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Postpartum depression and its risk factors: A review

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Abstract

Postpartum depression is a prevalent health disorder which affecting women's mental condition during the postnatal period, characterized by mood swings, anxiety, and depressive symptoms. PPD is a complex condition influenced by a combination of biological, psychological, and social factors. It can lead to significant adverse outcomes for both mothers and infants if not identified and managed promptly. Various biological, psychological, and social factors contribute to the onset of PPD, including hormonal fluctuations, genetic predisposition, prenatal anxiety, and lack of social support. Understanding these risk factors is essential for early diagnosis and effective intervention. This study conducted a comprehensive review of existing literature to identify the primary risk factors associated with PPD. The analysis included data from diverse populations across different countries, examining biological, psychological, and social determinants. Key studies were selected based on their relevance, sample size, and methodological rigor. The prevalence of PPD was analysed in relation to factors such as prenatal depression, caesarean section, vitamin D deficiency, and genetic markers. Additionally, therapeutic interventions like Cognitive-Behavioural Therapy (CBT), Interpersonal Therapy, and pharmacological managements were evaluated for their effectiveness in managing PPD. Early identification and intervention are critical to mitigating its impact on mothers and infants. Effective management strategies should include a combination of psychological therapies, pharmacological treatments, and strong social support systems. Public health initiatives must prioritize education, awareness, and access to mental health services to ensure timely diagnosis and treatment of PPD, thereby improving maternal and child health outcomes.

Keywords: Depression; Postpartum; Health care; Vitamin deficiency; Infants

1. Introduction

Postpartum (or postnatal) refers to the period after childbirth. Most often, the postpartum period is the first six to eight weeks after delivery, or until your body returns to its pre-pregnancy state. Depressive disorder (also known as depression) is a common mental disorder. It involves a depressed mood or loss of pleasure or interest in activities for long periods of time. The terms "postpartum" and "postnatal" are frequently employed to describe the period following childbirth in relation to the mother. Different organizations and countries have their preferences for terminologies, with some utilizing both terms interchangeably, leading to confusion. This ambiguity is compounded while thinking abou the duration of the period following delivery, often referred to as the postpartum/postnatal period. The postpartum period is generally divided into three phases: the immediate phase, the early phase, and the late postpartum phase [1].

Depression is the most common psychological issue affecting women globally during the perinatal period. Approximately 15% of women experience depression at some point in their lives, with it being more prevalent during pregnancy and the postpartum period [2].

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Postpartum depression (PPD) is primarily influenced by factors such as prenatal depression, anxiety during pregnancy, exposure to stressful life events, insufficient social support, and a history of depression. Predictors of postpartum depression include prenatal depression, self-esteem, stress related to childcare, prenatal anxiety, marital dynamics, infant temperament, marital status, limited social support, socioeconomic status, and pregnancies that were unplanned or unwanted [3].

Postpartum depression (PPD) was caused by many factors like Social relationships, Past history of depression and lack of support, Immigration status, Genetic and epigenetic markers, Chronic illness, Vitamin D, Cesarean section, Abuse, Body image dissatisfaction, Multiple births, Women's birth experiences, Pre-pregnancy obesity, Women with preterm and low-birth-weight infants [4].

Postpartum depression extends beyond just feeling down. Women with PPD may undergo mood swings, anxiety, sleep disturbances, and feelings of sadness, anger, or inadequacy. In rare instances, symptoms can escalate to hallucinations, thoughts of self-harm or harming the baby, and suicidal tendencies, signaling postpartum psychosis. Urgent medical attention is imperative to safeguard both the mother and the child [5].

postpartum depression was treated with Cognitive-Behavioral Therapy (CBT) and Interpersonal Therapy Psychotherapy, often referred to as "talk therapy," is a common treatment suggestion for postpartum depression. Cognitive-Behavioral Therapy (CBT) and Interpersonal Therapy represent just a couple of therapy modalities accessible for addressing PPD. A healthcare provider might recommend antidepressants, many of which are safe for breastfeeding, to assist with managing symptoms of depression and anxiety. Another medication choice is Brenaxolone, which is approved specifically for addressing postpartum depression [5].

Table 1 Prevalence rate is reported by various studies conducted by various countries [2]

S.no	Country	Percentage (%) of prevalence rate in PPD
1	HONG KONG	4.4%
2	AUSTRALIA	7%
3	FINLAND	7.7%
4	BANGLADESH	18%
5	NIGERIA	24.5%
6	ETHIOPIA	24.94%
7	INDIA	9.18-36.7%
8	PAKISTAN	64.6%

2. Causes

2.1. Biopsychosocial Model of Postpartum Depression

The biopsychosocial version offers a complete framework for information PPD, acknowledging the have an effect on of biological, mental, and social factors. At its core, this version shows that PPD arises from a mixture of genetic predisposition, hormonal fluctuations, mental vulnerabilities, and socio-environmental stressors [3].

2.2. Biological Influences

Biological elements play a critical position withinside the etiology of PPD. Hormonal adjustments all through being pregnant and childbirth, especially fluctuations in estrogen and progesterone levels, were implicated withinside the onset of PPD. The unexpected drop in those hormones postpartum can cause temper disturbances in prone individuals. Additionally, genetic predispositions to temper issues can growth the probability of growing PPD [3].

2.3. Psychological Factors

Psychological variables, together with prenatal melancholy and tension, are sizable predictors of PPD. Women with a record of melancholy or tension are at heightened danger at some stage in the perinatal period [3].

2.4. Social Determinants

Social assist stands as a important determinant of maternal intellectual fitness for the duration of the postpartum period. Adequate assist from partners, own circle of relative's members, and friends buffers towards the stressors of latest motherhood, decreasing the threat of PPD [3].

2.5. Life Events and Stressors

Stressful lifestyles events, which includes being pregnant headaches, annoying childbirth experiences, or childcare difficulties, can precipitate or exacerbate PPD. Additionally, lifestyles transitions, which includes modifications in employment popularity or relocation, can expand pressure all through the postpartum period. Quality relationship plays a major role in the postpartum depression [3].

3. Risk Factors

- Prenatal depression
- Childcare stress
- Life stress
- Social support
- Prenatal anxiety
- Maternity blues
- History of depression
- Family economic level
- Woman's occupation
- Pregnancy and birth complication
- Marital satisfaction
- Vitamin D Deficiency
- Cesarean
- Violence or current abuse
- Newborn disposition
- Self-worth unwanted or unplanned pregnancy
- abuse of substances
- Obesity
- Disruptions to sleep
- Breastfeeding
- Body image unhappiness
- Child sexual abuse
- Hypothalamic-pituitary-adrenal dysregulation
- Multigravida
- Genetic vulnerability [6].

3.1. Genetic vulnerability

Five studies examined the association between polymorphisms in the 5-HTTLPR (serotonin-transporter-linked polymorphic region) and the occurrence of depression during pregnancy. Polymorphous variants are genetic differences found in several key genes. These include those encoding cytochrome P450 2D6 (CYP2D6), fatty acid desaturases (FADS), catechol-O-methyl-transferase (COMT), monoamine oxidase type A (MAOA), nicotine acetylcholine receptors (CHRNA), methylenetetrahydrofolate reductase (MTHFR), oxytocin peptide (OXT), oxytocin receptor (OXTR), tryptophan hydroxylase isoform 2 (TPH2), glucocorticoid receptor (GR), corticotropin-releasing hormone receptor type 1 (CRHR1), and FK506 binding protein 51 (FKBP5) [7]. It was diagnosed by:

- Edinburgh Postnatal Depression Scale Questionnaire
- DNA Extraction.
- Genotyping of the TPH1 (218A>C) Polymorphism.
- Genotyping of the TPH2 (1463G>A) Polymorphism
- Genotyping of the SLC6A4 (L/S) Polymorphism [8].

Serotonin (5-hydroxytryptamine, 5-HT) play a major role in the postpartum depression. 5-HT is best known for its role in modulating mood and behaviour within the central nervous system. There is a growing link between the genes that regulate 5-HT neurotransmission and psychiatric disorders characterized by 5-HT dysregulation [9].

The genes identified in this analysis support previous findings from allelic, transcriptomic, and DNA-m association studies related to depressive phenotypes. Future research should integrate data from multiple omic platforms to understand the functional relevance of these DMRs. Additionally, DNA-m association results should be refined by reducing phenotypic heterogeneity and determining whether DNA-m differences are related to the onset timing, severity, and duration of perinatal mental health outcomes during the current pregnancy, or to a previous history of depressive psychopathology [10].

3.2. Vitamin D Deficiency

Vitamin D is a nutritional factor that has been suggested to positively impact depression in adults. It is hypothesized that vitamin D may function as a neuroactive hormone, with its receptors widely dispersed through the human brain. vitamin D deficiency can alter neurotransmitters involved in depressive symptoms [11].

Vitamin D deficiency may lead to an increase in neuronal Ca2+, thereby contributing to depression. Additionally, vitamin D may play a role in neuro-immunomodulation and neuroplasticity, both of which are proposed mechanisms for its observed effects on mood [11]. AD &PPD were also triggered by Vitamin D Deficiency.

To explored the relationship between blood concentrations of 25-hydroxyvitamin D (25(OH)D), the best indicator of vitamin D status in the general population, and mood disorders during pregnancy. However, the findings from these research results are unclear. This study aimed to systematically review the data supporting the correlation between 25(OH)D levels and antenatal depression and postpartum depression [12].

3.3. Multi Gravida

Multiple pregnancies significantly increase the risk of various negative health outcomes, including higher rates of maternal mortality and morbidity, increased prematurity, low birth weight, intrauterine growth retardation, higher neonatal mortality, and an elevated risk of disabilities and malformations. Multiple births may also be associated with an increased risk of postpartum depression due to the high levels of parenting stress, fatigue, and other risk factors [13]. The primary risk factor for antepartum depression is having had a previous female child [14].

3.4. Obesity

14–25% of women are at least 5 kg heavier one year after giving birth, which puts them at a higher risk for obesity and its associated health issues. Factors associated with retaining at least 5 kg at one year postpartum include higher pre-pregnancy weight and gestational weight gain, being of black race, being a first-time mother, and certain behaviours such as inadequate sleep, low physical activity, high trans-fat intake, and frequent television viewing [15]. Research on the link between BMI and postpartum depression mainly explores whether a higher pre-pregnancy BMI is connected to increased depressive symptoms after giving birth[15]. The association between obesity and postpartum depressing symptoms remains significant regardless of gestational weight gain [16].

3.5. Cesarean

There are two types of cesarean sections: elective and emergent. An elective cesarean section is one that is medically unnecessary, requested either by the pregnant woman or her doctor for delivery. Emergent cesarean section, on the other hand, refers to an unplanned procedure, such as when a Cesarean section is performed before the planned delivery date due to clinical conditions of the pregnant woman [17]. Who have the normal delivery in pregnancy they have low level risk of PPD. The risk of PPD is higher after elective CS than after vaginal delivery or emergency CS. Additionally, some studies have found a higher incidence of PPD among mothers who have emergency CS compared to those who have elective CS or vaginal delivery [17]. The risk of postpartum depression within one to six months after a cesarean section rises by 6% compared to the risk at six months postpartum [18]. Cesarean section can contribute to the development of post-traumatic stress disorder, with 65% of women diagnosed with PTSD also experiencing postpartum depression [19].

4. Conclusion

PPD is a significant public health issue, which affects new mothers globally. The risk factors for postpartum depression include prenatal depression and anxiety, childcare and life stress, lack of social support, maternity blues, a history of

depression, family income, the woman's occupation, pregnancy and birth complications, and marital satisfaction, Vitamin D Deficiency, Caesarean, abuse or violence that occurs now, a baby's disposition, self-worth unwanted or unplanned pregnancy substance misuse, being overweight, disruptions to sleep , nursing, discomfort with one's body image, sexual abuse of children, adrenal- pituitary-hypothalamic dysfunction, Multigravida Genetic vulnerability. So, they should aware about this condition also need mental care and support. Early identification and intervention are crucial to mitigate the adverse effects of PPD on mothers and their infants. Healthcare providers should focus on raising awareness about PPD, its risk factors, and symptoms to ensure timely diagnosis and treatment.

Effective treatments for PPD include Cognitive-Behavioural Therapy and Interpersonal Therapy, which can help mothers manage their symptoms and improve their mental health. Antidepressants that are safe for breastfeeding mothers may also be prescribed to manage depression and anxiety. Additionally, healthcare providers should encourage regular physical activity, a balanced diet rich in essential nutrients like vitamin D, and sufficient sleep to support overall well-being.

Creating a robust support system is vital. Encouraging partners, family members, and friends to provide emotional and practical support can significantly reduce stress and improve the mother's mental health. Support groups and counseling can also offer a sense of community and shared experiences, helping mothers feel less isolated.

Public health initiatives should aim to provide education and resources to expectant and new mothers about PPD. This includes accessible mental health services, screening for PPD during prenatal and postnatal visits, and ensuring healthcare providers are trained to recognize and address PPD symptoms effectively.

In conclusion, addressing PPD requires a multi-faceted approach that includes medical treatment, psychological support, lifestyle modifications, and a strong support system. By raising awareness, providing timely interventions, and ensuring comprehensive care, we can significantly improve mother's mental health and promote better outcomes for maternal and their child.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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