Volume: 4 Issue: 4 Pages: 17-21

A Review of Maternal Anxiety, Depression, and Stress in the Second and Third Trimesters of Pregnancy

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Article Info.
E-ISSN: 2583-6528
Impact Factor (SJIF): 6.876
Peer Reviewed Journal
Available online:
www.alladvancejournal.com

Received: 04/March/2025
Accepted: 03/April/2025

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Abstract
Maternal mental health during pregnancy is critical for both maternal and child well-being. This paper explores the prevalence, risk factors, and consequences of anxiety, depression, and stress experienced by women in their 2nd and 3rd trimesters of pregnancy. Synthesizing recent literature, this review article highlights the unique vulnerabilities of this period, including hormonal shifts, physical discomfort, and impending parenthood. Elevated maternal anxiety, depression, and stress during these trimesters are linked to adverse maternal outcomes such as gestational complications, and negative child outcomes including preterm birth, low birth weight, and later developmental and behavioural challenges. Furthermore, this paper discusses potential screening and intervention strategies to support maternal mental health during this critical period. Future research directions should focus on longitudinal studies, culturally sensitive interventions, and exploring the nuanced interplay between biological, psychological, and social factors contributing to maternal mental distress in late pregnancy.

Keywords: Maternal mental health, pregnancy, anxiety, depression, stress, 2nd and 3rd trimester.

1. Introduction

Pregnancy is a transformative experience, characterized by a complex interplay of hormonal, physiological, and emotional changes. While the anticipation of motherhood is often associated with joy and excitement, the reality is that pregnancy can also be a vulnerable period for mental health. Anxiety, depression, and stress are common psychological challenges experienced by pregnant women, particularly in the 2nd and 3rd trimesters. These conditions are not only detrimental to the mother's well-being but can also have significant consequences for the developing fetus and long-term child development. This review paper aims to provide a comprehensive review of the current understanding of maternal anxiety, depression, and stress during the 2nd and 3rd trimesters of pregnancy, focusing on prevalence, risk factors, consequences, potential interventions and future research directions. Recent research has highlighted the importance of addressing maternal mental health during pregnancy, as untreated anxiety, depression, and stress can lead to adverse obstetric outcomes, such as preterm birth, low birth weight, and complications during delivery (Mental Health America, 2022). Furthermore, maternal mental health challenges during pregnancy have been linked to negative child outcomes, including neurodevelopmental delays, behavioural problems, and emotional difficulties later in life (Field, 2017; Glover, 2014). This review aims to create the current evidence on maternal anxiety, depression, and stress during the 2nd and 3rd trimesters, with a focus on their implications for maternal and child health.

1.1 Significance of the 2nd and 3rd Trimesters

Maternal mental health is not merely the absence of mental illness, but a state of emotional, psychological, and social well-being in women during pregnancy and the postpartum period (World Health Organization, 2023). Optimal maternal mental health is paramount for both the pregnant individual and the developing child. Untreated maternal mental health issues can have profound and lasting consequences. For mothers, these can include increased risk of adverse pregnancy outcomes, postpartum depression, and difficulties in establishing a secure mother-infant bond (Gavin *et al*., 2018).

For offspring, prenatal exposure to maternal distress has been linked to preterm birth, low birth weight, altered fetal programming, and increased vulnerability to emotional and behavioral problems later in life (Entringer *et al*., 2019; Glover *et al*., 2018).

The 2nd and 3rd trimesters (13-40 weeks) represent a crucial period in pregnancy. Fetal development is rapid and significant, with major organ systems maturing and preparing for life outside the womb. This period is also characterized by noticeable physical changes for the mother, including weight gain, hormonal fluctuations, and discomforts associated with the growing fetus. Psychologically, women are often adjusting to the reality of impending parenthood, contemplating their changing roles and responsibilities, and grappling with concerns about labor, delivery, and the health of their baby.

1.2 Prevalence of Anxiety, Depression, and Stress

The prevalence of anxiety, depression, and stress during pregnancy varies depending on the population studied, the methodology used, and the diagnostic criteria employed. However, research consistently suggests that these conditions are more common during pregnancy than previously thought.

Anxiety, depression, and stress are common experiences during pregnancy, but when symptoms become excessive or persistent, they can indicate clinically significant conditions. Prevalence rates vary depending on the population studied and the assessment tools used, but evidence suggests a notable proportion of pregnant women experience elevated distress. Studies consistently show that anxiety disorders are as, if not more, prevalent than depressive disorders in pregnancy (Dennis & Dowswell, 2013). Estimates indicate that approximately 15-20% of pregnant women experience clinically significant anxiety (Fairbrother *et al*., 2020) and a similar percentage meet criteria for depression during pregnancy (Gavin *et al*., 2018). While stress is a normative part of life, chronic or overwhelming stress during pregnancy is also a significant concern. Prevalence rates for perceived stress in pregnancy range widely, with studies reporting rates from 20% to over 50%, depending on the population and measurement tools (Dunkel Schetter, 2011).

Focusing specifically on the 2nd and 3rd trimesters, research suggests these periods maintain or may even increase the risk for mental health challenges. Physical discomfort, body image concerns, worries about labor and delivery, and preparation for parenthood can escalate anxiety and stress in these later stages (Ross *et al*., 2019). While some women may experience a 'honeymoon period' in the 2nd trimester as morning sickness subsides, this is not universal, and psychological vulnerabilities remain or can intensify as pregnancy progresses.

1.3 Risk Factors for Anxiety, Depression & Stress

A complex interplay of biological, psychological, and social factors contributes to maternal mental health during pregnancy.

1.3.1 Biological Factors

Hormonal fluctuations, particularly changes in estrogen and progesterone, are hypothesized to play a role in mood regulation and vulnerability to mood disorders (Hodes *et al*., 2020). Physiological changes associated with pregnancy, such as sleep disturbances, fatigue, and physical discomfort, can also exacerbate emotional distress.

1.3.2 Psychological Factors

Pre-existing mental health conditions, including a history of anxiety or depression, significantly increase the risk of experiencing these conditions during pregnancy (Lancaster *et al*., 2010). Negative cognitive styles, rumination, and low self-esteem are also recognized psychological vulnerabilities (Richards *et al*., 2019). Fear of childbirth, concerns about maternal competence, and adjustment to changing body image can contribute to anxiety and stress, especially in later trimesters.

1.3.3 Social Factors

Lack of social support, strained relationships, financial insecurity, and exposure to stressful life events (e.g., job loss, bereavement) are potent social risk factors for maternal mental health challenges (Slomian *et al*., 2019). Experiences of discrimination, racism, and historical trauma can also significantly impact mental well-being during pregnancy, particularly for women from marginalized communities (Coleman-Cowger *et al*., 2022). Furthermore, partner relationship quality and support are critical protective factors; conversely, partner conflict or lack of support is a major risk factor for maternal distress (Fisher *et al*., 2018).

2. Consequences of Maternal Anxiety, Depression, and Stress in the 2nd & 3rd Trimesters

The consequences of elevated maternal anxiety, depression, and stress during the second and third trimesters are far-reaching, affecting both the mother and the developing child.

2.1 Maternal Outcomes: Experiencing significant mental distress in late pregnancy increases the risk of adverse pregnancy outcomes such as gestational hypertension, preeclampsia, and preterm labor (Ruifrok *et al*., 2017).

2.2 Furthermore, antenatal depression and anxiety are strong predictors of postpartum depression and anxiety, potentially leading to prolonged maternal distress and impacting the mother-infant relationship (Gavin *et al*., 2018).

2.3 Child Outcomes: Prenatal exposure to maternal anxiety and stress has been consistently linked to adverse infant and child outcomes.

2.4 Preterm Birth and Low Birth Weight: Maternal antenatal stress and depression are associated with increased risk of preterm birth and lower birth weight (Kinge *et al*., 2020).

2.5 Developmental Delays: Studies have indicated that prenatal exposure to maternal anxiety and depression can impact infant cognitive and motor development in early childhood (Van den Bergh *et al*., 2017).

2.6 Behavioral and Emotional Problems: Children exposed to high levels of maternal prenatal stress and anxiety may be at increased risk for developing emotional and behavioral problems, such as anxiety, ADHD, and conduct disorders, later in childhood and adolescence (O'Connor *et al*., 2017; Pearson *et al*., 2013). This effects are thought to be mediated by alterations in fetal programming and stress response systems.

3. Data Collection Techniques

3.1 Standardized Questionnaires

- **Description:** Using Reliable and validated questionnaires to assess anxiety, depression, and stress. These questionnaires provide standardized scores that can be compared across individuals and studies.

- **Examples**
  - **Edinburgh Postnatal Depression Scale (EPDS):** A widely used screening tool for depression during and after pregnancy. (While named "postnatal," it is frequently used during pregnancy.)
  - **State-Trait Anxiety Inventory (STAI):** Measures both state anxiety (current anxiety level) and trait anxiety (general tendency to be anxious).
  - **Perceived Stress Scale (PSS):** Measures the degree to which individuals perceive their lives as stressful.
  - **Hospital Anxiety and Depression Scale (HADS):** Useful whether the population of interest has a physical health condition or not, to measure the severity of their anxiety and depression.
  - **Generalized Anxiety Disorder 7-item (GAD-7) scale:** A commonly used questionnaire that screens for generalized anxiety disorder.
- **Considerations:** It is important to use questionnaires that have been validated for use in pregnant women. Also, consider the reading level and cultural appropriateness of the questionnaire.

3.2 Clinical Interviews

- **Description:** Structured or semi-structured interviews conducted by trained clinicians to assess mental health.
- **Examples**
  - **Structured Clinical Interview for DSM-5 (SCID-5):** A comprehensive diagnostic interview based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).
  - **Anxiety Disorders Interview Schedule (ADIS):** A structured interview specifically designed to diagnose anxiety disorders.
- **Strengths:** Provides more in-depth information than questionnaires. Can be used to establish a formal diagnosis.
- **Weaknesses:** Time-consuming and expensive. Requires trained clinicians.

3.3 Physiological Measures

- **Description:** Measuring physiological indicators of stress, such as:
  - **Cortisol levels:** Can be measured in saliva, blood, or urine. Elevated cortisol levels are associated with stress.
  - **Heart rate variability (HRV):** Reflects the balance between the sympathetic and parasympathetic nervous systems. Reduced HRV is associated with stress and anxiety.
  - **Blood pressure:** Elevated blood pressure can be a sign of stress.
- **Strengths:** Provides objective measures of stress that are not subject to self-report bias.
- **Weaknesses:** Can be affected by factors other than stress (e.g., physical activity, caffeine intake). May be invasive or uncomfortable for participants.

3.4 Qualitative Data Collection

- **Description:** Gathering in-depth information about women's experiences of anxiety, depression, and stress through:
  - **Individual Interviews:** Allowing women to share their stories and perspectives in their own words.
  - **Focus Groups:** Facilitating discussions among groups of pregnant women to explore shared experiences and themes.
- **Strengths:** Provides rich data that can complement quantitative findings. It can help to identify important factors that may not be captured by standardized questionnaires.
- **Weaknesses:** Time-consuming to collect and analyze. Findings may not be generalizable to all pregnant women.

3.5 Reviewing Medical Records

- **Description:** Includes gathering information on pre-existing conditions, prior pregnancies, pregnancy complications or pre-existing treatments.
- **Strengths:** Objective and can provide important contextual information.
- **Weaknesses:** Requires medical administrative approval and record access. It's also limited to the data already recorded.

4. Prevention

Preventive interventions are essential for reducing the burden of maternal anxiety, depression, and stress.

- **Preconception Counseling:** Identifying and addressing risk factors for mental health problems before conception can help prevent or mitigate issues during pregnancy.
- **Early Prenatal Care:** Early and consistent prenatal care provides opportunities for screening, education, and support.
- **Mental Health Promotion Programs:** Implementing community-based programs that promote mental health and well-being can help reduce stigma and increase access to resources.
- **Social Support Interventions:** Providing support groups or peer support programs can help women connect with others and build a sense of community.
- **Partner Involvement:** Engaging partners in prenatal care and providing education and support can improve relationship dynamics and reduce stress.

5. Screening and Intervention Strategies

Given the significant consequences of maternal mental distress, routine screening and timely intervention are crucial. Many professional organizations recommend universal screening for perinatal depression and anxiety at least once during pregnancy and postpartum (American College of Obstetricians and Gynecologists, 2023). Validated screening tools, such as the Edinburgh Postnatal Depression Scale (EPDS) and the Generalized Anxiety Disorder-7 (GAD-7), can be effectively used in antenatal care settings (Thombs *et al*., 2019). Intervention strategies should be tailored to the individual's needs and preferences and can encompass a range of approaches:

5.1 Psychological Interventions: Cognitive Behavioral Therapy (CBT), Interpersonal Psychotherapy (IPT), and mindfulness-based interventions have demonstrated effectiveness in reducing anxiety and depression during pregnancy (Armstrong *et al*., 2020; Sockol, 2016). These therapies can be delivered individually or in group settings.

5.2 Social Support Interventions: Enhancing social support through peer support groups, home visiting programs, and couples therapy can bolster maternal well-being and buffer against stress (Hodnett *et al*., 2013).

5.3 Pharmacological Interventions: In cases of moderate to severe depression or anxiety, pharmacological treatment with antidepressants or anti-anxiety medications may be

considered. A careful risk-benefit assessment, in consultation with a psychiatrist and the pregnant woman, is essential when considering medication use during pregnancy (Yonkers *et al*., 2017).

5.4 Lifestyle Modifications: Encouraging healthy lifestyle behaviors, such as regular physical activity (within safe pregnancy guidelines), adequate sleep hygiene, and stress-reduction techniques (e.g., relaxation exercises, yoga), can complement other interventions (Stapleton *et al*., 2021).

6. Future Research Directions

Maternal anxiety, depression, and stress in the 2nd and 3rd trimesters of pregnancy are significant public health concerns with profound implications for both mothers and children. This review has highlighted the prevalence, risk factors, and consequences of these conditions, emphasizing the critical need for routine screening, early intervention, and ongoing support for pregnant women. Given the significant impact of maternal anxiety, depression, and stress during the second and third trimesters on both maternal and child health, future research should prioritize the following areas:

6.1 Targeted Interventions and Prevention Strategies

- **Personalized Interventions:** Develop and evaluate personalized interventions that consider individual risk factors, cultural context, and preferences. This could include tailoring psychotherapy approaches (e.g., CBT, IPT) or incorporating mindfulness-based interventions.
- **Technology-Based Interventions:** Explore the use of mobile health (E-Health) technologies (e.g., smartphone apps, wearable sensors) to deliver mental health support, monitor stress levels, and promote self-care practices during pregnancy. Focus on accessibility and scalability.
- **Preventative Strategies:** Investigate the effectiveness of universal or targeted preventative interventions (e.g., antenatal education, social support programs) in reducing the incidence of maternal anxiety, depression, and stress. Early intervention is key.
- **Pharmacological Interventions:** Conduct rigorous research on the safety and efficacy of pharmacological treatments for maternal mental health conditions, considering both short-term and long-term effects on the mother and child.

6.2 Addressing Specific Populations and Contexts

- **Diverse Populations:** Focus on underrepresented and vulnerable populations (e.g., women from low socioeconomic backgrounds, racial/ethnic minorities, immigrant women, women with pre-existing mental health conditions). Cultural adaptations of interventions are essential.
- **Impact of Social Determinants:** Examine the impact of social determinants of health (e.g., poverty, food insecurity, discrimination, violence) on maternal mental health during pregnancy, and develop interventions that address these underlying factors.
- **Paternal Mental Health:** Acknowledge and incorporate the role of paternal mental health and the couple's co-parenting relationship in mitigating maternal distress and promoting healthy family functioning.
- **Longitudinal Studies on Offspring Outcomes:** Conduct long-term follow-up studies to assess the impact of maternal anxiety, depression, and stress during pregnancy on offspring cognitive, emotional, and behavioral development across childhood and adolescence.
- **Impact of Global Events:** Examine the effects of large-scale events (e.g., pandemics, natural disasters, political instability) on maternal mental health and explore strategies to support pregnant women during these challenging times.

6.3 Methodological Advancements

- **Longitudinal Data Collection:** Employ longitudinal study designs to capture the dynamic changes in maternal mental health throughout pregnancy and postpartum.
- **Advanced Statistical Modeling:** Utilize advanced statistical techniques (e.g., growth curve modeling, mediation analysis) to examine complex relationships between maternal distress, biological factors, and pregnancy outcomes.
- **Objective Measures of Stress:** Incorporate objective measures of stress (e.g., cortisol levels, heart rate variability) in addition to self-report questionnaires.
- **Big Data Analytics:** Leverage large datasets from electronic health records and other sources to identify patterns and predictors of maternal mental health problems.

6.4 Implementation Science

- **Dissemination and Implementation:** Focus on translating research findings into practice by developing and implementing evidence-based interventions in real-world settings.
- **Cost-Effectiveness Analyses:** Conduct cost-effectiveness analyses to evaluate the economic benefits of interventions aimed at improving maternal mental health.
- **Policy Implications:** Advocate for policies that support maternal mental health, such as increased access to affordable healthcare, paid parental leave, and childcare services.

By addressing these research gaps, we can improve our understanding of maternal anxiety, depression, and stress during pregnancy and develop more effective strategies to promote the well-being of mothers and their children.

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