

A Study of Postpartum Depression Amongst Women Delivered at Tertiary Care Center Jaipur

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Abstract

Background: Gestation and the postpartum phase are regarded as critical intervals for the onset of mental health issues. This research sought to identify the burden and socio-demographic, obstetric, and pregnancy outcome factors of postpartum depression (PPD) among women after childbirth in a tertiary care facility in Jaipur. **Material and Methods:** This investigation was carried out as a facility-oriented cross-sectional observational study on all successive postpartum women who presented for follow-up within six weeks post-delivery at the Department of Obstetrics and Gynaecology of Govt RDBP Jaipuria Hospital, RUHS-CMS, Jaipur, throughout the study duration from July 2024 to December 2024. Detailed history was obtained and EPDS scale was used to assess PPD. **Results:** Approximately 16.5% of women were susceptible to postpartum depression (PPD), and we identified a notable correlation between PPD and factors such as low maternal education, nuclear family structure, overcrowding, and women with many daughters, fewer male offspring, and a preference for male children. Additionally, maternal complications during gestation and childbirth, a background of psychiatric disorders, lack of strong emotional connection with a partner, spousal alcohol dependency, maternal alcohol consumption, absence of support from in-laws, and strained relations with in-laws were significantly correlated with an increased risk of postpartum depression in our research ($p < 0.05$). **Conclusion:** Nearly 25% of women are susceptible to PPD. The following factors were found to be statistically significantly associated with the risk of PPD: low women's education level; nuclear family structure; overcrowding; more live girls than male children; sex preference; complications during pregnancy or delivery; personal history of psychiatric illness; lack of closeness to the partner; alcohol use by the husband or wife; unsatisfactory relationship with in-laws; and lack of support from in-laws.

Keywords: Postpartum depression, psychological factors, sex preference, risk factors, alcohol, girl child.

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INTRODUCTION

Even though giving birth is usually a joyful occasion, the mother experiences a crisis and a great deal of stress due to her new obligations and responsibilities. Many women are unaware that mood swings, ranging from mild to severe, are typical following childbirth. Depression symptoms and disorders are common among postpartum mothers.^[1] Patients may experience more severe syndromes of moderate or major depression or postpartum blues, which are characterized by mild depressed symptoms that usually go away on their own. If left untreated, postpartum depression can have negative effects on both the mother and the child.^[1,2] Psychiatric illnesses are thought to be more likely to manifest during pregnancy and the postpartum period. One of the most prevalent psychopathologies during these stages is postpartum depression (PPD). Postpartum depression (PPD) is defined by the DSM-5 criteria as a depressive episode that initially manifests during pregnancy or within four weeks of delivery; nevertheless, the risk of PPD remains significant even months after childbirth.^[3] In Western studies, prevalence estimates vary between 13 and 19%. According to four studies conducted in India, between 16 and 18% of women have postpartum depression.^[4,5]

PPD appears to have a complex etiology that includes medical, obstetric, psychological, economic, and demographic risk factors. In both resource-rich and resource-limited environments, cross-cultural common PPD risk factors have been identified. However, in low- and medium-income nations like India, several characteristics have surfaced as risk factors for PPD, including the delivery of a girl, the protective influence of cultural rituals, financial instability, marital violence, and a lack of social support.^[6] PPD typically manifests four to six weeks after childbirth, and symptoms that are similar to those of major depressive disorders (MDD) include depressed mood, loss of interest or enjoyment in activities, sleep disturbance, appetite disturbance, low energy, feelings of guilt or worthlessness,

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diminished concentration, irritability, anxiety, and suicidal thoughts. An environment that is detrimental to a mother's personal growth or a child's optimal development is created by postpartum depression. In order to prevent negative outcomes, it appears crucial to identify and treat depression during the postpartum phase as soon as feasible.^[7]

To screen postpartum depression three scales are commonly used; the Postpartum Depression Screening Scale (PDSS),^[8] the Edinburgh Postnatal Depression Scale (EPDS),^[9] and the Beck Depression Inventory-II (BDI-II).^[10] Numerous authors in an Indian context have examined PPD and its risk factors. Nevertheless, no local study setting research has been done to date. This study sought to determine the burden and sociodemographic, obstetric, and pregnancy outcome determinants of PPD among postpartum women in a tertiary care center in Jaipur in order to support the early diagnosis of PPD and address the lack of research among moms in the local setting.

MATERIALS AND METHODS

The present analysis was performed as a facility-based cross-sectional observational study involving all consecutive postpartum women who sought postpartum follow-up within six weeks after delivery at the Department of Obstetrics and Gynaecology of Govt RDBP Jaipuria Hospital, RUHS-CMS, Jaipur, subsequent to obtaining approval from the RUHS ethical committee during the six-month study timeframe from July 2024 to December 2024. All women who delivered at our hospital and came for postpartum follow up within 6 weeks of delivery, during the study period were included in the study whereas women with acute severe illness at the time of interview (for example acute respiratory or cardiovascular distress), cognitive impairment and not willing to consent for voluntary participation were excluded from the study. Sample size was estimated using the following formula

$$n = \frac{Z_{1-\alpha/2}^2 P (1 - P)}{d^2}$$

Here

$Z_{1-\alpha/2}$ = is standard normal variate (at 5% type I error ($P < 0.05$) it is 1.96.

p = Expected prevalence in population based on previous studies or pilot studies.

d = absolute error or precision. (taken as 5%).

sample size was calculated by taking the prevalence of postpartum depression as 13% according to Sood et al.¹¹ With 95% confidence level.

$$N = \frac{Z_{1-\alpha/2}^2 P (1 - P)}{d^2} = \frac{(1.96)^2 \times 0.13(1 - 0.13)}{(0.05)^2} = 173.79$$

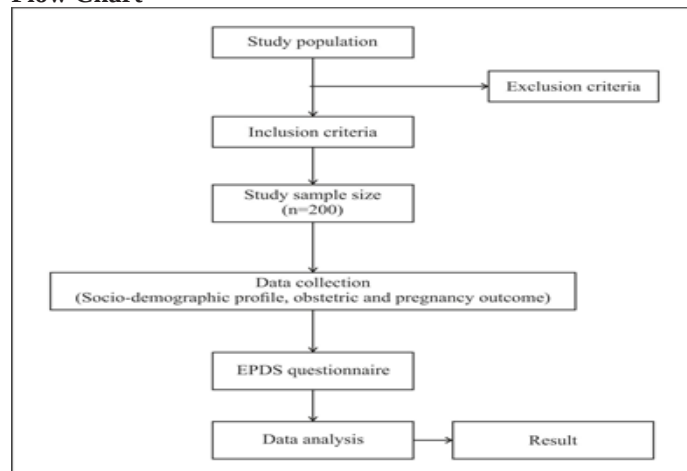
Sample size was calculated to be to be minimum 173.79 subjects which was rounded off to 200 subjects.

Upon receiving ethical approval from the Institute's ethics committee, all postpartum women meeting the inclusion criteria were recruited, and comprehensive histories about their socio-demographic profiles, obstetric details, and pregnancy outcomes were collected using a validated semi-structured proforma. The confidentiality of the study participants was preserved to improve the participation rate

and safeguard their anonymity. A Hindi rendition of the EPDS (derived from Perinatal Mental Health: A Guide to the Edinburgh Postnatal Depression Scale by Cox & Holden, 2003) was utilized.^[12] A threshold of ≥ 10 was employed to identify women susceptible to depression. Data was gathered utilizing a preformulated and prevalidated questionnaire. The EPDS has been confirmed for use throughout both pregnancy and after childbirth, and it is extensively utilized as a screening tool for identifying depressive symptoms. The EPDS scale comprises ten elements. Every item is evaluated on a scale from 0 to 3, resulting in a cumulative score ranging from 0 to 30. Seven of its components are graded in reverse.

Statistical Analysis: Using computer software (SPSS Trial version 23 and primer), descriptive and inferential statistical analysis was performed in the current investigation. Means and standard deviations were used to convey the quantitative data, whereas proportions and percentages were used to express the qualitative data. The Fisher exact test and the chi square test were used to analyze the difference in proportion. The correlation coefficient was employed to determine the relationship between quantitative data. A 95% significance level ($P < 0.05$) was used for the tests.

Flow Chart



RESULTS

In the study data of 200 postpartum women were collected and analyzed. Mean age of participants were 23.6 ± 3.5 years. Out of 200 subjects 33 (16.5%) had EPDS score ≥ 10 i.e. at risk of developing postpartum depression [Figure 1].

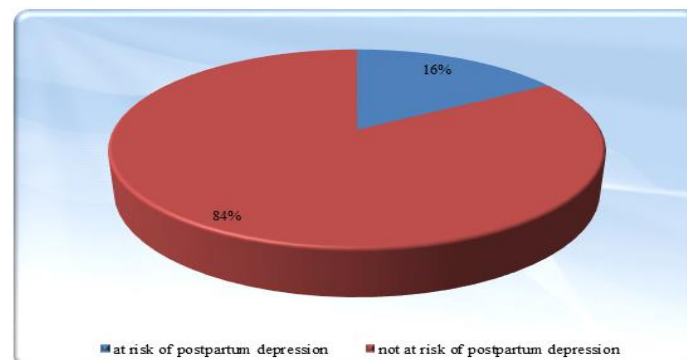


Figure 1: Prevalance of risk of Postpartum Depression in Women

Table 1: Distribution of the cases according to sociodemographic variables

Sociodemographic variables		At risk of postpartum depression n =33(%)	Not at risk of postpartum depression n= 167(%)	Total n=200(%)	OR (95% CI)	P value
Age (years)	<30	29 (87.87)	160 (95.80)	189 (94.5)	0.317 (0.087-1.15)	0.09
	>30	4 (12.12)	7 (4.19)	11 (5.55)		
Education	≤Primary	21 (63.63)	43 (25.74)	64 (32)	5.047 (2.291-11.114)	0.001
	>Primary	12 (36.36)	124 (74.25)	136 (68)		
Type of family	Nuclear	24 (72.72)	82(49.10)	106 (53)	2.764 (1.213-6.301)	0.014
	Joint	9(27.27)	85(50.89)	94 (47)		
Occupation	Housewife	29 (87.87)	152(91.01)	181(90.5)	0.715 (0.222-2.310)	0.53
	Working	4(12.12)	15(8.98)	19(9.5)		
Type of house	Kuccha	5 (15.15)	18(10.77)	23(11.50)	1.478 (0.507-4.309)	0.549
	Pacca	28(84.84)	149(89.22)	177(88.50)		
Ownership of House/Land	No	20 (60.60)	98(58.68)	118(59)	1.083 (0.505-2.324)	0.84
	Yes	13(39.39)	69(41.31)	82(41)		
Overcrowding	Yes	26 (78.78)	55(32.93)	81(40.5)	7.564 (3.091-18.507)	0.001
	No	7(21.21)	112(67.06)	119(59.5)		
Socioeconomic status	Low /lower middle	27 (81.81)	124(74.25)	151(75.50)	1.560 (0.603-4.036)	0.34
	Middle/upper Middle/upper	6(18.18)	43(25.74)	49(24.50)		

In the study, 94.5% women belonged to less than 30 years, and 32% women were educated upto primary or less than primary education. About 53% women lived in nuclear family, 90.5% were housewives, 88.5% women lived in Kuccha house and 59% women had no ownership of land. About 40.5% women lived in overcrowded surroundings and 75.5% women were from low or lower middle

socioeconomic class. Amongst various sociodemographic factors, we found a significant association of high risk of PPD with low education (63.6% vs. 36.36%; OR-5.047; 95% CI- 2.291-11.114; p<0.05), nuclear family (72.72% vs. 27.27%; OR-2.764, 95% CI-1.213-6.301; p<0.05), and living in overcrowded conditions (78.78% vs. 21.21%; OR-3.091-18.507; p<0.05).

Table 2: Distribution of cases according to obstetric history

Obstetric history		At risk of postpartum depression n =33(%)	Not at risk of postpartum depression n= 167(%)	Total n=200(%)	OR (95% CI)	P value
Total no. of living children	> 2	14 (42.42)	45 (26.94)	59(29.5)	1.998 (0.925-4.316)	0.075
	≤ 2	19 (57.57)	122 (73.05)	141(70.5)		
Total no. of live girls	> 1	14 (42.42)	29 (17.36)	43(21.5)	3.506 (1.579-7.788)	0.0043
	≤ 1	19 (57.57)	138 (82.63)	157(78.5)		
Total no. of live boys	≤ 1	11 (33.33)	24 (14.37)	35(17.5)	2.979 (1.282-6.922)	0.009
	>1	22 (66.67)	143 (85.62)	165(82.5)		
Desire of pregnancy	Unwanted	5 (15.15)	16 (9.58)	21(10.5)	1.685 (0.571-4.973)	0.353
	Wanted	28 (84.84)	151 (90.41)	179(89.5)		
Wanted son but delivered daughter	Yes	14 (42.42)	37 (22.15)	51(25.5)	2.589 (1.186-5.653)	0.015
	No	19 (57.57)	130 (77.84)	149(74.5)		
Mode of delivery	Instrumental/ Caesarean	7 (21.21)	33 (19.76)	40(20)	1.093 (0.437-2.736)	0.85
	Normal vaginal delivery	26 (78.78)	134 (80.23)	160(80)		

In our study, 43/200(21.5%) women had >1 live girls. In this group 14 were at risk of postpartum depression and 29 were not. Women with > 1 live girls were more likely at risk of postpartum depression in comparison to women with ≤ 1 live girl. [Odd's ratio=3.506 (1.579-7.788)] and this difference was statistically significant. (p-value=0.0043). However, 165/200(82.5%) women had >1 live boys. In this group 22 were at risk of postpartum depression and 143 were not. And women with ≤ 1 live boy were more likely at risk of

postpartum depression in comparison to women with >1 live boys. [Odd's ratio=2.979 (1.282-6.922)] and this difference was statistically significant. (p-value=0.009). In the study women who wanted a son, but delivered a daughter were more likely at risk of postpartum depression in comparison to women who did not want a son and delivered a daughter. [Odd's ratio=2.589 (1.186-5.653)] and this difference was statistically significant. (p-value=0.015).

Table 3: Distribution of cases according to Pregnancy outcome

Pregnancy outcome		At risk of postpartum depression n =33(%)	Not at risk of postpartum depression n= 167(%)	Total n=200(%)	OR (95% CI)	P value
Complications during pregnancy	Yes	15 (45.45)	28 (16.76)	43(21.5)	4.137 (1.865-9.174)	0.0001
	No	18 (54.54)	139 (83.23)	157(78.5)		
Complications during delivery	Yes	18 (54.54)	15 (8.98)	33 (16.5)	12.160 (5.112-28.924)	0.0001
	No	15 (45.45)	152 (91.01)	167 (83.5)		

43/200(21.5%) women had some complications during pregnancy. There were 28 people in this group who were not at risk for postpartum depression and 15 who were. Compared to women who had no pregnancy difficulties, those who had some were more likely to experience postpartum depression. This difference was statistically significant [Odd's ratio=4.137 (1.865-9.174)]. (p-value <0.001). 33 out of 200 women (16.5%) experienced some

difficulties giving birth. Fifteen members of this cohort were not at risk for postpartum depression, while eighteen were. Compared to women who experienced no problems during delivery, those who experienced some were more likely to experience postpartum depression. This difference was statistically significant [Odd's ratio=12.160 (5.112-28.924)]. (p-value <0.001).

Table 4: Distribution of cases according to Family history, personal history, comorbidities and interpersonal relationship

History		At risk of postpartum depression n =33(%)	Not at risk of postpartum depression n= 167(%)	Total n=200(%)	OR (95% CI)	P value
Psychiatric illness in first degree family members	Yes	2 (6.06)	3(1.79)	5(2.5)	3.527 (0.566-21.984)	0.19
	No	31(93.93)	164 (98.20)	195(97.5)		
Personal history of psychiatric illness	Yes	7(21.21)	4(2.39)	11(5.5)	10.971 (3.001-40.109)	0.0001
	No	26(78.78)	163(97.60)	189(94.5)		
Closely attached to partner	No	9(27.27)	8(4.7)	17(8.5)	7.453 (2.622-21.184)	0.0001
	Yes	24(72.72)	159(95.20)	183(91.5)		
Husband taking alcohol	Yes	16(48.48)	40(23.95)	56(28)	2.988 (1.384-6.452)	0.004
	No	17(51.51)	127(76.04)	144(72)		
Herself taking alcohol	Yes	4(12.12)	2(1.19)	6(3)	11.379 (1.99-65.004)	0.007
	No	29(87.87)	165(98.80)	194(97)		
Herself taking tobacco	Yes	6(18.18)	12(7.18)	18(9)	2.870 (0.993-8.300)	0.09
	No	27(81.81)	155(92.81)	182(91)		
Satisfactory relationship with parents	No	2(6.06)	1(0.59)	3(1.5)	10.710 (0.94-121.76)	0.07
	Yes	31(93.93)	166(99.40)	197(98.5)		
Satisfactory relationship with in laws	No	13(39.39)	9(5.38)	22(11)	11.411 (4.31-30.068)	0.001
	Yes	20(60.60)	158(94.61)	178(89)		
Support from in-laws during pregnancy	No	15(45.45)	12(7.18)	27(13.5)	10.764 (4.36-26.54)	0.0001
	Yes	18(54.54)	155(92.81)	173(86.5)		
History of chronic illness	Yes	5(15.15)	25(14.97)	30(15)	1.014 (0.358-2.876)	1.0
	No	28(84.84)	142(85.02)	170(85)		

11/200(5.5%) women had personal history of psychiatric illness. In this group 7 were at risk of postpartum depression and 4 were not and women with personal history of psychiatric illness were more likely at risk of postpartum depression in comparison to women without personal history of psychiatric illness. [Odd's ratio=10.971 (3.001-40.109)] and this difference was statistically significant. (p-value=<0.001). 17/200(8.5%) women were not closely attached to the partner. In this group 9 were at risk of postpartum depression and 8 were not and women who were not closely attached to the partner were more likely at risk of postpartum depression in comparison to women who were closely attached to the partner. [Odd's ratio=7.453 (2.622-21.184)] and this difference was statistically significant. (p-value=<0.001). In the study women with history of husband taking alcohol were more likely at risk of postpartum depression in comparison to women with no history of husband taking alcohol. [Odd's ratio=2.988 (1.384-6.452)] and this difference was statistically significant. (p-value=<0.004). Women with history of taking alcohol were more likely at risk of postpartum depression in comparison to women with no history of taking alcohol. [Odd's ratio=11.379 (1.992-65.004)] and this difference was statistically significant. (p-value=0.007). Women without

Satisfactory relationship with In-laws were more likely at risk of postpartum depression in comparison to women with Satisfactory relationship with In-laws. [Odd's ratio=11.411 (4.331-30.068)] and this difference was statistically significant. (p-value=<0.001). Women without support from In-laws were more likely at risk of postpartum depression in comparison to women with support from In-laws. [Odd's ratio=10.764 (4.366-26.540)] and this difference was statistically significant. (p-value=<0.001).

DISCUSSION

Not only does postpartum depression negatively affect the affected lady, but it also negatively affects her partner and the entire family. For the infant, who depends so heavily on the mother for care, this is especially crucial. The long-term negative effects on children's socioemotional development found in follow-up studies of moms who have suffered from postpartum depression are extremely concerning. Disturbances in the mother-child interaction, which start in the early postpartum period, seem to be the cause of these negative child outcomes. This emphasizes how crucial it is for the primary care team to identify and treat problems early. It also recommends that efforts be focused on developing and assessing preventive treatments as well as identifying high-risk samples. After receiving approval

from the RUHS ethical committee, this hospital-based cross-sectional observational study was carried out from July 2024 to December 2024 at the Department of Obstetrics and Gynecology at Govt RDBP Jaipuria Hospital, RUHS –CMS, Rajasthan University of Health Sciences and College of Medical Sciences, Jaipur. Data from 200 consecutive postpartum women who visited the institute for postpartum follow-up within six weeks of giving birth were included.

In the present study, 16.5% women were at risk of PPD. Our study findings were supported by findings of Chowdhary et al, in which 23.7% women were at risk of PPD.¹³ Verma et al reported that 28% women were at risk of PPD.¹⁴ Shriram et al also reported PPD in 11% women in their study (an EPDS score of 10 and above).^{15]}

Amongst various sociodemographic factors, we found low education status (OR-5.047; 95% CI- 2.291-11.114; $p<0.05$), living in nuclear family (OR-2.764, 95% CI-1.213-6.301; $p<0.05$), and living in overcrowded conditions (OR-3.091-18.507; $p<0.05$) to be significant factors associated with high risk of PPD in our study. This was similar to findings of Verma et al. in which lower literacy is significantly associated with more PPD,^{14]} In contrast Chowdhary et al found higher risk of PPD in women with higher literacy.^{13]} Ghosh et al also found significantly higher risk of PPD in women living in joint family, supporting our study findings.^{16]} Gupta et al also documented higher risk of PPD in women living in overcrowded conditions supporting our study findings.^{17]}

With respect to obstetric factors, our study documented significantly higher risk of PPD in women with >1 live girls, women with ≤ 1 live boys, women who wanted a son, but delivered a daughter, and women with >2 live children ($p<0.05$). In Indian civilizations, the birth of a girl is viewed as a family and social stressor due to cultural factors, which may be a powerful indicator of PND. Additionally, Gupta et al. discovered a strong correlation between PPD and mothers who had previously given birth to a girl and those who had fewer than one living male child.^{17]} Chowdhary et al also found a significant association of maternal depression with two or more daughters. The child's current sex and the mother's and husband's preferred sex were found to be highly statistically significant.^{13]} Unwanted pregnancy increases the likelihood of poor mental health outcomes for mothers, such as stress, perinatal depression, and reduced psychological well-being and life satisfaction. Long-term effects on a child's health are also influenced by pregnancy intention. Compared to their peers, children born after an unwanted pregnancy exhibited a cognitive delay at age three, greater behavioral issues at ages five and seven, and more problem behaviors and substance usage at age fourteen. Even when the child has grown up, unwanted births can lead to strained relationships between the mother and her children. Nevertheless, there was no significant correlation ($p>0.05$) between PPD and unintended pregnancy.

According to the study, women who experienced some pregnancy and delivery problems were more likely than those who did not to experience postpartum depression ($p\text{-value}=\leq 0.001$). This result was consistent with that of Hirani et al,^{18]} and Shiivalli et al.^{19]}

Furthermore, we found a significantly higher risk of PPD in women with history of psychiatric illness, women who were not closely attached to the partner, women with history of husband taking alcohol, herself taking alcohol, unsatisfactory relationship with In-laws and without support from In-laws. Similar findings were reported by Gupta et al,^{17]} Alloghani et al observed a significant association of PPD with marital conflict, previous history of depression, poor marital relation before or after delivery, patient not receiving emotional support ($p<0.05$).^{20]} Chowdhary et al reported a significant association of PPD with family history of depression.^{13]} However Verma et al reported a significant association of PPD with lack of partner support ($p<0.05$).^{14]}

Accordingly, we propose promoting awareness of Postpartum depression and its harmful implications for the lady concerned, her spouse, and the family collectively. It is essential to accentuate the importance of early diagnosis and treatment by the primary care health team. Resources should be concentrated on the detection of high-risk samples and on the design and assessment of preventive measures.

CONCLUSION

Based on the findings of current study and sample taken to analyze it can be concluded that almost one fifth of women are at risk of PPD. Risk of PPD was associated statistically significantly with the following factors low women education level, nuclear family structure, overcrowding, higher no. of live girls and lower number of male child, sex preference, complications during pregnancy or delivery, History of mental health issues, lack of intimacy with the partner, both the husband and the individual use alcohol, unsatisfactory interactions with in-laws, and absence of assistance from in-laws.

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Conflicts of interest

There are no conflicts of interest.

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