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Postpartum Depression: Theoretical Perspectives, Prevalence, and Predictive Models for Public Health Interventions

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Abstract

Postpartum depression (PPD) is a major public health challenge affecting millions of mothers globally, with prevalence rates as high as 18.6% in Sub-Saharan Africa and 10–15% worldwide. Characterized by symptoms such as impaired functioning, sadness, irritability, and guilt, PPD has significant psychological, emotional, and social consequences for mothers, families, and communities. While its etiology remains multifaceted, involving demographic, biological, and psychological factors, theoretical frameworks such as the Health Belief Model, Information Motivation Theory, Protection Motivation Theory, and Transtheoretical Model offer insights into understanding and addressing PPD. These models emphasize the importance of education, behavioural intent, motivation, and risk perception in shaping maternal health behaviours. Evidence-based interventions, including pharmacological, psychosocial, and psychological strategies, have shown promise in lessening PPD's impact. However, tailored, culturally sensitive approaches are crucial for effective prevention and management. This review underscores the urgent need for integrated public health interventions informed by robust theoretical perspectives to enhance maternal mental health and improve postpartum care outcomes globally.

Introduction

Giving birth to a new baby is expected to be a pleasurable and satisfactory experience, but some mothers experience some emotional difficulties commonly referred to as postpartum depression (PPD) (Kobayashi et al., 2017). Postpartum depression is the most frequently recognized psychological disorder after birth and is defined as an affective mood disorder often occurring in women up to one year after childbirth (Nilav, 2023; Gardner, 2012; WHO, 2003). According to Kusuma et al. (2019), it usually occurs in the second or third week after delivery, and it may last for one to two years. It is the time when many women are vulnerable to a variety of emotional disorders. It is often associated with symptoms of hallucination, decreased libido, guilt feeling, insomnia, irritability, lack of energy, sadness, crying, feeling

unworthy, suspicious, forgetfulness, inability to concentrate and poor functioning, feeling unable being a mother, a lack of interest to the baby, and even potentially harm the baby (Saharoy et al., 2023; WHO, 2003). Atuhaire et al. (2020) argue that postpartum depression (PPD) continues to become one of the major critical public health challenges in Africa. Extant literature posits that postpartum disorder, when poorly managed, can lead to enduring mental illness for women. Critically, PPD can have serious psychological and emotional consequences for families (Mundorf et al., 2022; Atuhaire et al., 2022; Alba, 2021; Slomian et al., 2019). According to Woldeyohannes et al. (2021), postpartum depression has a considerable burden on partners and close family members, social and leisure activities, as well as potentially creating financial challenges within a family.

PPD is estimated to affect the health of 350 million people worldwide (Azmoude, 2022). In Sub-Saharan Africa (SSA), the overall estimated level of postpartum depression is 18.6% (95% CI: 13.8, 23.4). Moreover, it is estimated to affect 10–15% of all mothers in the postpartum period (Abdollahi et al., 2011). Studies have found that in the first three months after childbirth, 14.5% of women have an episode of minor or major depression (Woldeyohannes et al., 2021; Santana et al., 2021; Matsumura et al., 2019). The Institute for Health Metrics and Evaluation (IHME) (2019) equally found that in low- and middle-income countries (LMICs), and Sub-Saharan Africa in particular, postpartum depression is among the leading non-communicable causes of disability, affecting a higher proportion of women than men. However, the exact cause of postpartum depression has not yet been identified; some theories argue that it is affected by biological, psychological, and demographic factors (Kusuma et al., 2019). This encompasses physiological changes that occur during pregnancy, labour and postnatal, nutritional deficiencies, metabolic disorders, anaemia, hormonal changes, fatty acid changes, and obstetric-related complications suffered by the pregnant woman (Marzo, 2019). Norhayati et al. (2015), Abdollahi et al. (2016) and Zarghami et al. (2021) all reported the prevalence of PPD to be approximately 1.9 to 82.1% and 5.2 to 74.0% in developing and developed countries, respectively. According to Kusuma et al. (2019), postpartum depression must be pressed to 1%. Hence, appropriate mechanisms are needed to prevent its deleterious effects both on mothers and children across the globe.

Theoretical Frameworks and Models

The most important factor influencing clinicians' choice of intervention is its theoretical perspective. Thus, it is imperative that healthcare providers help postpartum depressive mothers make informed choices regarding their treatment based on relevant theories (Abdollahi, 2016).

Information Motivation Theory And Ratu's Model

The Information Motivation Theory proposed by Fisher and Fisher (1992) to explain public health-related behaviours recognizes three constructs—information, motivation, and behavioural skills (Fisher et al., 2003). The model posits that individuals must be informed, motivated, and behaviourally skilled to initiate and maintain preventive behaviour. In context, individuals must have information that is relevant to the prevention of postpartum depression and be able to apply it to their setting. Premised on the constructs of information, motivation, and behavioural skills, the information motivation theory presents an appropriate model for postpartum mothers or pregnant women to acquire adequate information and knowledge on postpartum depression, its causes, effects, and probable interventions for behavioural change adoption. This theoretical framework is in tandem with Ratu's model (a nursing model which seeks to prevent postpartum depression through education and interventions). According to Kusuma (2019), Ratu's Model

is effective in reducing the incidence of PPD, and it is recommended as a more focused model for use in maternity nursing for the prevention of postpartum depression in healthcare settings.

Expectancy-Value Theory and Protection Motivation Theory (PMT)

Expectancy Value Theory (Vroom, 1964) postulates that motivation for a given behaviour or action is determined by two factors: expectancy and value, i.e., how probable it is that a wanted outcome is achieved through behaviour or action; and how much the individual values the desired outcome, respectively (De Simone, 2015). In regard, mothers who are cognizant of postpartum depression and its deleterious consequences may be bent on adopting approved interventions or behaviours if they place value on mitigating adverse effects of PPD and vice versa. Protection Motivation Theory (PMT) has two main constructs: education and motivation. It is premised on the argument that an individual's expectation that carrying out a recommended action will remove a threat and perceived self-efficacy, or the belief in one's ability to execute a recommended course of action successfully (Malmir et al., 2018). Primarily, this model denotes taking measures to combat the risk of developing a health problem[3] (E.g., adhering to medications to prevent postpartum depression).

Transtheoretical Model (TTM) and Theory of Planned Behaviour (TPB)

The Transtheoretical Model is a theory that assesses an individual's readiness to act on a new, healthier behaviour and provides strategies, stages, or processes of change for public health interventions to guide the individual to ascertain decisional balance (Gordali et al., 2021). This can result in interventions that are tailored (i.e., constructs specifically created for a target population's-postpartum mothers) and effective. Primarily, the model operates on the assumption that behavioural change is intentional and may be realized through the application of a six-stage cyclical process: pre-contemplation, contemplation, preparation, action, maintenance, and termination (Johnson et al., 2018). Critics, however, argue that the model assumes individuals make coherent and logical plans in their decision-making process when this is not always true (Strohacker & Beaumont, 2020; Abdallah, 2018). Whereas the theory of planned behaviour (TPB) is a psychological theory that links beliefs to behaviour. TPB maintains that attitude, subjective norms, and perceived behavioural control together shape an individual's behavioural intentions. According to Luqman et al. (2018), a prime tenet of TPB is that behavioural intention is the most proximal determinant of public health behaviour. Hence, TPB remains the appropriate model for postpartum depression intervention and behaviour.

The Health Belief Model (HBM) and The Vulnerability-Stress Framework

The Health Belief Model derives from psychological and behavioural theory with the foundation that the two components of health-related behaviour are the desire to avoid illness or, conversely, get well if already ill and the belief that a specific health action will prevent or cure illness (Aliyu, 2021; Ochoa, 2021). In context, a mother's course of action towards postpartum depression is dependent on her perceptions of the benefits and barriers related to the disorder. The vulnerability-stress framework, on the other hand, has received much attention in the literature on general depression. This framework conceives that maternal stressors and vulnerability factors, both distal (those that occur early in the etiological sequence) and proximal (occur later, sometimes immediately prior to or simultaneously with the disorder), are the pivotal factors for postpartum depression etiology (Bohne et al., 2022; Dongn et al., 2021).

Etiological Research

Information Motivation Theory

A cross-sectional study by Maita et al. (2017) on "postpartum depression and health-related quality of life" among 658 women with a response rate of 90.6% aimed to assess the prevalence of postpartum depression (PPD) and its determinants and to examine the relationship between PPD and quality of life (HRQOL) among women conducted in 18 randomly selected vaccination centers found that the prevalence of PPD was 45.9% (CI: 42.1%-49.8%). Binary logistic regression analysis revealed that low educational level, unplanned pregnancy, no breastfeeding, and history of PPD were significant risk factors for postpartum depression among new mothers.

Ratu's Model

A meta-analysis of over 14,000 subjects and subsequent studies of nearly 10,000 additional subjects found that depression during pregnancy, anxiety during pregnancy, stressful life events during pregnancy, low levels of social support and having a previous history of depression were the strongest predictors of postpartum depression. Moderate predictors were high levels of childcare stress, low self-esteem, neuroticism and infant temperament. Small predictors were obstetric and pregnancy complications, negative cognitive attributions, quality of relationship with partner, and socioeconomic status. Ethnicity, maternal age, level of education, parity and gender of the child (in Western societies) were not predictors of postpartum depression (Robertson et al., 2004).

Vulnerability-Stress Framework

Hassert (2014) in testing the Vulnerability-Stress Framework on postpartum depression to predict depressive symptoms in early postpartum (within the first week after delivery) found several risk factors that were categorized as belonging to sociodemographic, biological, pregnancy-related, life stressors, support, obstetric, and maternal adjustment domains. Among the 594 mothers who participated, the study found several variables to be significantly associated with postpartum depression. These included vulnerable personality, depression prior to childbirth, hypertension while pregnant, life events, global support, feeling unprepared for hospital discharge, and less satisfaction with the infant feeding method. Likewise, Ngai and Chan (2011) conducted an intervention study with 181 first-time mothers living in Hong Kong. Results of their path analysis suggested that more stress, less coping resources, less social support, and lower maternal efficacy lead to postpartum depressive symptoms.

Intervention Research

Transtheoretical Model (TTM)

A study by Lewis et al. (2018) aimed at examining the efficacy of a physical activity intervention for the prevention of postpartum depression among 130 women who were less than eight weeks postpartum, had a history of depression or a maternal family history of depression, not currently depressed, and were otherwise healthy were randomly assigned to a theory-based physical activity intervention or a wellness/support contact control condition, which lasted for six months based on a Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I). The study found that participants in the physical activity condition reported fewer depressive symptoms. At significant p value of 0.05 ($p < .05$) they concluded that a higher level of physical activity participation between 122 and 128 minutes is significantly related to fewer depressive symptoms regardless of the condition. A similar study by Lujan (2017) among 10 healthcare providers found that early postpartum screening among pregnant women

enhances early identification of women with PPD. As such, health facilities should incorporate PPD screening interventions as a mechanism towards the abetment of postpartum depression among mothers.

Expectancy-Value Theory and Transtheoretical Model (TTM)

Benitez et al. (2017) in analyzing the "Relevance of the Transtheoretical Model in Activity Promotion" among obese women (n=13) aged between 27-40 years in focus groups, found that, the desire to lose weight through a physical activity, to overcome postpartum depression and its adverse effects informed participants readiness to accept interventions implemented through the TTM model. The study found that physical activity helped reduce postpartum depression among the study participants. However, the study findings further highlighted that the participants were motivated by such factors as fear of becoming a burden to their families or being unable to care for their family members due to illness or poor health, which had an implicit derivative application of the expectancy-value theory.

Theory of Planned Behaviour

WHO (2016) report that pharmacological interventions: antidepressant medication; psychological interventions: interpersonal psychotherapy, cognitive behavioural therapy, psychological debriefing; psychosocial interventions: antenatal and postnatal classes, intrapartum support, supportive interactions; quality improvement interventions: continuous care, early postpartum follow-up; hormonal interventions; oestrogen therapy, progesterone therapy, thyroid function; other interventions: educational strategies, relaxation with guided imagery, postpartum screening, adherence to medication, counselling, and prioritization of nutrition when readily incorporated into practice and health care systems can led to higher maternal-efficacy and in turn, led to fewer postpartum depressive symptoms.

Conclusion

Postpartum depression (PPD) remains a significant public health concern, affecting millions of mothers worldwide and posing serious psychological, emotional, and social consequences for families. The prevalence of PPD varies across regions, with higher rates observed in low- and middle-income countries, including Sub-Saharan Africa. Despite its widespread impact, the exact causes of PPD remain complex, influenced by biological, psychological, and demographic factors. Several theoretical frameworks, including the Health Belief Model, Information Motivation Theory, Transtheoretical Model, and Protection Motivation Theory, provide valuable insights into understanding and addressing PPD. These models emphasize the role of education, motivation, behavioural intent, and risk perception in influencing maternal health decisions. Effective interventions informed by these theoretical perspectives are crucial in preventing PPD and mitigating its adverse effects on both mothers and their children. Future research should focus on developing tailored, evidence-based strategies that enhance maternal mental health and promote holistic postpartum care.

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