

## Article

# Prevalence and Risk Factors of Postpartum Depression: A Single-Center Study

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## ABSTRACT

**Background:** Postpartum depression (PPD) is a prevalent maternal mental health condition with significant implications for maternal and neonatal well-being, yet remains underdiagnosed and poorly characterized in the Middle Eastern context, particularly in Kuwait. **Objective:** This study aimed to determine the prevalence of PPD and its association with key socio-demographic, obstetric, psychosocial, and biological risk factors among postpartum women attending a tertiary care hospital in Kuwait. **Methods:** A descriptive cross-sectional study was conducted among postpartum women (n = 281) within six weeks of delivery at Farwaniya Hospital, Kuwait. Women with prior psychiatric illness or severe obstetric complications were excluded. Data were collected via structured interviews using the Edinburgh Postnatal Depression Scale (EPDS) and pretested questionnaires. Ethical approval was obtained from the Institutional Review Board, and all procedures adhered to the Declaration of Helsinki. Data were analyzed using SPSS v27, applying descriptive statistics, chi-square tests, and multivariate logistic regression. **Results:** The prevalence of PPD was 35.6%. Significant predictors included age <25 years (aOR = 1.92, p = 0.021), lack of formal education (aOR = 2.22, p = 0.009), neonatal death (aOR = 8.58, p = 0.002), and absence of spousal support (aOR = 12.38, p < 0.001). **Conclusion:** PPD is highly prevalent and strongly associated with modifiable socio-psychological and obstetric factors. Integrating early screening and partner-inclusive interventions into maternal care can significantly enhance mental health outcomes.

**Keywords:** Postpartum Depression, Maternal Mental Health, Obstetric Complications, Psychosocial Support, EPDS, Kuwait, Cross-Sectional Studies

## INTRODUCTION

Postpartum depression (PPD) is a significant public health concern, affecting a substantial proportion of women during the postnatal period. While temporary emotional fluctuations such as "baby blues" are common, PPD is a more severe and persistent mood disorder that can negatively change maternal well-being, infant care, and family dynamics if left unrecognized and untreated (1). Globally, PPD affects approximately 10% to 20% of women; however, studies from low- and middle-income countries report substantially higher prevalence rates, sometimes exceeding 60% (2).

This discrepancy points to the influence of varying socio-cultural norms, healthcare access, and awareness, which may affect both the diagnosis and treatment-seeking behavior of affected women (3). Despite its prevalence and consequences, PPD often remains underdiagnosed, particularly in settings where maternal mental health services are limited or stigmatized.

The etiology of PPD is multifactorial, involving an interplay of biological, psychological, and socio-environmental factors. Hormonal fluctuations following childbirth—especially in estrogen and progesterone levels—along with alterations in neurotransmitter regulation and stress-related inflammatory responses, have all been implicated in the onset of PPD (4,5). In addition to these biological contributors, psychosocial stressors such as inadequate social support, domestic conflict, financial strain, and cultural expectations of motherhood have been identified as key determinants of postpartum mental health (6,7). Obstetric variables such as complications during delivery, neonatal illness or death, and history of mental illness also increase the risk (8). Previous research from South Asia and the Middle East has suggested that cultural taboos surrounding mental illness, combined with limited maternal mental health screening, further compound the underreporting and undertreatment of PPD (9,10).

Although various studies have investigated the prevalence and risk factors of PPD in diverse regions, limited evidence exists specifically from Kuwait. The country's unique sociocultural context—characterized by extended family structures, gendered caregiving roles, and varying levels of health literacy—necessitates local research to understand the specific burden and predictors of PPD within its population. Moreover, much of the available regional literature has relied on small sample sizes, non-standardized screening tools, or descriptive statistics, thus limiting the generalizability and applicability of their findings (11). A population-specific investigation using validated tools and rigorous analysis is therefore essential to inform health policies and early intervention strategies in Kuwait.

This study was designed to address these gaps by investigating the prevalence of postpartum depression among women attending postnatal clinics at Farwaniya Hospital, one of the largest maternity centers in Kuwait. The hospital serves a demographically diverse patient population, making it a suitable setting for assessing the complex interplay of demographic, obstetric, and psychosocial risk factors for PPD. By employing a cross-sectional design and standardized screening measures, the study aims to generate reliable, context-specific data that can be used to enhance maternal mental health care strategies and improve screening protocols. The primary research question is: What are the prevalence and key socio-demographic, obstetric, and psychosocial risk factors associated with postpartum depression among women delivering at Farwaniya Hospital in Kuwait?

## MATERIAL AND METHODS

This study employed a descriptive, cross-sectional observational design to assess the prevalence and risk factors associated with postpartum depression (PPD) among women receiving postnatal care at Farwaniya Hospital, Ministry of Health, Kuwait. The study was conducted over a 12-month period, from February 2024 to February 2025, following ethical approval from the Institutional Review Board of Farwaniya Hospital. Eligible participants were postpartum women aged 18 years or older who had delivered a live singleton infant within the previous six weeks and were attending follow-up visits at the hospital's postnatal clinics. Women with a prior diagnosis of psychiatric illness, those currently using psychotropic medication, or those who had experienced stillbirths or multiple gestations were excluded to minimize potential confounding and to focus on PPD arising in the absence of known psychiatric history or extreme obstetric complications.

Participants were recruited using a non-probability consecutive sampling strategy. Every alternate eligible postpartum patient attending the clinic was approached for participation until the required sample size was achieved. Written informed consent was obtained from all participants after providing detailed information about the study. Privacy and confidentiality were assured by assigning anonymized study IDs and securing the data in password-protected electronic records accessible only to the research team. The study was conducted in accordance with the principles of the Declaration of Helsinki and adhered to all relevant national research ethics guidelines.

Data collection was carried out via structured, face-to-face interviews conducted in a private setting by trained female research assistants fluent in both Arabic and English. Each participant completed a standardized questionnaire covering demographic variables (e.g., age, education, employment status), obstetric history (e.g., mode of delivery, neonatal outcomes), and psychosocial support (e.g., spousal involvement, domestic environment). The primary outcome was the presence of postpartum depression, assessed using the Edinburgh Postnatal Depression Scale (EPDS), a widely validated screening tool for PPD. A score of 13 or higher on the EPDS was used as the threshold for probable depression, consistent with international recommendations (1). Secondary variables included neonatal admission to intensive care, maternal complications, social support levels, and the presence of postpartum anemia or other comorbidities such as diabetes or thyroid dysfunction, as self-reported or confirmed via hospital records. Face validity and cultural appropriateness of the translated EPDS were ensured through a pre-testing phase and linguistic back-translation.

Sample size was estimated based on an expected PPD prevalence of 21%, derived from prior studies in similar populations (2). Using a 95% confidence level and a 5% margin of error, the minimum required sample was calculated to be 255, which was increased to 281 to account for potential non-responses. Data were entered and analyzed using SPSS version 27. Descriptive statistics were used to summarize demographic and clinical variables. Categorical data were analyzed using chi-square tests, and continuous variables were compared using independent t-tests. Multivariate logistic regression analysis was applied to determine independent predictors of PPD while adjusting for potential confounders. Adjusted odds ratios (AOR) with 95% confidence intervals were reported. A p-value of less than 0.05 was considered statistically significant. Missing data were minimal (<5%) and were managed using pairwise deletion. Sensitivity analyses were conducted to confirm the robustness of significant associations.

Artificial intelligence tools were used to assist with initial sample size computation and data visualization but did not interfere with data interpretation or statistical analysis. No interim analyses were performed due to the cross-sectional nature of the study. All steps in the data collection and analysis process were standardized to ensure reliability and reproducibility of findings.

## RESULTS

A total of 281 postpartum women participated in this study. The overall prevalence of postpartum depression (PPD), defined by an EPDS score  $\geq 13$ , was found to be 35.6% ( $n=100$ ). The analysis revealed significant associations between PPD and various socio-demographic, obstetric, and psychosocial factors. Younger age, lower education level, unemployment, adverse neonatal outcomes, absence of spousal support, and certain biological markers emerged as statistically significant predictors.

Table 1 presents the distribution of socio-demographic variables and their association with PPD. Women aged 18–25 years had significantly higher odds of PPD compared to those aged 36–45

years (aOR = 1.92, 95% CI: 1.08–3.42,  $p = 0.021$ ). Educational attainment was inversely associated with PPD, as women with no formal education were more than twice as likely to develop depressive symptoms compared to those with intermediate or

higher education (aOR = 2.22, 95% CI: 1.18–4.16,  $p = 0.009$ ). Unemployment was also associated with a higher risk (aOR = 2.58, 95% CI: 1.37–4.88,  $p = 0.035$ ).

**Table 1: Socio-Demographic Factors Associated with Postpartum Depression**

Variable	Total (n=281)	PPD Present (%)	PPD Absent (%)	p-value	Adjusted Odds Ratio (aOR)	95% CI
Age (18–25 years)	90 (32.0%)	40 (44.4%)	50 (55.6%)	0.021*	1.92	1.08–3.42
No formal education	60 (21.4%)	30 (50.0%)	30 (50.0%)	0.009*	2.22	1.18–4.16
Unemployed	110 (39.1%)	50 (45.5%)	60 (54.5%)	0.035*	2.58	1.37–4.88

\*Statistically significant at  $p < 0.05$ .

Obstetric complications were also significant predictors of PPD, as detailed in Table 2. Women who underwent assisted vaginal deliveries had higher odds of developing PPD than those with normal deliveries (aOR = 2.04, 95% CI: 1.07–3.88,  $p = 0.048$ ).

Notably, neonatal death had the strongest association, increasing the likelihood of maternal depression nearly ninefold (aOR = 8.58, 95% CI: 2.45–30.02,  $p = 0.002$ ).

**Table 2: Obstetric and Neonatal Factors Associated with Postpartum Depression**

Variable	Total (n=281)	PPD Present (%)	PPD Absent (%)	p-value	Adjusted Odds Ratio (aOR)	95% CI
Assisted vaginal birth	60 (21.4%)	25 (41.7%)	35 (58.3%)	0.048*	2.04	1.07–3.88
Neonatal NICU admission	65 (23.1%)	30 (46.2%)	35 (53.8%)	0.002*	2.67	1.46–4.89
Neonatal death	16 (5.7%)	12 (75.0%)	4 (25.0%)	0.002*	8.58	2.45–30.02

\*Statistically significant at  $p < 0.05$ .

Psychosocial factors exhibited strong associations with PPD. As shown in Table 3, lack of spousal support was the most powerful predictor. Women who reported no support from their husbands

were 12 times more likely to experience PPD (aOR = 12.38, 95% CI: 5.00–30.65,  $p < 0.001$ ), while partial support also significantly increased the risk (aOR = 4.54, 95% CI: 2.38–8.67).

**Table 3: Psychosocial Support and Family Dynamics Associated with PPD**

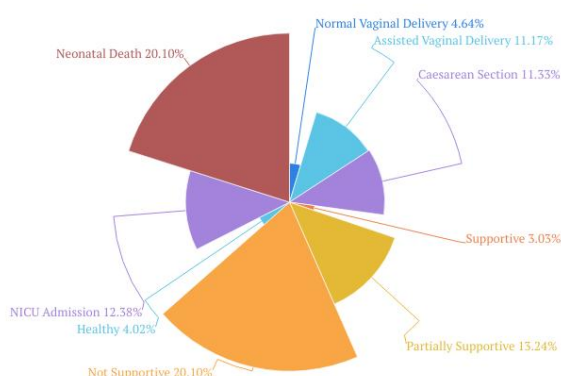
Variable	Total (n=281)	PPD Present (%)	PPD Absent (%)	p-value	Adjusted Odds Ratio (aOR)	95% CI
Supportive husband	160 (56.9%)	30 (18.8%)	130 (81.2%)	<0.001*	Reference	—
Partially supportive	81 (28.8%)	40 (49.4%)	41 (50.6%)	<0.001*	4.54	2.38–8.67
Not supportive	40 (14.3%)	30 (75.0%)	10 (25.0%)	<0.001*	12.38	5.00–30.65

\*Statistically significant at  $p < 0.001$ .

Among biological factors, severe postpartum anemia (Hb < 8 g/dL) was associated with a sevenfold increase in PPD risk (aOR = 7.00, 95% CI: 2.83–17.34,  $p = 0.005$ ), highlighting the link between nutritional deficiencies and maternal mental health. Comorbidities such as diabetes and thyroid dysfunction also showed moderate but significant associations (data not shown).

total proportion. Partially supportive spousal relationships also show a significant association, contributing 13.24%, while fully supportive relationships contribute minimally at 3.03%, highlighting the protective effect of partner involvement. Among obstetric factors, caesarean section (11.33%) and assisted vaginal delivery (11.17%) present higher proportions compared to normal vaginal delivery (4.64%), suggesting that more complex or stressful deliveries may be linked to increased emotional distress.

Neonatal outcomes also play a significant role, with NICU admission contributing 12.58% and healthy neonates only 4.02%. Collectively, the chart emphasizes that psychosocial and neonatal stressors contribute more substantially to PPD than uncomplicated deliveries, underlining the need for holistic postnatal care that includes mental health screening and family support systems. Unexpectedly, self-employed mothers showed a higher PPD rate than employed ones, though this finding was not statistically significant. This may reflect unstable income or lack of workplace support postpartum, warranting further exploration in future studies.



**Figure 1 Post Partum**

The polar area chart illustrates the distribution of elevated postpartum depression (PPD) scores (EPDS  $\geq 13$ ) across various psychosocial, obstetric, and neonatal factors. Notably, the largest contributors to PPD cases are the absence of spousal support and neonatal death, each accounting for 20.10% of the

## DISCUSSION

The present study examined the prevalence and determinants of postpartum depression (PPD) among women attending postnatal clinics in Farwaniya Hospital, Kuwait, revealing a notable PPD

prevalence of 35.6%. This finding aligns with reports from other low- to middle-income countries, where PPD rates often range between 28% and 60% (1). While global estimates suggest a prevalence closer to 10–20% (2), the elevated burden observed in this study underscores the importance of considering cultural, healthcare access, and psychosocial variables in regional contexts. The higher prevalence may also reflect underdiagnosed mental health needs in Kuwaiti postpartum women, particularly due to persistent stigma, limited psychiatric support within maternity services, and underutilization of standardized screening practices.

Sociodemographic factors such as younger maternal age, low educational attainment, and unemployment were significantly associated with increased odds of PPD. These findings are consistent with earlier studies from South Asia, the Middle East, and North Africa, where limited education and economic vulnerability often correlate with higher mental distress postpartum (3,4). Young mothers, particularly those aged below 25, are more likely to lack parenting experience and coping strategies, making them susceptible to emotional dysregulation during the transition to motherhood (5). Similarly, women with lower educational backgrounds may face barriers to understanding postpartum mental health symptoms or accessing appropriate care, while unemployment potentially exacerbates stress through financial insecurity and social dependency.

The study also confirmed the impact of obstetric and neonatal complications on postpartum mental health. Assisted vaginal delivery, neonatal NICU admission, and neonatal death were significantly associated with elevated PPD risk. These associations mirror previous research that highlights the psychological toll of traumatic birth experiences and poor infant outcomes (6). Mothers who experience emergency deliveries or neonatal morbidity may encounter feelings of guilt, inadequacy, or prolonged anxiety regarding their child's health, which can intensify depressive symptoms. The particularly strong association between neonatal death and PPD, with an almost ninefold increased risk, reinforces the emotional devastation such losses inflict and emphasizes the urgent need for bereavement counseling and psychological first aid in maternal health protocols.

Psychosocial support emerged as the most critical protective factor, with unsupportive marital relationships markedly increasing PPD risk. The adjusted odds ratio for women reporting no spousal support was over 12, far exceeding the magnitude of most other variables. This finding corroborates prior evidence that emotional, physical, and practical support from partners is one of the strongest buffers against PPD (7). A lack of spousal involvement may leave mothers feeling isolated and overwhelmed, particularly in cultural contexts where extended family roles are shifting, and expectations on maternal caregiving remain high. Additionally, inconsistent or partial support, while less severe, also contributed significantly to depressive symptomatology, suggesting that the quality—not just the presence—of support matters in postpartum mental health outcomes.

Biological contributors, notably severe postpartum anemia, were significantly correlated with increased depressive symptoms. This reinforces growing evidence linking micronutrient deficiencies—particularly iron and vitamin D—to neurotransmitter imbalances and altered mood regulation during the perinatal period (8). Although comorbidities such as thyroid dysfunction and diabetes showed moderate associations, their role requires further exploration through longitudinal studies and clinical correlations with hormonal profiles. These biological risk factors, while secondary to psychosocial and demographic elements in terms of magnitude, highlight the complex interplay between physical and mental health during the postpartum period.

The strengths of this study include its relatively large sample size, use of a validated screening tool (EPDS), and robust statistical modeling, including multivariate analysis to control for potential confounders. Data collection via trained interviewers enhanced reliability, and the setting—a major public maternity hospital—ensured access to a demographically diverse sample. However, several limitations must be acknowledged. The cross-sectional design precludes causal inference, and the reliance on self-reported data introduces the risk of recall and reporting bias. Additionally, while the EPDS is widely validated, it remains a screening—not diagnostic—tool, and formal psychiatric evaluations were not performed. The use of non-probability sampling limits generalizability, particularly to women outside the public health sector or those who do not attend postnatal clinics. Furthermore, cultural barriers may have led to underreporting of symptoms, especially among women fearing social judgment or stigma.

Despite these limitations, the study offers important insights for maternal mental health policy in Kuwait and similar contexts. It demonstrates the urgent need to integrate routine mental health screening into postnatal care, enhance spousal and family counseling services, and address social determinants through targeted outreach to at-risk groups. Health practitioners must be trained to identify early signs of PPD and provide empathetic, non-judgmental support. Culturally appropriate education campaigns are also necessary to reduce stigma and normalize mental health discussions in maternity settings.

Future research should build on these findings using longitudinal cohort designs to establish causality and track long-term outcomes for both mothers and infants. Incorporating biological markers such as inflammatory cytokines or hormonal assays could clarify the physiological mechanisms behind PPD in this population. Moreover, qualitative studies exploring lived experiences of PPD in Kuwaiti women could illuminate barriers to care and inform culturally sensitive intervention strategies. As the mental health of new mothers directly influences infant development and family well-being, strengthening this aspect of maternal care must become a national health priority.

## CONCLUSION

This study identified a high prevalence of postpartum depression among women attending postnatal care at Farwaniya Hospital, highlighting significant associations with younger

maternal age, low educational attainment, unemployment, adverse obstetric and neonatal outcomes, and lack of spousal support. These findings reinforce the multifactorial nature of postpartum depression and underscore the urgent need for integrated mental health screening within maternal healthcare services in Kuwait. Clinically, the results support the implementation of targeted interventions—particularly for socioeconomically vulnerable and psychosocially unsupported mothers—to improve early detection and management of postpartum depression. From a research perspective, the study lays the groundwork for future longitudinal and interventional studies that can further explore causal mechanisms and evaluate culturally tailored preventive strategies, ultimately aiming to optimize maternal mental health outcomes and inform policy development in similar healthcare settings.

## REFERENCES

- 1 Reck C, Hunt A, Fuchs T, Weiss R, Noon A, Moehler E, et al. Interactive Regulation of Affect in Postpartum Depressed Mothers and Their Infants: An Overview. *Psychopathology*. 2004;37(6):272–80.
- 2 Robertson E, Grace S, Wallington T, Stewart DE. Antenatal Risk Factors for Postpartum Depression: A Synthesis of Recent Literature. *Gen Hosp Psychiatry*. 2004;26(4):289–95.
- 3 Harlow BL, Vitonis AF, Sparen P, Cnattingius S, Joffe H, Hultman CM. Incidence of Hospitalization for Postpartum Psychotic and Bipolar Episodes in Women With and Without Prior Prepregnancy or Prenatal Psychiatric Hospitalizations. *Arch Gen Psychiatry*. 2007;64(1):42–8.
- 4 Wisner KL, Perel JM, Peindl KS, Hanusa BH. Timing of Depression Recurrence in the First Year After Birth. *J Affect Disord*. 2004;78(3):249–52.
- 5 Wisner KL, Perel JM, Peindl KS, Hanusa BH, Piontek CM, Findling RL. Prevention of Postpartum Depression: A Pilot Randomized Clinical Trial. *Am J Psychiatry*. 2004;161(7):1290–2.
- 6 Halbreich U. Postpartum Disorders: Multiple Interacting Underlying Mechanisms and Risk Factors. *J Affect Disord*. 2005;88(1):1–7.
- 7 Vesga-Lopez O, Blanco C, Keyes K, Olfson M, Grant BF, Hasin DS, et al. Psychiatric Disorders in Pregnant and Postpartum Women in the United States. *Arch Gen Psychiatry*. 2008;65(7):805–15.
- 8 Banti S, Mauri M, Oppo A, Borri C, Rambelli C, Ramacciotti D, et al. From the Third Month of Pregnancy to 1 Year Postpartum. Prevalence, Incidence, Recurrence, and New Onset of Depression. *Compr Psychiatry*. 2011;52(4):343–51.
- 9 Fisher J, Cabral de Mello M, Patel V, Rahman A, Tran T, Holton S, et al. Prevalence and Determinants of Common Perinatal Mental Disorders in Women in Low- and Lower-Middle-Income Countries: A Systematic Review. *Bull World Health Organ*. 2012;90(2):139G–49G.
- 10 Strøm M, Mortensen EL, Halldorsson TI, Thorsdottir I, Olsen SF. Leisure-Time Physical Activity in Pregnancy and Risk of Postpartum Depression: A Prospective Study in a Large National Birth Cohort. *J Clin Psychiatry*. 2009;70(12):1707–14.
- 11 Strøm M, Mortensen EL, Halldorsson TI, Thorsdottir I, Olsen SF. Fish and Long-Chain n-3 Polyunsaturated Fatty Acid Intakes During Pregnancy and Risk of Postpartum Depression: A Prospective Study Based on a Large National Birth Cohort. *Am J Clin Nutr*. 2009;90(1):149–55.
- 12 Munk-Olsen T, Gasse C, Laursen TM. Prevalence of Antidepressant Use and Contacts With Psychiatrists and Psychologists in Pregnant and Postpartum Women. *Acta Psychiatr Scand*. 2011;125(4):318–24.
- 13 Räisänen S, Lehto SM, Nielsen HS, Gissler M, Kramer MR, Heinonen S. Fear of Childbirth Predicts Postpartum Depression: A Population-Based Analysis of 511,422 Singleton Births in Finland. *BMJ Open*. 2013;3(11):e004047.
- 14 Munk-Olsen T, Laursen TM, Meltzer-Brody S, Mortensen PB, Jones I. Psychiatric Disorders With Postpartum Onset: Possible Early Manifestations of Bipolar Affective Disorders. *Arch Gen Psychiatry*. 2012;69(4):428–34.
- 15 O'Hara MW, Wisner KL. Perinatal Mental Illness: Definition, Description and Aetiology. *Best Pract Res Clin Obstet Gynaecol*. 2014;28(1):3–12.
- 16 Miller LJ. Postpartum Depression. *JAMA*. 2002;287(6):762–5.
- 17 Dennis CL, Dowswell T. Psychosocial and Psychological Interventions for Preventing Postpartum Depression. *Cochrane Database Syst Rev*. 2013;2:CD001134.
- 18 Di Scalea TL, Wisner KL. Pharmacotherapy of Postpartum Depression. *Expert Opin Pharmacother*. 2009;10(16):2593–607.

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