

Predictor of Postpartum Depression: Literature Review

Indah Lestari^{1*}, Noer Saudah¹, Ika Ainur Rofi'ah¹, Heru Santoso Wahito Nugroho²

¹ Faculty of Nursing, University of Bina Sehat PPNI Mojokerto, Mojokerto, East Java, Indonesia

² Department of Midwifery, Poltekkes Kemenkes Surabaya, Surabaya, East Java, Indonesia

(Correspondence author's email, ns.indah@yahoo.com)

ABSTRACT

The incidence of postpartum depression is quite high. The largest percentage occurs when they have their first child, and have a family history of mood disorders. The incidence of postpartum depression is 50 - 60% in mothers when they have their first child, and around 20% in mothers who give birth to subsequent children. This study aims at reviewing and synthesizing the determinants factor of depression among adolescent in rural area. This study design was a systematic review using the PICO framework. This data was carried out from various journal databases 2012-2022, including Scopus, ScienceDirect, PubMed. 16 articles meet the inclusion criteria and meet the qualifications for review. A systematic procedure is used to collect articles, as well as a critical appraisal and data synthesis with qualitative synthesis. The analysis of the literature review found that aspects of findings related to predictors of postpartum depression are as follows: socio-demographic factors (age, socio-economic status, education, risk age group), maternal factors (pregnancy spacing, parity, pregnancy condition, birth experience, postpartum complications), biological factors (hypothalamus function, prolactin, CRH, inflammatory process), psychosocial factors (negative mood, anxiety, unpreparedness, history of depression), cultural factors (children care stress, wisdom), support system (support husband, family support, decision-making patterns). Healthcare professionals should be aware of this phenomenon and strategies such as primary, secondary, and tertiary prevention interventions may be applied. Women should be screened for potential risk factors and depressive symptoms during pregnancy and postpartum periods so that appropriate interventions if needed, can be initiated in a timely fashion.

Keywords: *Postpartum, Depression, Predictor*

<https://doi.org/10.33860/jik.v17i3.3350>



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INTRODUCTION

Postpartum depression is a mood disorder that occurs after childbirth and reflects psychological dysregulation which is a sign of major depressive symptoms. The condition of postpartum depression is a serious condition where a study proves that 25% of mothers who

have given birth for the first time experience severe postpartum depression and about 20% of mothers who have given birth to their next child. This mood disorder usually occurs 2-6 weeks after giving birth with characteristics, namely feelings of depression, excessive anxiety, insomnia, and changes in body weight¹.

The incidence of postpartum

depression is quite high. The largest percentage occurs when they have their first child, and have a family history of mood disorders. The incidence of postpartum depression is 1 to 2 in 1000 births and about 50 to 60% of mothers experience postpartum depression when they have their first child, and about 50% of mothers who experience postpartum have a family history of mood disorders ².

The impact of postpartum depression does not only occur on mothers but can also occur on babies. Mothers with postpartum depression have a depressed mood, loss of interest in activities, appetite disturbances, sleep disturbances, physical agitation or psychomotor slowing, weakness, feeling useless, difficulty concentrating, and even suicidal ideation. Babies will experience delays from various aspects, both cognitive, psychological, neurological, and motor, and tend to be more fussy in response to seeking and getting attention from their mothers ³.

The cause of postpartum depression is the complexity of various aspects, both internal and external. The literature review aims to analyze the predictor factors of postpartum depression. It is important to know the causes and risk factors to prevent the effects of postpartum depression, as well as to manage women who have been diagnosed so that their condition does not worsen.

METHODS

A literature search was conducted using the following electronic databases: Scopus, ProQuest, PubMed, Science Direct. Such terms as postnatal depression, postpartum depression, puerperal depression, risk factors, predisposing factors, and predictor factors were entered separately and in combination during the search. Studies were included in this review if they (a) examined and identified risk factors for PPD, (b) using quantitative and qualitative methodologies, and (c) were published in English peer-reviewed journals between 2012 and 2022. The primary goals of this literature review are to provide updated description, possible relationships among study variables,

scope of existing studies, and a comprehensive understanding of the predictor of postpartum depression. Integration of findings from both qualitative and quantitative perspectives, which provides a much broader summary of the literature, has the potential to accomplish the goals, of illustrating possible links between PPD and its pertinent variables. Furthermore, studies undertaken within a 10-year period were included as they are more likely to reflect the current state of knowledge concerning PPD. This process aims to prevent the inclusion of poor-quality research, which may distort the conclusion of research findings. In this literature review, the authors examined each individual research and provided an overall critique of the existing studies in terms of knowledge gaps and methodological limitations. The inclusion of qualitative and quantitative research in this review requires different sets of criteria for each type of research. This may increase the complexity of the appraisal process and produce difficulties in determining and comparing quality across studies.

This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, including identification (n=378), screening (after removal of duplicates (n=115) and screened based on title (n=53)); eligibility using inclusion criteria (n=16). To determine the articles' validity, the authors conducted a careful and structured evaluation using the Critical Appraisal Skill Program (CASP). Each article is assessed for quality according to the research design at CASP. The quality of the journals reviewed passed the critical appraisal, namely 16 articles. To answer the research question, data abstraction was carried out to find every necessary point (meet the inclusion criteria). The implementation process is carried out in an electronic form (MS Excel). Data extraction forms can reduce the need for authors to refer back to the original studies. Analysis and Qualitative synthesis were carried out to find essential points/ characteristics of each relevant article and describe the research findings. the author makes a matrix to facilitate the delivery of information.

RESULTS

Table 1. Synthesis of Results.

Title	Method (Design, sample, Variable)	Results
The psychosocial impact of nausea and vomiting during pregnancy as a predictor of postpartum depression ⁴	<p>D : Retrospective, cross-sectional</p> <p>S : Participants were women above 18 years of age who had been pregnant at least once.</p> <p>V : PPD, Physical characteristic of NVP and HG</p> <p>I : Self-report online survey. The Hyperemesis Impact of Symptoms Questionnaire (HIS)</p> <p>A : Hierarchical logistic regression models</p>	The psychosocial impact of nausea and vomiting in pregnancy appears to be predictive of postpartum depression. Our findings indicate that assessing the psychosocial impact of nausea and vomiting in pregnancy during antenatal care may identify women at risk of postpartum depression.
Can Insomnia in Pregnancy Predict Postpartum Depression? ⁵	<p>D : Cohort-longitudinal</p> <p>S : Participants were women post partum with insomnia.</p> <p>V : Insomnia, post partum depression.</p> <p>I : The Bergen Insomnia Scale (BIS) was used to assess for insomnia. Pittsburgh Sleep Quality Index (PSQI), and The Edinburgh Postnatal Depression Scale (EPDS)</p> <p>A : For categorical data with chi square. Differences in prevalence of insomnia were tested by McNemar's test. Pearson's correlation and Multivariate linear regressions were used for testing associations.</p>	High EPDS scores and anxiety in pregnancy, fear of delivery, previous depression, primiparity, and higher educational level were risk factors for both postpartum insomnia and depression. Insomnia did not predict postpartum depression in women with no prior history of depression, whereas women who recovered from depression had residual insomnia.
Anxiety and fear of childbirth as predictors of postnatal depression in nulliparous women ⁶	<p>D : Prospective longitudinal survey design</p> <p>S : Women were eligible to participate if they were experiencing a healthy Pregnancy (no complications) and had a Body Mass Index (BMI) of between 19.6 and 26.</p> <p>V : Depression, anxiety, post natal</p> <p>I : State-Trait Anxiety Inventory (STAI) and Childbirth Attitudes Questionnaire (CAQ) and EPDS.</p> <p>A : Pearson Correlation, logistic regression, two-way ANOVA.</p>	The findings from this study suggest that antenatal state and trait anxiety, assessed by interview, is an important predictor of postpartum depression. Therefore, it should be Routinely screened in order to develop specific preventive interventions.
Hair cortisol levels, psychological stress and psychopathological symptoms as predictors of postpartum depression ⁷	<p>D : Cohort-longitudinal</p> <p>S : 44 pregnant women was assessed during 3 trimesters of pregnancy and the postpartum period using psychological questionnaires and hair cortisol levels.</p> <p>V : Hair cortisol, Maternal perceived stress, Psychopathological symptoms, Pregnancy-specific stress, postpartum depression</p> <p>I : salivary ELISA cortisol kit; Spanish version of the Perceived Stress Scale (PSS); Prenatal Distress Questionnaire (PDQ);</p>	Hair cortisol levels could predict 21.7% of the variance of postpartum depression symptoms. In conclusion, our study provided evidence that psychopathological symptoms, pregnancy-specific stress, and hair cortisol levels can predict postpartum depression symptoms at different time points during pregnancy. These findings can be applied in future studies and improve maternal care in clinical settings.

	EPDS	
	A : ANOVA	
Loss of Resources and Hurricane Experience as Predictors of Postpartum Depression Among Women in Southern Louisiana ⁸	D : longitudinal study S : 208 women residing in New Orleans and Baton Rouge, Louisiana, who were pregnant during or immediately after Hurricane Katrina's landfall. V : hurricane experience, social support, and demographics I : Loss of Resources Scale, EPDS, Hurricane experience score A : Wilcoxon test, log-linear regression	Both tangible and nontangible LOR were associated with depression cross-sectionally and prospectively. Severe hurricane exposure (high HES) was also associated with depression. Regression analysis showed LOR-associated depression. Consistent with COR theory, however, nontangible LOR explained some of the association between severe hurricane exposure and depression in our models.
Predictors of postpartum depression in a sample of Egyptian women ⁹	D : cross-sectional study S : Sixty female patients with PPD were compared with 60 healthy postpartum females (control group). V : psychosocial stressors, level of hormone, marital status, residence, parity, method of delivery, complicated puerperium, positive history of premenstrual tension syndrome and baby variables I : EPDS, Hormonal assay A : t-test, Pearson product-moment, linear regression Model	There were high statistical differences between PPD females and controls as regard psychosocial stressors, level of (estradiol, thyroxin [T3], and cortisol), marital status, residence, parity, method of delivery, complicated puerperium, positive history of premenstrual tension syndrome and baby variables (eg, unwelcomed, with a negative attitude of parents toward the baby, underweight, female, artificially feeding, unhealthy baby).
Adverse life events, psychiatric history, and biological predictors of postpartum depression in an ethnically diverse sample of postpartum women ¹⁰	D : cross sectional study S : (549 cases, 968 controls) at 6 weeks postpartum from obstetrical clinics in North Carolina. V : life events, psychiatric history, and biological I : EPDS, MINI-Plus A : logistic regression	Psychiatric history and multiple exposures to adverse life events were significant predictors of PPD in a population of minority and low-income women. Genetic ancestry and hormone levels were not predictive of case status. Increased genetic vulnerability in conjunction with risk factors may predict the onset of PPD.
Predictors of Postpartum Depression ¹¹	D : A prospective cohort study S : 1,423 pregnant women at a university-based high risk obstetrics clinic V : depression, sociodemographic, chronic medical problems, stressors. I : Patient Health Questionnaire-9 (PHQ-9), (ICD-9), The Prenatal Psychosocial Profile Stress Scale A : t-test and models	Specific sociodemographic and clinical risk factors for PPD were identified that could help physicians target depression case finding for pregnant women.
Luteinizing Hormone-Follicle Stimulating Hormone ratio as biological predictor of post-partum depression ¹²	D : case control study S : 450 postpartum women were screened at 6 Th week post-delivery for PPD. V : PPD, Hormone I : direct competitive immunoassay by chemiluminescence technology A : normality test, t-test, Mann-Whitney, Kruskal-Wallis ANOVA, and spearman rho.	Our study demonstrated that low LH/FSH ratio after delivery was associated with increased risk for the development of PPD. Low LH/FSH ratio at six week post delivery can be used as a robust biochemical predictor of post-partum depression.
Prenatal β -endorphin as an early predictor of	D : cross sectional S : Three hundred and seven women	β -Endorphin may be a useful early predictor of PPD symptoms in women

postpartum depressive symptoms in euthymic women ¹³	<p>with a singleton, full-term (>37.0 weeks' GA) pregnancy were recruited early in pregnancy and followed up into the postpartum period.</p> <p>V : β-endorphin levels, PPD I : EPDS. A : Person product moment, regressions logistic, t-test</p>	who do not report depressive symptoms in mid-pregnancy.
Predictors of Postpartum Depression in the Eastern Province Capital of Saudi Arabia ¹¹	<p>D : cross-sectional study S : Four hundred and fifty mothers — visiting the health centers for immunizing their children at age two to six months V : PPD, family history, lifetime history, stressful I : EPDS A : Regression analysis</p>	It was found that 17.8% of the women had PPD. The strongest predictor of PPD was a family history of depression, followed by non-supportive husband, lifetime history of depression, unwanted pregnancy, and stressful life events.
Predictors of Postpartum Depression Among Immigrant Women in the Year After Childbirth ¹⁴	<p>D : prospective cohort study S : 519 immigrant women who were recruited from two hospitals in one urban city and delivered full-term singleton infants. V : PPD, demographic data I : EPDS, The Mother's Questionnaire A : Binary logistic regression</p>	<p>Living in Canada for ≤ 2 years, poor perceptions of health, and lower mental health functioning were other important predictors of PPD. Living in communities with a high prevalence of immigrants and low income also was associated with PPD. Complex individual and community-level factors are associated with PPD in immigrant women.</p> <p>Understanding these contextual factors can inform a multifaceted approach to addressing PPD</p>
An overview of risk factors associated to post-partum depression in Asia ³	<p>D : overview study S : PubMed and Psych INFO databases V : The keywords Used were risk factors, post partum, postnatal, after child birth, Asia and depression. I : PRISMA flow diagram A : summary data of reviewed.</p>	There are several risk factors for this highly prevalent problem of postpartum depression in Asian countries, some of which are Child-related factors, Husband/marriage related factors, Miscellaneous, Psychosocial factors, Clinical factors, Demographic factors
Prediction of incidence and bio-psycho-socio-cultural risk factors of post-partum depression immediately after birth in an Iranian population ¹⁵	<p>D : A longitudinal cohort study S : 2279 eligible women during weeks 32–42 of pregnancy to determine bio-psycho-socio-cultural risk factors of depression at 2 weeks post-partum V : PPD, bio-psycho-socio-cultural risk factors I : EPDS, General Health Questionnaire (GHQ) A : Sequential logistic regression</p>	The findings indicated that a combination of demographic, sociological, psychological and cultural risk factors can make mothers vulnerable to PPD.
Experience of pregnancy and delivery as predictors of postpartum depression ¹⁶	<p>D : survey study S : A total of 492 completed questionnaires were returned, and of these we excluded 52 respondents whose infants were older than 12 months V : PPD, pregnancy I : EPDS A : Hierarchical regression</p>	Influence of pregnancy- and birth-related factors on overall EPDS scores is likely to subsume separate covert effects. Accounting for these differential emotional responses to experiences of the different elements of pregnancy and delivery may contribute to greater understanding and more appropriate treatment for specific

Predictive Factors of Maternal Depression in Indonesia : a Systematic Review ¹⁷

D : Systematic Review
S : 5 databases from 1 January 2019 to 31 September 2019 following the PRISMA Guidelines and found 20 articles that met the criteria with a total of 1079 samples.
V : Maternal Depression
I : EPDS; PDSS; CESD-R and WHOQOL-BREF
A : critical Appraisal Skills Program (CASP) of a Qualitative Research Checklist.

components of PPD. Future research should aim to substantiate the tridimensional structure of the EPDS used here, and should investigate the role of other risk factors associated with PPD.

Fifteen predictive factors of maternal depression in Indonesia were revealed. The ranking of the following predictors is based on the number of studies that included them in the study: marital relationship (19), social support (18), various physical complaints (17), maternity blues (17), parity (17), education (15), age at risk (14), children care stress (14), pregnancy-related complication (13), housewives (12), low economic status (11), unplanned pregnancy (11), prenatal anxiety (10), history of depression (2) and history of stillbirths (1). This study also identify three new predictors of maternal depression: various physical complaints, pregnancy-related complications and housewives.

The results of the analysis of the literature review found that aspects of findings related to predictors of postpartum depression are as follows: socio-demographic factors (age, socio-economic status, education, support system, risk age group), maternal factors (pregnancy spacing, parity, pregnancy condition, birth experience, baby condition, post partum complications), biological factors (hypothalamus function, prolactin, CRH, inflammatory process), psychosocial factors (negative mood, anxiety, unpreparedness, history of depression), cultural factors (children care stress, wisdom), support system (support husband, family support, decision making patterns). The framework of the review results can be described as follows:

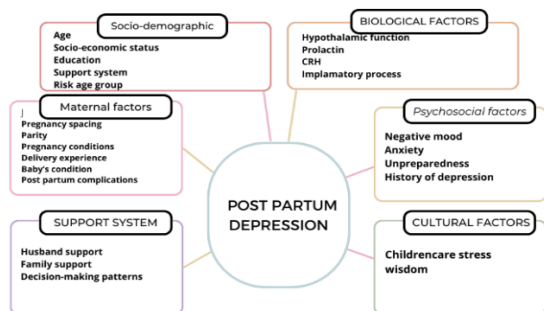


Figure 1. Analysis framework for predictors of postpartum depression.

DISCUSSION

Postpartum depression is a condition where mothers who have just given birth experience changes in mood that reflect psychological dysregulation which is a sign of major depressive symptoms that last for seven days to one year after the birth of the baby ¹. According to Kaplan, risk factors for postpartum depression include genetic factors, neuroendocrine factors, husband's support, age, parity, mother's education, stressful life, and previous history of depression. Based on the experts' explanations, it can be concluded that postpartum depression is caused by several factors, namely hormonal (biological) factors; demographic factors; pregnancy and childbirth factors such as experience in the pregnancy/childbirth process and obstetric factors (cesarean section, instrumental delivery); previous history of depression; psychosocial background; and physical factors ⁹.

The results of a review of all journals show that many aspects make postpartum depression occur in mothers. Various predictors of postpartum depression include:

1. Internal factors

Including the factors of age, pregnancy distance, socio-economic conditions, the

role and function of the partner, and the efforts made by the family, all of which are important triggers for the occurrence of post-partum depression .

2. External factors

Factors obtained from outside include support from the family, decision-making patterns, conditions of pregnancy and the birth process, and the competence of the helper which will make a person vulnerable or not in being ready to care for a baby.

3. Support system

Not only what is obtained from the family, but the main support comes from the partner. Other factors that are also important are the condition of the family, the decision-making process, progress in the relationship, the family's ability to provide welfare, and the readiness of siblings ².

4. Officer factor

Staff communication, the ability to implement policies about patients, will provide a different meaning in the approach to the relationship between patients and staff.

5. Community culture

Postpartum depression is closely related to existing cultural factors, the role of culture plays a key role in fully empowering women.

6. Biological

Biological processes are hypothalamic-pituitary-adrenal regulation, inflammatory processes, and genetic susceptibility. Regarding the biological aspect, the hormone Prolactin has anxiolytic properties and is thought to contribute to the stress-buffering effect of lactation.

The CRH hormone increases exponentially during pregnancy, this occurs because CRH, which is normally released by the hypothalamus, is also produced by the placenta. Because cortisol stimulates placental CRH production as a feedback loop, increased cortisol early in pregnancy may lead to an accelerated increase in CRH during pregnancy ⁴.

7. Psychological

The strongest predictors are severe life events, some form of chronic tension, negative mood, cognitive difficulties, and increased anxiety characteristic of depressive disorders.

8. Prenatal beta-endorphin

The increase in β -endorphin can be the cause of the disruption of the negative feedback system that controls the activity of the HPA axis. HPA feedback disorder is a high-risk for affective disorder.

9. Experience of pregnancy and delivery

Difficult pregnancies influence susceptibility to nonspecific depression, Spousal support increases a mother's self-esteem, which can emphasize feelings of self-worth and reduce the negative effects of stress. This feeling of confidence and happiness makes the mother's soul more mature and steady.

The diversity of causes of postpartum depression, maternal impacts, and risks to the baby means that maternal and child services are urgently needed from multidisciplinary medical personnel, including psychiatrists, psychologists, nurses, and social workers. Where the goal is prevention, early diagnosis, appropriate intervention, and minimal impact. With a support system, mothers who experience postpartum depression can be handled properly ¹⁶.

CONCLUSION

Limitations concerning this literature review need to be addressed. First of all, all studies examined in this review were published in English, peer-reviewed journals. Publications in Asian languages, which may contain useful and insightful information, were excluded, leading to limited generalisability of the findings. Secondly, integrating findings from both qualitative and quantitative methodologies, which differ in their philosophical stances, may compromise an ability to draw accurate conclusions across studies.

Referring to the results of the study, various predictor factors for postpartum depression were obtained. It is of great importance that health care professionals become aware of this phenomenon and provide effective interventions in a timely fashion. Strategies such as primary, secondary, and tertiary prevention interventions may be applied. Primary prevention interventions include indentifying risk factors associated with PPD in the target populations and delivering appropriate preventive measures. Secondary

prevention interventions encompass early detection and treatments of disabling depressive symptoms. Routine screening for PPD by using a self-reported questionnaire during pregnancy and postpartum periods is strongly encouraged. Finally, tertiary prevention interventions entail preventing relapses of depressive symptoms. Routine follow-up and home health visits during the pregnancy and postpartum periods are strongly recommended.

ACKNOWLEDGMENT

We would like to give thanks to the Faculty of Nursing, University of Bina Sehat PPNI Mojokerto.

CONFLICTS OF INTEREST

The author declare no conflict of interest.

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Depression in Indonesia : a Systematic
Review. Available from:
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