	Innovative and well-rounded	Insightful and balanced	Creative and comprehensive

Table 4.7.7: Quality Assessment of Quantitative studies

	Umuziga, Adejumo, and Hynie, (2020)	**Cena et al., (2021)**	**Jimènez-Barragan et al., (2024)**
Purpose/Research	Clearly stated	Clearly stated	Clearly stated
Problem Identification	Well-defined	Well-defined	Well-defined
Logical Presentation	Well-structured	Structured and coherent	Structured and coherent
Literature Review	Relevant and contextual	Relevant and informative	Relevant and informative
Theoretical Framework	Implicit	Implicit	Implicit
Aims / Objectives	Clearly defined	Clearly defined	Clearly defined
Research Question / Hypotheses	Articulated	Articulated	Articulated
Sample	Adequately described	Adequately described	Adequately described
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clear and valid	Clear and valid	Clear and valid
Methodology	Appropriate	Appropriate and rigorous	Appropriate and rigorous

Data Analysis / Results	Transparent and robust	Robust and transparent	Robust and transparent
Discussion	Thoughtful and reflective	Insightful and balanced	Insightful and comprehensive

Table 4.7.8: Quality Assessment of Quantitative studies

	Cena et al., (2020)	**Clayborne et al., (2022)**	**Matsumura et al., (2019)**
Purpose/Research	Clearly defined	Clearly defined	Clearly defined
Problem Identification	Well-defined	Well-defined	Well-defined
Logical Presentation	Well-structured	Well-structured	Structured and coherent
Literature Review	Relevant and concise	Relevant and informative	Relevant and informative
Theoretical Framework	Not explicitly stated	Implicit	Implicit
Aims / Objectives	Clearly articulated	Clearly articulated	Clearly articulated
Research Question / Hypotheses	Implied and focused	Implied and focused	Clearly defined
Sample	Adequately described	Large and representative	Large and representative
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clear and valid	Clear and valid	Clear and valid
Methodology	Rigorous and appropriate	Rigorous and appropriate	Rigorous and appropriate
Data Analysis / Results	Transparent and robust	Transparent and robust	Transparent and robust
Discussion	Thoughtful and balanced	Thoughtful and balanced	Insightful and balanced

Table 4.7.9: Quality Assessment of Quantitative studies

	deMontigny et al., (2020)	**Ramohlola, Maimela, and Ntuli, (2022)**	**Ginja et al., (2020)**
Purpose/Research	Clearly defined	Clearly defined	Clearly defined
Problem Identification	Well-defined	Well-defined	Well-defined

Logical Presentation	Well-structured	Structured and coherent	Structured and coherent
Literature Review	Relevant and current	Relevant but brief	Relevant and informative
Theoretical Framework	Implicit	Not explicitly stated	Implicit
Aims / Objectives	Clearly stated	Clearly articulated	Clearly articulated
Research Question / Hypotheses	Implied and focused	Implied	Clearly implied
Sample	Adequate and defined	Adequate and defined	Defined and appropriate
Ethical Considerations	Addressed	Addressed	Addressed
Operational Definitions	Clear and validated	Clear and valid	Clear and valid
Methodology	Appropriate	Appropriate	Appropriate
Data Analysis / Results	Transparent and robust	Transparent and informative	Transparent and robust
Discussion	Thoughtful and contextualized	Contextualized and reflective	Thoughtful and contextualized

Table 4.7.10: Quality Assessment of Qualitative study (using CASP checklist).

CASP criteria check list questions	Jones et al., (2022)
1. Was there a clear statement of the aims of the research?	Indeed, the study built on previous qualitative findings to investigate the psychological experiences and factors contributing to suffering of postpartum mothers during the COVID-19 epidemic.
2. Is a qualitative methodology appropriate?	YES, Qualitative approaches were ideal for revealing depth and subtlety because of the emphasis on real-life events and psychological reactions.
3. Was the research design appropriate to address the aims?	YES, Rich investigation of participants' viewpoints was made possible by thematic analysis of open-ended survey replies.
4. Was the recruitment strategy appropriate?	Indeed, participants were selected from a larger survey on perinatal mental health during COVID-19 that was conducted in the UK. The requirements for inclusion were well-defined.

5. Was the data collected in a way that addressed the research issue?	YES, Participants were able to openly share their experiences thanks to open-ended enquiries. The topic's emotional content was taken into consideration in the design.
6. Has the relationship between researcher and participants been adequately considered?	The flexibility was somewhat constrained because the data were gathered through anonymous surveys. Although the authors were aware of this limitation, they did not thoroughly examine researcher positionality.
7. Have ethical issues been taken into consideration?	YES, Consent and participant anonymity were maintained, and ethical approval was acquired. The population's vulnerability was taken into consideration during the investigation.
8. Was the data analysis sufficiently rigorous?	YES, Thematic analysis adhered to the framework developed by Braun and Clarke. Themes were accompanied by excerpts that provided context, and coding was methodical.
9. Is there a clear statement of findings?	YES, the results were arranged neatly into themes like emotional overload, interrupted care, and solitude. The writers connected them to more general healthcare and social circumstances.
10. How valuable is the research?	The work is very valuable because it provides important insights into perinatal mental health in the midst of a worldwide crisis, with implications for future research, policy, and service delivery.