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DISCOVERY SCIENTIFIC SOCIETY

Postpartum Depression: Risk Factors, Child Outcomes, and Treatment Approaches - A Systematic Review

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ABSTRACT

Postpartum depression is a mental disorder that affects approximately 10-20% of women after childbirth. Despite such high prevalence, the exact etiology is unknown, but it is definitely multifactorial and involves changes in hormone levels, genetic predisposition, environmental stressors, and possibly immunological factors. Early detection and incorporation of appropriate treatment are of great importance for proper child development and the well-being of the mother. The purpose of this systematic review is to summarize the current knowledge regarding risk factors of postpartum depression (PPD), its effect on child development, and available diagnostic and therapeutic possibilities.

Keywords: Postpartum depression; perinatal mental health; baby blues; Edinburgh Postnatal Depression Scale

1. INTRODUCTION

The perinatal period brings significant physical and mental health changes for women. The mental health of women during pregnancy and postpartum is critical, both medically and socially. Factors such as hormonal contraception and infertility treatment can affect women's mental health. Approximately 85% of women experience emotional instability immediately after giving birth. Typical symptoms include low mood, fatigue, and anxiety (Bręborowicz, 2021). Up to 50% of postpartum depression cases may go undiagnosed due to social stigma and mothers masking symptoms out of fear of abandonment and misunderstanding.

The exact pathogenesis of postpartum depression (PPD) is unclear. Hormonal fluctuations, including decreases in estrogen, progesterone, and cortisol levels, along with changes in the serotonergic pathway, are believed to contribute to the development of this condition. Early diagnosis and treatment are essential for both the mother and the child. We most often use the Edinburgh Postnatal Depression Scale as a screening scale (Gałecki & Szulc, 2018).

2. REVIEW METHODS

A review of studies from major scientific databases such as PubMed and Google Scholar focused on the risk factors of postpartum depression, treatment modalities, and outcomes in children. Such selected articles were analyzed and summarized in this review. In our database search, we used the following keywords: postpartum depression, baby blues, risk factors of PPD, Edinburgh Postnatal Depression Scale, PPD child development, and therapy of PPD. The period covered by this review included articles published between 2010 and 2025. Case reports, conference abstracts, and studies not relating directly to postpartum depression were excluded (Figure 1).

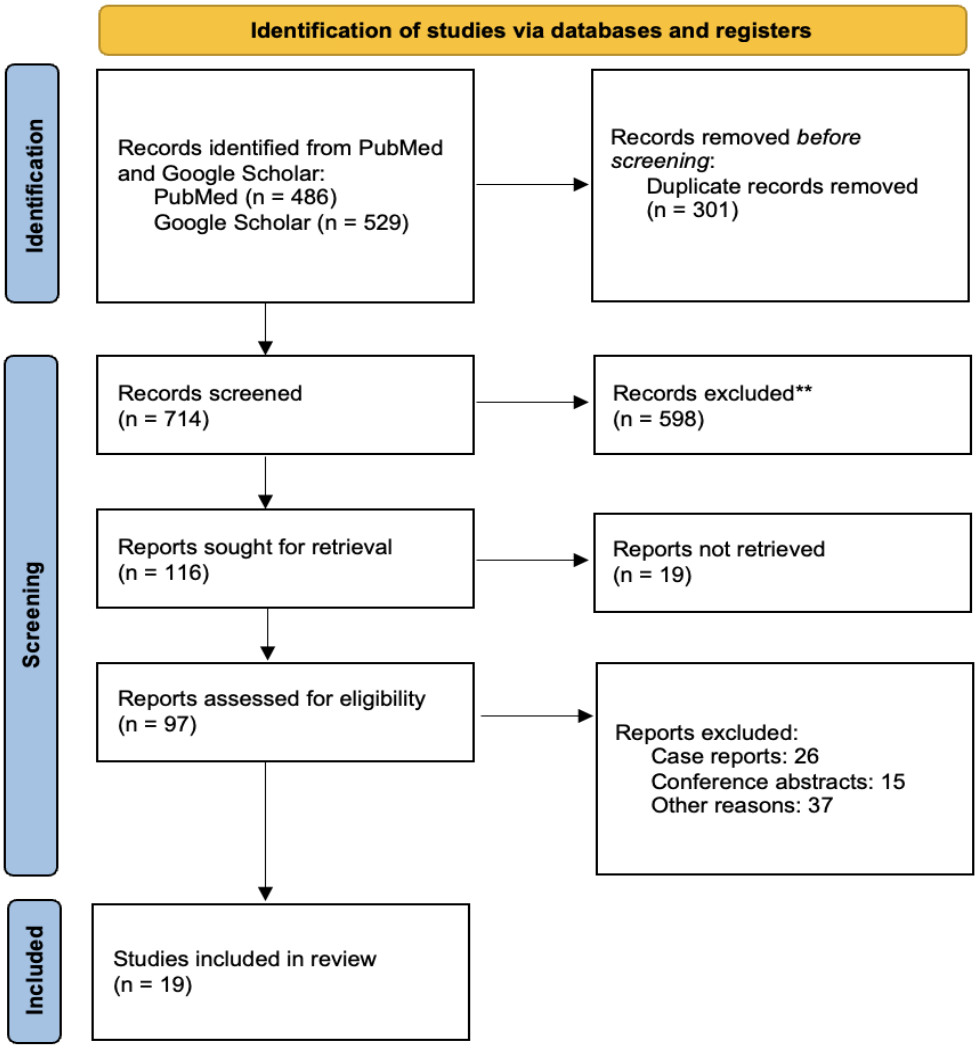

Figure 1: Flow Chart

3. RESULTS & DISCUSSION

Definition and Epidemiology

The definition of baby blues is a low mood following childbirth (Chechko et al., 2023). Baby blues include low mood and mild, transient, self-limited depressive symptoms, which can develop in the first days after delivery (Tosto et al., 2023; Langan et al., 2016).

Baby blues affects about 50-80% of women. Symptoms usually worsen on the fifth or sixth day after birth and last from about 10 days to 2 weeks, sometimes extending to a month. Symptoms include mood swings, tearfulness, fatigue, sadness, irritability, nervousness, and feeling unable to cope with the baby. While these symptoms usually do not significantly impair the mother's ability to function, they can decrease her quality of life (Gałecki & Szulc, 2018).

According to DSM-5, postpartum depression definition is the occurrence of symptoms that meet the criteria for depression within 6 months after giving birth (Golec et al., 2016). Symptoms of postpartum depression occur in approximately 10-20% of women after childbirth. It appears at the turn of the first and second months after the birth of the child.

In teenage mothers, the risk of symptoms is higher, reaching approximately 26-32%. It is a moderate-to-severe disorder. An episode usually lasts 3-9 months, but without treatment, depression symptoms can persist for up to a year after giving birth. Some women develop the disorder 4-5 months after giving birth due to hypothyroidism occurring at that time (Gałecki & Szulc, 2018).

Risk Factors

Risk factors for postpartum depressive disorders are divided into a few groups. The most important one is current or previous PPD, as relapse occurs in 50-60% of future cases (Cafiero & Justich Zabala, 2024; Gałecki & Szulc, 2018; Chechko et al., 2023; Oliveira et al., 2022):

- Socioeconomic factors: lack of social support, unemployment, first pregnancy, young maternal age (<20 years), being a single mother, having more than three children, domestic violence in the form of spousal abuse, poor relationship with partner, troubled mother-daughter relationships.
- Factors related to pregnancy: unwanted pregnancy, high-risk pregnancy, traumatic pregnancy history (miscarriage, abortion, traumatic birth in the past), stressful events during pregnancy or in the previous 12 months, C-section delivery, and absence of breastfeeding.
- History of mental conditions: previous episodes of depression, history of bipolar disorder, history of anxiety disorders, a negative attitude towards the baby, and history of mental conditions in the family.
- Other factors include poor dietary habits, low physical activity, vitamin B6 deficiency, insufficient sleep, low self-esteem, and substance abuse.

It is worth remembering that there are protective factors that can reduce the risk of PPD. These include: a good, supportive relationship with the child's father, support from the mother's social environment, breastfeeding, and access to and the possibility of seeking professional help (gynecologist, pediatrician, psychologist) (Fejfer-Szpytko et al., 2016).

Mechanism

The etiology of postpartum depression is unknown, but most likely it is multifactorial and related to hormonal changes in postpartum, genetic conditions, psychological aspects, and social life stressors (Carlson et al., 2025). Hormonal changes play a significant role in its development, but this relationship is not linear with any hormone concentration. The rapid decrease in reproductive hormones (estrogens, progesterone) during postpartum can lead to the development of PPD in prone women (Payne & Maguire, 2019). Changes in the HPA axis may also contribute to the development of postpartum depression (hyperactive HPA axis and elevated cortisol, ACTH, and CRH levels).

There are hypotheses concerning the impact of immune system dysfunction in women on the development of PPD. During pregnancy, the immune system adapts to the prevailing conditions, leading to a specific immune tolerance in the woman towards the fetus. The intensity of immune system activation during and after childbirth may affect microglial activation and nerve transmission in higher brain centers.

T lymphocytes, in particular, can directly influence tryptophan and serotonin metabolism through cytokine production. Each of these hypotheses underlines the multifactorial aspect of postpartum depression, implying that its cause is compound and includes physiological, psychological, and environmental factors (Bręborowicz, 2021; Tosto et al., 2023; Payne & Maguire, 2019).

Clinical Manifestation

Baby blues manifests as irritability, decreased mood, feeling overwhelmed by new responsibilities, feeling weighed down by stimuli, feeling inadequate, exhaustion, or problems with concentration.

Persistent sadness and fatigue, combined with anxiety concerning the health and development of the child, are the axial symptoms of postpartum depression (Dominiak et al., 2021). Other symptoms of PPD include depressive syndromes, fatigue, irritability, frequent crying, emotional lability, sleep disorder, intrusive thoughts, lack of appetite, lack of energy, and feeling guilty (Cafiero & Justich Zabala, 2024; Tosto et al., 2023). Thoughts about harming the child may arise. The appearance of symptoms indicating a disturbed relationship with the child is characteristic: weakened bonds, excessive worrying about the child's health, which objectively should not

cause concern. Despite the mother's efforts, she is unable to properly care for the child (Fejfer-Szpytko et al., 2016). Sometimes, even suicidal thoughts may occur.

The difference between these two states is also the time of occurrence: baby blues usually appear 1-14 days after childbirth, reaching a maximum between 3-7 days, and postpartum depression usually occurs up to 6 weeks after birth (Table 1). Baby blues do not impair a mother's ability to function normally, contrary to postpartum depression (Chechko et al., 2023; Dominiak et al., 2021).

Table 1. Differences Between PPD And Baby Blues

Features	Baby blues	Postpartum depression
Onset	Day 1-14 PPD	Up to 6 weeks PPD
Duration	10-14 days	Usually 3-9 months
Severity	Mild	Moderate to severe
Functional impairment	None or minimal	Significant

Diagnosis and Treatment

To detect postpartum depression early and effectively, attention should be paid to the woman's mental state, especially in the third month after giving birth, when the risk of its occurrence is highest. Women in high-risk groups require particular attention.

Recognizing postpartum depression is particularly difficult because depressive symptoms can overlap with symptoms usually associated with pregnancy and childbirth. Often, women experiencing depressive symptoms try to deny their presence for fear of social judgment. The role of the physician, whether a gynecologist, family doctor, or pediatrician, is essential in this regard (Pearlstein et al., 2009; Kaźmierczak et al., 2010). It is important to start talking to the patient about the possibility of this disorder during pregnancy, which can significantly speed up the mother's decision to seek help if it occurs (Ceriani Cernadas, 2020).

The Edinburgh Postnatal Depression Scale is particularly helpful in diagnosis. It is a 10-question questionnaire completed by the mothers themselves. It is the most popular questionnaire for PPD screening, available in up to 50 languages (Maurer et al., 2018). It is helpful for screening this disorder, but the results should correlate with a conversation with the patient (Gopalan et al., 2022).

Treatment approaches for PPD include non-pharmacological and pharmacological treatment. The most commonly used non-pharmacological methods are cognitive-behavioral therapy and interpersonal therapy. There are several classes of medications available for pharmacological treatment (selective serotonin reuptake inhibitors, monoamine oxidase inhibitors, and tricyclic antidepressants), as well as a few drugs that do not belong to any of these classes (venlafaxine, mirtazapine) (Brown et al., 2021). The main factors determining the choice of medication are possible side effects, use of other medications, and whether the medication passes into breast milk (Maliszewska & Preis, 2014).

Clinicians use non-pharmacological methods to treat milder forms of PPD, while in more severe cases, they add pharmacological treatment. The choice of the appropriate treatment method depends on the doctor's decision based on the medical history and examination.

Postpartum Depression in Mothers and Child Development

During pregnancy, childbirth, the neonatal period, and the first months of life, a fundamental bond forms between mother and child. This relationship depends on physical contact and attachment, breastfeeding, nutrition, stimulation, general care, and cultural and emotional transmission between generations. Disruption of the bond between mother and child leads to abnormal neurological development in the child (Cafiero & Justich Zabala, 2024). Maternal postpartum depression has both direct and indirect effects on child development, including reducing the quality of the home environment and decreasing maternal sensitivity and caregiving capacity (Slomian et al., 2019).

Women suffering from postpartum depression are more prone to neglecting their childcare obligations, such as failing to attend pediatric appointments, not keeping vaccinations up to date, and not adhering to basic safety precautions (Golec et al., 2016). Infants of mothers experiencing PPD are more likely to suffer from lack of weight gain, colic, excessive crying, sleep problems, and behavioral

disorders (Pearlstein et al., 2009). Postpartum depression in mothers significantly affects children's cognitive development and slows down speech development. (Golec et al., 2016)

In newborns, maternal postpartum depression can manifest itself in reduced activity, irritability, nervousness, fewer positive facial expressions, circadian rhythm disturbances, and higher levels of stress hormones. Later in life, infants and young children whose mothers suffered from postpartum depression show depressive interaction patterns, lower weight and muscle strength, and delays in motor development (Table 2). Preschool children exhibit more aggressive and empathy-deficient behaviors and have higher levels of stress hormones (Gałecki & Szulc, 2018).

Table 2. Effects Of PPD In Children Depending on Their Age

Child's age	**Common outcomes**
0-12 months	Troubles with bonding, colic, and sleep issues
1-3 years	Speech delays, behavioral dysregulations
4-6 years	Emotional dysregulation and aggression issues

In this review, we confirmed the assumption that postpartum depression is a common disorder with a multifactorial etiology, which, if left untreated, can have a profound impact on the health of the mother and child. The prevalence varies depending on the resource, but studies estimate that PPD affects approximately 10-20% of mothers. Differences in prevalence rely on the population studied, level of education, economic situation, access to healthcare, and the time of the study.

In our review, we identify relatively consistent risk factors for PPD regardless of the study used, such as: previous depression or perinatal mental illness, limited social support, younger maternal age, unwanted or high-risk pregnancy, traumatic birth experiences, sleep disturbances, and co-occurring anxiety or substance use. Risk factors include biological, psychological, and social factors.

Multiple studies consistently demonstrate the impact of maternal postpartum depression on child development. Long-term research strongly links maternal postpartum depression to adverse outcomes in child development, including impaired social-emotional regulation, sleep disturbances, increased incidence of colic, delayed speech development, and behavioral problems in preschool children. Severity varies, with higher risk observed in children of mothers experiencing recurrent depression.

The reviewed studies collectively support a multifactorial etiology of postpartum depression and highlight the current lack of understanding of its exact mechanism. Research indicates that hormonal changes after childbirth are the most significant influence, and suggests that the immune system may also be involved.

Building on this, all the sources we use agree on the need for early detection and effective treatment of PPD. By far the most frequently used scale for detecting PPD is the Edinburgh Postnatal Depression Scale, which can be considered a kind of screening test. Effective treatment is possible after diagnosing the severity of the disorder, which allows for the selection of the appropriate form of therapy - pharmacotherapy, psychotherapy, or a combination of both.

4. CONCLUSION

Postpartum depression is a serious problem that can have serious consequences for both mother and child. This review highlights the multifactorial nature of its etiology and emphasizes the importance of screening, early detection, and treatment. It is important to remember to care for women not only after childbirth, but also during pregnancy. Evidence shows that untreated postpartum depression in the mother can affect the child's cognitive development, delay speech development, and disrupt emotional development.

A wide range of treatment options, including psychotherapy, pharmacotherapy, and combining non-pharmacological and pharmacological methods, can help avoid these serious consequences. Future research should focus on assessment methods that account for cultural factors, long-term observation of children, and the evaluation of available interventions. Educating women about PPD is especially important to ensure that they are not afraid of judgment or stigmatization by their surroundings and that they accept help that they may need.

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