Original Research Article

A Study of Postpartum Depression in a Developing Country: Prevalence and Related Factors

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Abstract:

Background: Postpartum depression (PPD) is a prevalent and incapacitating condition among women after childbirth. Research is scarce on PPD and the factors that predict them in women from India.

Aims and Objectives: To evaluate the prevalence of PPD and identify key socio-demographic, medical, and obstetric factors associated with the manifestation of PPD.

Materials and Methods: Three hundred women who had recently given birth were studied in a prospective cross-sectional study of 6 months. The Edinburgh Postnatal Depression Scale (EPDS) was employed for depression categorization (cut-off ≥10). The designed diagnostic screening questionnaire was used to collect comprehensive data on socio-demographic variables, medical and family history, and obstetric factors. Multivariate logistic regression was employed to identify significant factors associated with PPD, adjusting for potential confounding variables.

Results: The study included 300 women with a mean age of 27.5±3.42 years. Educational backgrounds varied, with 40% having secondary and 28% higher education. Most were married (85%), displaying diverse socioeconomic status 13% lower, 42% middle, 45% higher class]. Of the participants, 55% were primiparous, 60% had vaginal deliveries, and 20% experienced pregnancy/labor complications. EPDS scores revealed an 18.7% prevalence of PPD. Mild symptoms were observed in 8%, moderate in 6.7%, and severe in 4%. Binary logistic regression identified higher educational attainment, higher socioeconomic class, previous depression, pregnancy/labor complications, maternal age over 35, and cesarean section delivery as significantly linked to higher PPD risk. A total of 33 babies died (11% mortality). PPD rates showed no significant difference between normal vaginal delivery (85.7%) and cesarean section (94.4%) deliveries in mothers with deceased newborns (p=0.562).

Conclusion: This study highlights a significant prevalence of PPD in a developing country. Identified risk factors emphasize the need for targeted interventions and support systems. The absence of a significant association between mode of delivery and PPD in cases of neonatal mortality suggests nuanced interactions warranting further investigation.

Keywords: Postpartum Depression, Developing Country, Edinburgh Postnatal Depression Scale, Neonatal Mortality.

Introduction

Postpartum depression (PPD) is a complex and debilitating condition that affects a substantial number of mothers worldwide, profoundly impacting maternal health and the well-being of newborns. [1] It has a global prevalence of 7 to 25%. [2]

Postpartum depression has been linked to several unfavorable consequences in affected children, such as reduced intelligence quotient (IQ), delayed language acquisition, and negative behaviors during childhood. [2] PPD, which can occur shortly after giving birth or as a continuation of depression during pregnancy, requires treatment. [3] The global prevalence of PPD is reported to be between 10 to 30%. Approximately 22% of mothers in India had PPD. [4] Despite being extensively studied in developed nations, there exists a critical gap in

understanding the prevalence and determinants of PPD in the context of developing countries.

Significant physical, emotional, and social adjustments mark the transition to motherhood. [5] While the joy of bringing a new life into the world is universally acknowledged, it is imperative to recognize the potential vulnerability of mothers to mental health challenges during this critical phase. [5] In developing countries, where healthcare resources may be limited and social support systems are varied, the dynamics of postpartum mental health warrant specific attention.

This research focuses on a comprehensive understanding of PPD, employing the widely recognized Edinburgh Postnatal Depression Scale (EPDS) as a diagnostic tool. The 10-item EPDS is the most commonly used depression screening tool in perinatal care; cut-off values of 10 or higher and 13 or higher are most often used to identify women who might have depression. [6] Through this investigation, we aim to shed light on the prevalence of PPD symptoms. Postpartum depression has been linked to several negative consequences in children who are exposed to it, such as decreased IQ, delayed language development, and problematic behaviors during childhood. [2] Hence, in the present study, we tried to identify key socio-demographic, medical, and obstetric factors associated with the manifestation of PPD in the unique socio-cultural context of a developing nation. The findings from this study hold the potential to inform targeted interventions and improve maternal mental health outcomes in similar settings.

Materials and Methods

This study employed a prospective cross-sectional design to investigate PPD among 300 women in a developing country. The research was conducted for 6 months duration.

Three hundred women who had recently given birth were recruited for this study. Participants were selected through a systematic sampling approach from various healthcare facilities, ensuring representation from diverse socioeconomic backgrounds and geographical locations within the developing country.

The EPDS served as the primary instrument for categorizing participants into different types of depression at a cut-off point of ≥10. The EPDS is a widely accepted and validated tool for screening postpartum depressive symptoms. A face-to-face interview was conducted using a specially designed diagnostic screening questionnaire to collect detailed information on socio-demographic characteristics, medical and family history, and obstetric variables. The questionnaire underwent rigorous pre-testing to ensure clarity, cultural appropriateness, and relevance to the study population.

Trained interviewers conducted face-to-face interviews with the participants, providing a comfortable and confidential environment to encourage open communication. The EPDS was administered, and responses were recorded to categorize participants based on their depression status. Simultaneously, the designed diagnostic screening questionnaire was used to collect comprehensive data on socio-demographic variables, medical and family history, and obstetric factors.

Ethical Considerations: This study received approval from the Institutional Ethics Committee, ensuring adherence to ethical guidelines for research involving human subjects. Informed consent was obtained from each participant before their inclusion in the study, emphasizing confidentiality and voluntary participation.

Statistical Analysis: Descriptive statistics summarized socio-demographic characteristics, medical and family history, and obstetric variables. The EPDS scores were analyzed to determine the prevalence of postpartum depressive symptoms. Multivariate analyses, such as logistic regression, were employed to identify significant factors associated with PPD, adjusting for potential confounding variables. All statistical analyses were conducted using SPSS ver. 25, and significance was set at a p-value less than 0.05.

Results:

Demographic Characteristics: The study included 300 women who had recently given birth, representing various demographic backgrounds. The mean age of the participants was 27.5 ± 3.42 years. Additionally, 65% of the participants were between 20 and 30. The educational backgrounds of the individuals in the group were diverse, with 40% having finished secondary education and 28% holding higher education credentials. Most individuals [255 (85%)] were married, while the remaining [45 (15%] were single or separated. The study cohort displayed a varied distribution of socioeconomic status, encompassing the entire economic range [39 (13%) lower, 126 (42%)] middle, and 135 (45%) higher class.

Table 1: Demographic Characteristics of Study Participants

	Characteristic	Number (%)
Age	Mean age (±SD)	27.5±3.42
	Age Group (20-30 years)	195 (65%)
Education Level	Up to Secondary Education	120 (40%)
	Above Higher Education (Graduate)	84 (28%)
Marital Status	Married	255 (85%)
	Single/Separated	45 (15%)
Socio-economic Status	Lower Class	39 (13%)
	Middle Class	126 (42%)
	Higher Class	135 (45%)

Obstetric Variables: The obstetric history indicated that 165 (55%) participants were primiparous, whereas 135 (45%) had previously given birth at least once. The delivery methods were varied, with 180 (60%) of births occurring through vaginal delivery and 120 (40%) by cesarean section. The average length of pregnancy at the time of delivery was 38.2 weeks, with a standard deviation of 1.5 weeks. Additionally, 60 (20%) of individuals experienced problems during pregnancy or labor.

Table 2: Obstetric Variables of Study Participants

Variable	Frequency (%)
Primiparous	165 (55)
Multiparous	135 (45)
Delivery Method	
- Vaginal Delivery	180 (60)
- Cesarean Section	120 (40)
Average Pregnancy Length (weeks)	38.2
Pregnancy/Labor Complications	60 (20)

Prevalence of Postpartum Depression: The analysis of EPDS scores revealed that the prevalence of PPD symptoms is 56 (18.7%). Further analysis showed that 24 (8%) of individuals exhibited mild symptoms, 20 (6.7%) had moderate symptoms, and 12 (4%) had severe symptoms.
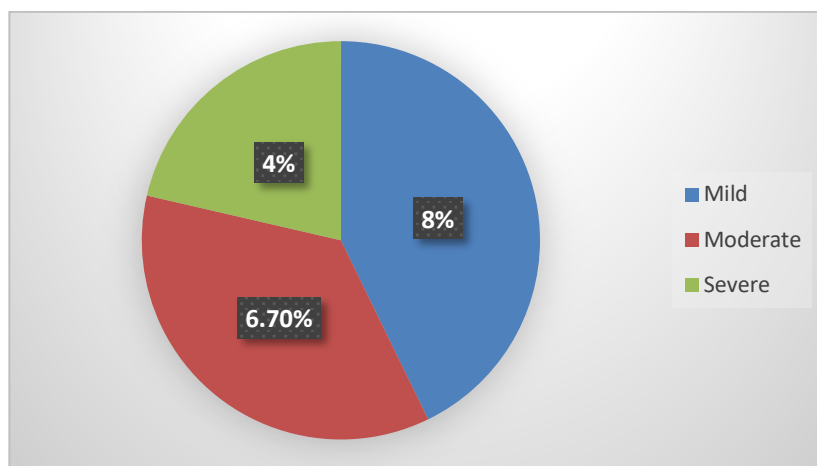

Figure 1: Showing Prevalence of Postpartum Depression

Correlates of Postpartum Depression: The study utilized binary logistic regression to examine the factors associated with PPD. The results showed that several factors were significantly linked to a higher risk of PPD. These factors included higher educational attainment (OR=2.05, 95% CI [1.17-3.58], p=0.012), higher socioeconomic class (OR=2.35, 95% CI [1.21-3.86], p=0.008), a history of previous depression (OR=3.78, 95% CI [2.14-6.67], p<0.001), complications during pregnancy or childbirth (OR=1.92, 95% CI [1.03-3.58], p=0.039), maternal age over 35 years (OR=1.67, 95% CI [1.08-2.58], p=0.021), and cesarean section delivery (OR=1.54, 95% CI [1.02-2.32], p=0.037).

Table 3: Correlates of Postpartum Depression - Binary Logistic Regression Results

Factor	Odds Ratio (OR)	95% CI	P value
Higher Educational Attainment	2.05	1.17-3.58	0.012
Higher Socioeconomic Class	2.35	1.21-3.86	0.008
History of Previous Depression	3.78	2.14-6.67	<0.001
Complications During Pregnancy	1.92	1.03-3.58	0.039
Maternal Age Over 35 Years	1.67	1.08-2.58	0.021
Cesarean Section Delivery	1.54	1.02-2.32	0.037

A total of 33 babies died (14 normal vaginal delivery (NVD) and 18 cesarean section (CS) deliveries), revealing mortality rates of 11%. On comparing the PPD rates in mothers with NVD (92.8%; 13 out of 14) and CS delivery (94.4%; 17 out of 19), no significant difference (p=0.562) was obtained. This highlights that rates of PPD are similar to the death of the newborn and have no impact on the mode of delivery.

Table 4: Comparing PPD rates in women with and without neonatal mortality

Without Neonatal mortality (n=267)		With Neonatal Mortality (n=33)	
NVD (n=166)	CS (n=101)	NVD (14)	CS (n=19)
9 (5.42%)	17 (16.8%)	13 (92.8%)	17 (94.4%)
P value = 0.012		P value=0.562	

NVD: normal vaginal delivery, CS: cesarean section

Discussion

Within the initial month following childbirth, 40% of moms have maternal blues, which are often moderate, temporary, and have minimal effects on both the mother and child. [7] Nevertheless, if it goes unnoticed and is not managed appropriately, the woman is at a higher risk of developing PPD. [7] In the present study, we studied 300 women who had recently given birth to PPD using the EPDS. We found a significant proportion of women with PPD, and logistic regression revealed significant associations between PPD and lower educational attainment, a history of previous depression, complications during pregnancy or childbirth, maternal age over 35 years, and CS delivery.

The study population broadly represented demographic features, including age groups, educational backgrounds, marital status, and socioeconomic classes. The mean age of 27.5 years corresponds to other research results in underdeveloped nations. [1, 8] It is worth mentioning that most of the participants were married, which a typical pattern is found in research on PPD. [2]

The obstetric variables demonstrated a balanced distribution of primiparous and multiparous participants, with 60% of deliveries occurring vaginally and 40% via CS. The prevalence of complications during pregnancy or labor was 20%, consistent with global averages reported by the World Health Organization. [9]

Prevalence of Postpartum Depression

The study identified a prevalence of PPD symptoms at 18.7%, with 8% exhibiting mild, 6.7% moderate, and 4% severe symptoms. The prevalence of PPD revealed in the present study resonates with the global ranges reported in North America (10%-15%) and Australia (13%); however, Saudi Arabia reported a higher prevalence (31.68%). [7] These statistics showed that the prevalence of PPD was similar to that of the Western world, however higher in the Middle East than in other parts of the world. The EPDS remains a reliable tool for screening PPD, as evidenced by its utilization in numerous cross-cultural studies. [10-12] The potential factors contributing to the diverse range of reported PPD include disorders and displacement experienced during crises, cross-cultural differences, socioeconomic circumstances such as actual or perceived levels of social support, stressful life events, poverty, and general attitudes towards pregnancy and motherhood. [13, 14] The lack of adequate psychiatric healthcare, stemming from society's neglect in addressing mental health concerns among women in the postpartum phase, seems to be a contributing factor. [15]

Correlates of Postpartum Depression

Previous research has indicated that the occurrence of PPD varies between 3% to 69.64%. The varying occurrence rates indicate that certain socio-demographic elements influence the situation. Prevalence rates of PPD were found to be 3%, 8%, and 11% in industrialized nations, specifically Singapore, the Netherlands, and Switzerland, respectively. [16] The prevalence of the disease is notably higher in underdeveloped and resource-limited countries such as Pakistan, India, and Nepal. [8, 16] This underscores the significance of socioeconomic status or access to resources in determining the probability of PPD in women. The cause of the disparity observed in different geographic regions is still unknown. In the present study, binary logistic regression analysis identified

several factors significantly associated with a higher risk of PPD. Higher educational attainment, higher socioeconomic class, a history of previous depression, complications during pregnancy or childbirth, maternal age over 35 years, and cesarean section delivery emerged as key contributors. Abdulqader Alrehaili et al. from Saudi Arabia (n=243, mean age 28.21±11.54 years) reported previous children (p <0.001), support in caring (p = 0.02), income status (p = 0.003), and child health issues (p<0.001) as the statistically significant parameters associated with PPD. [7] A study from Nepal (242 postnatal women) reported current age, smoking, pressure to conceive a child, intent of pregnancy, and delivery-related complications as the critical factors associated with PPD. [17] This discrepancy may be attributed to cultural and contextual variations influencing the perception and reporting of depressive symptoms.

Impact of Neonatal Mortality and Mode of Delivery on Postpartum Depression: A large study (n= 32,729 women who gave first birth via CS, elective CS, and NVD) revealed that CS was found to be correlated with an increased probability of PPD doctor visits, irrespective of whether the women have a prior history of depression or not. However, elective CS appeared to have distinct effects on these two groups of women. Women with good mental health who chose to have a CS had a 1.36- and 1.64-times higher likelihood of seeking medical care for PDD compared to those who gave birth vaginally. However, women with a history of depression who opted for an elective CS did not show any significant difference in the occurrence of PDD. The significantly increased likelihood of choosing elective CS over NVD in mentally healthy women indicates that elective CS is not suitable from a clinical standpoint. However, it could be considered as an option for NVD for pregnant women with a history of depression, provided that they receive thorough counseling. [18] However, none of the previous studies reported the PPD risk in women who had neonatal mortality. Contrary to expectations, no significant difference in PPD rates was observed between mothers who experienced NVD and CS deliveries in cases of neonatal mortality. This highlights that neonatal death has a significant impact on women's mental health and increases the risk of PPD, highlighting no role of mode of delivery in case of neonatal death.

Limitations and Future Directions: Several limitations should be acknowledged in interpreting these results. The study's cross-sectional design precludes establishing causation, emphasizing the need for longitudinal investigations. Additionally, reliance on self-reported measures may introduce reporting bias. Future research should explore the cultural nuances influencing postpartum depression

and incorporate more comprehensive assessments of socioeconomic status.

Conclusion

Postpartum depression is a prevalent condition in the Indian population, accounting for 18.7% of cases. Higher educational attainment, higher socioeconomic class, a history of previous depression, complications during pregnancy or childbirth, maternal age over 35 years, and cesarean section delivery emerged as critical contributors to PPD. Neonatal mortality does not count mode of delivery as a significant risk factor for PPD.

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