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PREVALENCE AND EVALUATION OF FACTORS CONTRIBUTING TOWARDS POSTPARTUM DEPRESSION

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ABSTRACT

Background: Pregnancy and childbirth cause various physiological, psychological, and social changes. Postpartum depression (PPD) is a prevalent issue, representing a significant public health challenge that affects mothers, their children, and families. Research indicates that many mothers with young infants experience depressive symptoms, with 10-15% experiencing major depressive episodes.

Aims and Objectives: To study the prevalence and factors contributing to postpartum depression.

Materials and Methods: This study included married women aged 18-35 years who delivered between June 1, 2023, and January 1, 2024, at Index Medical College and Hospital's antenatal and postnatal outpatient department (OPD). Women were approached during their third trimester and postpartum period. Exclusion criteria included pre-existing conditions such as diabetes, hypertension, physical and psychiatric illnesses, multiple gestations, and previous perinatal loss. PPD was evaluated using the Edinburgh Postnatal Depression Scale (EPDS), with a score of 13 or higher indicating PPD. The research questionnaire was translated into the local language, and data were collected. Statistical analysis included univariate and multivariate methods using Fisher's exact test or the Chi-square test.

Results: A total of 250 participants were enrolled, with a mean age of 24.7 ± 3.5 years and a mean gestational age of 38.3 ± 1.2 weeks. Screening with the EPDS revealed a PPD prevalence of 12.8% (32 out of 250 participants). Factors such as lack of family support, parity, educational status, delivery complications, unintended pregnancy, obesity, and financial problems were identified as independent determinants of PPD.

Conclusion: The study found a PPD prevalence of 12.8% in this demographic region. Given the significant proportion of women affected, it is recommended that all postpartum individuals be screened for PPD to ensure prompt identification and management. There is a critical need to educate primary healthcare providers about PPD, highlighting its importance as a significant health issue.

Keywords: Postpartum depression, Postpartum period, Edinburgh Postnatal Depression Scale

INTRODUCTION

Although motherhood brings happiness, it may cause emotional distress for some women. During pregnancy and the postnatal period, mothers are vulnerable to mental illnesses like depression. Postpartum disorders typically manifest within the first 4 to 6 weeks after childbirth. [1] Attitudes toward pregnancy and childbirth vary widely across cultures and within the same culture. [2] Many new mothers experience depressive symptoms during the first year after childbirth. [3]

Postpartum depression (PPD) is a prolonged and serious condition that generally occurs in at least 13% of women within 4 to 6 weeks after delivery. Symptoms include low mood, anhedonia, forgetfulness, irritability,

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anxiety, sleep disturbance, and, though rare, postpartum psychosis is seen in 1-2 per 1000 deliveries [4]. Robertson et al. identified prenatal depression, prenatal anxiety, stressful life events, lack of social support, and a history of depression before pregnancy as the strongest risk factors [5]. Several factors contribute to the development of PPD in India, including environmental, cultural, and social factors [6].

There is evidence suggesting a high risk of depression in developing countries [7]. Mothers with postpartum depression tend to provide inadequate care to their child, exhibit negative parenting behaviors, and have poorer mother-infant bonding [8]. Diagnosis of PPD is challenging due to its variable clinical presentation. The Edinburgh Postnatal Depression Scale (EPDS) is a well-recognized screening tool for PPD [9]. This tool consists of 10 questions rated on a scale of 0-3, yielding a total score ranging from 0-30. Early detection of PPD prevents the worsening of depressive symptoms, which helps mothers adjust better to motherhood and improves the mother-child relationship [10].

Aims and Objectives: The present study aimed to examine the prevalence and factors contributing to PPD in Indian women.

MATERIAL AND METHODS

This cross-sectional observational study was undertaken between June 1, 2023 to January 1, 2024 at Index medical college and hospital.

Inclusion criteria:

- Married pregnant female in age group of 18-35 years attending ante-natal care (ANC) outpatient department (OPD)
- Women 4-6 weeks post-partum.

Exclusion criteria:

- Women <18 years and >45 years of age
- Women with pre-existing co-morbidities like diabetes mellitus and hypertension
- Women with known physical and psychiatric illness
- Women with history of multiple gestation, or with history of perinatal loss
- Women not giving consent for study.

METHODOLOGY:

Trained study personnel conducted face to face interview to collect data on socio-demographic variables which includes information regarding age, parity, obstetric history, socioeconomic and educational status etc. Physical examination of the subjects was carried out by an obstetrician. EPDS questionnaire was used to assess postnatal depression. EPDS is a 10 question based self-rating scale designed to detect depression among women in the early postpartum period. Total score is 30. A threshold score of 13 suggests depression. This questionnaire was given during postnatal follow-up at 2, 4, 6 weeks. Women with PPD were referred to a psychiatrist for further psychiatric evaluation. Non-depressed mothers acted as the controls for correlating various risk factors.

RESULTS

A total of 250 patients were enrolled in this study during the study period. Screening with the EPDS revealed a PPD prevalence of 12.8% which is 32 out of 250 participants. The mean age of enrolled participants was 24.7±3.5 years. Mean age in depressed group was 23.9±3.3 and in non-depressed group was 25.5±3.7 (t value=1.82, p=>0.05). Mean age of menarche was 13.36±0.72 in depressed group and was 13.58±0.86 in non-depressed group (t value=1.08, p=>0.05). In both the cases, the difference was statistically not significant. Similarly, in our study, occupation, place of residence and socio-economic status did not show any statistically significant difference between the depressed and non-depressed group. However, educated female had significantly lesser prevalence of PPD (X^2 = 16.66, p = <0.001, uneducated PPD OR = 4.4, 95% CI: 3.13-6.28).

Table – 1: Individual and socio-demographic data

Factors	Depressed (n=32)	Non-depressed (n=218)	X^2 value	P value
Age	23.9 ± 3.3	25.5 ± 3.7	t value = 1.82	>0.05

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Age of menarche	13.36 ± 0.72	13.58 ± 0.86	t value = 1.08	>0.05
Occupation	32	218	$X^2 = 2.86$	>0.05
Education	32	218	$X^2 = 16.66$	<0.001
Residence	32	218	$X^2 = 0.08$	>0.05
Socioeconomic status	32	218	$X^2 = 4.26$	>0.05
Statistical significance P < 0.05				

In our study, it was found that marital factors played a significant role in mother's mental health. In the present study, the mean duration of marriage was 3.09 ± 2.52 years, the mean duration of marriage in depressed women was 2.76 ± 2.41 years whereas in non-depressed women it was 3.42 ± 2.62. Though there was a difference in duration of marriage before childbirth in depressed and non-depressed mothers, it was not statistically significant (t value = 1.14, p=>0.05). We found that even though antenatal sex preferences may have put the mothers under significant mental stress, the difference was not statistically significant (OR = 1.62, 95% CI: 1.22-2.67, X^2=4.73, p>0.05). But factors like marital disharmony (OR = 11.58, 95% CI: 8.43-14.78, X^2=78.56, p<0.0001) and domestic violence (OR = 9.27, 95% CI: 6.86-11.42, X^2=69.42, p<0.0001) did show a statistically significant correlation with PPD.

Table – 2: Marital factors

Factors	Depressed (n=32)	Non-depressed (n=218)	X^2 value	P value
Duration of marriage	2.76 ± 2.41	3.42 ± 2.62	t value = 1.14	>0.05
Marital disharmony	32	218	$X^2 = 78.56$	<0.0001
Domestic violence	32	218	$X^2 = 69.42$	<0.0001
Sex preference of baby	32	218	$X^2 = 4.73$	>0.05
Statistical significance P < 0.05				

In, obstetric factors, multivariable analysis adjusted for age and gestational age showed primiparity (OR = 2.62, 95% CI: 1.32-4.17, X^2=0.32, p>0.05), unplanned pregnancy (OR = 1.78, 95% CI: 1.04-3.84, X^2=0.82, p>0.05). The mean gestational age was 38.3±1.2 weeks, preterm/LBW birth (OR = 2.86, 95% CI: 1.16-4.78, X^2=24.36, p<0.001), and women experience complications at time of delivery (OR = 7.42, 95% CI: 3.06-17.56, X^2=1.10, p>0.05) as some of the obstetric determinants of postpartum depression.

Table – 3: obstetric factors

Factors	Depressed (n=32)	Non-depressed (n=218)	X^2 value	P value
Menstrual disorder	32	218	$X^2 = 3.24$	>0.05
Parity of mother	32	218	$X^2 = 0.32$	>0.05
Previous pregnancy complications	32	218	$X^2 = 0.08$	>0.05
Previous pregnancy abortions	32	218	$X^2 = 3.92$	>0.05
Planned or unplanned pregnancy	32	218	$X^2 = 0.82$	>0.05
Period of gestation (preterm, full-term, post-term)	32	218	$X^2 = 24.36$	<0.001
Mode of delivery	32	218	$X^2 = 0.28$	>0.05
Pregnancy and delivery complications	32	218	$X^2 = 1.10$	>0.05
Statistical significance P < 0.05				

In our study, the condition of the newborn is the one of the most important predicting factors for PPD in mother. Multivariate analysis showed health of newborn (OR = 6.74, 95% CI: 4.32-8.67, X^2=29.89, p=<0.0001), need for hospitalization of the baby (OR = 7.16, 95% CI: 5.48-9.31, X^2=31.06, p=<0.0001), gender of the newborn (OR = 4.21, 95% CI: 2.95-5.80, X^2=17.60, p=<0.01), successful breastfeeding (OR = 3.87, 95% CI: 2.32-5.66, X^2=14.98, p=<0.01) and bonding with the newborn (OR = 4.76, 95% CI: 3.54-7.86, X^2=22.37, p=<0.01).

Table – 4: Newborn related factors

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Factors	Depressed (n=32)	Non-depressed (n=218)	X^2 value	P value
Health of the newborn	32	218	$X^2 = 29.89$	<0.0001
Hospitalization of the baby	32	218	$X^2 = 31.06$	<0.0001
Gender of the newborn	32	218	$X^2 = 17.60$	<0.01
Breastfeeding	32	218	$X^2 = 14.98$	<0.01
Bonding	32	218	$X^2 = 22.37$	<0.01
Statistical significance P < 0.05				

Family support during the period of pregnancy and at the time of childbirth is one of the most important factors for the mental wellbeing of the mother. In this study, it was found that previous history of mental illness, (OR =3.51, 95% CI: 1.87-5.32, X^2=12.87, p=<0.01), husband's support during pregnancy and delivery (OR = 4.91, 95% CI: 3.14-6.03, X^2=19.82, p=<0.001), other family members' support (OR = 5.89, 95% CI: 4.04-8.51, X^2=26.58, p=<0.01), financial stressors and life events (OR = 6.24, 95% CI: 4.68-8.41, X^2=29.81, p=<0.0001) and antenatal depression (OR = 7.52, 95% CI: 5.37-9.74, X^2=32.82, p=<0.0001).

Table – 5: Psychological factors

Factors	Depressed (n=32)	Non-depressed (n=218)	X^2 value	P value
Previous history of mental illness	32	218	$X^2 = 12.87$	<0.01
Husband's support in pregnancy & at the time of delivery	32	218	$X^2 = 19.82$	<0.001
Other family members' support at the time of delivery	32	218	$X^2 = 26.58$	<0.0001
Stressors / life events	32	218	$X^2 = 29.81$	<0.0001
Antenatal depression	32	218	$X^2 = 32.82$	<0.0001
Statistical significance P < 0.05				

Univariate analysis showed low education, marital disharmony, domestic violence, period of gestation (preterm, full-term, post-term), health of the newborn, hospitalization of the baby, gender of the newborn, breastfeeding, bonding with the baby, previous history of mental illness, husband's support in pregnancy & at the time of delivery, other family members' support at the time of delivery, stressors / life events, and antenatal depression are significant determinants of PPD.

DISCUSSION

PPD is a far more serious and prevalent disorder than previously considered. In this study, the prevalence of post-partum depression was found to be 12.8% (n=32). In the western countries prevalence of PPD ranges from 10-15%. [11] The global pooled prevalence of PPD was 17.7% (95% CI: 16.6–18.8%), with significant heterogeneity across nations (Q = 16,823, p = 0.0001, I2 = 98%), ranging from 3% (2–5%) in Singapore to 38% (35–41%) in Chile. [12] Whereas, prevalence of PPD in Lebanon was 21% [13], United Arab Emirates (UAE) was 22% [14] and Jordon was 22%. [15] The wide variation in the prevalence of PPD is attributable to different cut-offs of a score of EPND, rapid urbanization, the environment at home and relation with spouse and in-laws. [16]

Although it has been suggested that PPD might be more frequent in urban societies, recent studies in non-western countries shows that PPD has similar prevalence rates in different societies worldwide. [17] It is interesting that the factors that predict PPD in the developing countries are somehow different from those have been found to predict PPD in developed countries and western societies. [18] One such examples is the newborn's sex. In our study, the more mothers who gave birth to a female newborn experienced PPD compared to those who gave birth to male newborns (X^2 = 17.60, p value = <0.01). Our study findings are comparable with the meta-analysis data found by Ye Z, Wang L et al who included 23 studies including 119,736 women where they suggested women giving birth to a girl are associated with a higher risk of developing PPD when compared with those giving birth to a boy (OR = 1.15, 95% CI: 1.01–1.31; p = 0.03). [19]

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In this study, there is no statistically significant association between prevalence of PPD and mean age of the mother, mean age of menarche, place of residence of mother, occupation of mother, socio-economic status of the family, duration of marriage, antenatal sex preference of the baby, parity of the mother, planned or unplanned pregnancy, mode of delivery, pregnancy and delivery complications.

In our study, we found that unplanned pregnancy and PPD was not significantly associated with each other (OR = 1.78, 95% CI: 1.04-3.84, X^2=0.82, p>0.05). In contrast to our findings, a study conducted by Upadhyay Ak and Singh A found that postpartum depression is generally found with a higher likelihood among mothers with unintended and unwanted births. According to them this was likely due to the fact that characteristics that were associated with higher rates of unintended pregnancies (younger age, unmarried, pre-pregnancy anxiety/depression) were also associated with postpartum depression. [20] Though C-section was not significantly associated with PPD but some women perceive C-section as a source of fear and stress especially when women is a primiparous and experiencing complication. [21]

A statistically significant association was noted between level of education and prevalence of PPD where educated female had significantly lesser prevalence of PPD (X^2 = 16.66, p = <0.001, uneducated PPD OR = 4.4, 95% CI: 3.13-6.28). These findings are similar to the findings by Gupta S, Kishore J, Mala YM et al, where they found females with PPD were significantly more likely to be less educated (up to primary level). [22] Our findings are in contrast with the findings by Agarwala A, Rao PA and Narayan P where they found educational status of the mother was found to be a risk factor for PPD and higher level of education of the mothers increased the odds of developing PPD, which was 9–17 times more in secondary, higher secondary and degree level when compared to primary level. [23] Further, in depth studies are required to understand these opposing findings.

Our study suggests that marital factors like marital disharmony (OR = 11.58, 95% CI: 8.43-14.78, X^2=78.56, p<0.0001) and domestic violence (OR = 9.27, 95% CI: 6.86-11.42, X^2=69.42, p<0.0001) are significantly associated with PPD. Although the numbers and severity may vary but it is understandable that these factors have a positive correlation with PPD not only in India but almost universally. [24, 25, 26, 27]

In our study, we found that newborn's condition has a huge impact on mother's mental health. All the neonatal parameters like health of newborn (X^2=29.89, p=<0.0001), need for hospitalization of the baby (X^2=31.06, p=<0.0001), successful breastfeeding (X^2=14.98, p=<0.01) and bonding with the newborn (X^2=22.37, p=<0.01) had statistically significant correlation with PPD. Similar findings were found in meta-analysis by Dubey A, Chatterjee K, Chauhan VS et al where after analyzing 84 studies found adverse events in newborns and hospitalization was significantly associated as individual risk factor for PPD. [28] Similarly, studies done in other developing countries like Brazil also showed similar results, where having an unhealthy newborn, requiring hospitalization and lack of breastfeeding was significantly associated with PPD. [29]

In India, most of the people are living in a joint family system. The results of this study suggest that just like less support from husband during time of pregnancy and during delivery; no family support is also associated with PPD (OR = 5.89, 95% CI: 4.04-8.51, X2=26.58, p=<0.01). Similar results were found by Roy SK, Majumdar S, Singh R et al who observed that women who had no support at home during the postpartum period were 3.64 times more likely to have PPD than those who had a supportive environment at home.[30]

In our study, we found that previous history of mental illness was significantly associated with PPD (X2=12.87, p=<0.01). Similar results were found by Modi VP, Parikh MN, Valipay SK et al who found that 20 of 58 (34.48%) women who had personal history of previous psychiatric complaints had depression compared to 38 (65.52%) who did not have depression, 32 of 192 (16.15%) women who did not have personal history of previous psychiatric complaints had depression, and 161 (83.85%) did not have depression. Their findings suggested that women with previous personal history of psychiatric illness are at an increased risk of developing PPD. [31]

In order to prevent PPD screening should be done. The validity of the screening approach described here was further supported by the rate of positive EPDS screens obtained (12.8%), which is consistent with previously reported PPD prevalence.

Strengths of the Study:

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- The study features a substantial sample size.
- It is a cross-sectional study, eliminating the need for attrition adjustments.
- The use of a self-administered EPDS questionnaire facilitates straightforward data collection.

Limitations of the Study:

- Results may not be widely applicable due to the study being conducted at a single center.
- The hospital-based nature of the study might not reflect the broader population accurately.
- In developing countries like India, where many deliveries happen at home, the study may not encompass all relevant cases.
- Women might provide inaccurate responses because of insufficient family support or pressure from in-laws.

CONCLUSION

Our findings indicate that the prevalence of postpartum depression is 12.8%. Contributing factors include various social, cultural, and demographic elements such as low education, marital disharmony, domestic violence, preterm / LBW babies, poor health of newborn, need for hospitalization in newborn, gender of the child, inability to breastfeed the child, poor bonding with the child, previous history of mental illness, husband's support during pregnancy and at the time of delivery, family support during pregnancy, presence of stressors and antenatal depression are the individual risk factors for the PPD. It's essential for healthcare providers to recognize PPD and implement health promotion programs to enhance the well-being of pregnant and postpartum women. Early screening and intervention for perinatal distress, depression, and anxiety during the antenatal period are crucial for addressing PPD in young mothers.

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