

Burden of postpartum depression among mothers delivering at a tertiary care hospital of Maharashtra, India: an observational study.

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Abstract:

Background: Despite the recent increase in attention to postpartum depression among Indian women, there is still paucity of research on the topic in the country. The present study was conducted with an objective of assessing the burden and risk factors of postpartum depression among women delivering at a tertiary care teaching hospital of Maharashtra, a state in Western India.

Materials and Methods: An observational cross-sectional study was conducted in the post-natal ward of the department of Obstetrics and Gynecology of a tertiary care teaching hospital of Maharashtra, a state of Western India from April 2021 to October 2022. Study population consisted of 300 mothers delivering in the study institution and in the post-natal period. The postpartum depression (PPD) characteristics of the participants were elicited using the Edinburg Postpartum Depression Scale.

Results: The mean age of the mothers was 26.3±4.6 years. A majority were multigravida (58.3%), and belonged from joint families (84.3%). Both the women as well as their husbands were educated, 90.3% of the women reported that they had regular menstrual habits. More than 60% of the mothers delivered via lower segment cesarean section, 33.3% developed some degree of neonatal complications. The incidence of postpartum depression among the mothers was 10.3%. Lower age group, joint family, lower socioeconomic class, illiteracy of both the women and their husbands poor social history, primigravida status, bad obstetric history, and presence of neonatal complications were significantly associated with higher proportions of PPD among the women.

Conclusion: The present study found that the incidence of postpartum depression was high among mothers delivering at the study institution, with poor demographic, social, and clinical characteristics being significantly associated with the increased risk of developing the condition.

Key Word: India, postpartum depression, postnatal period, depression.

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I. Introduction

Postpartum period is defined as a period of six weeks of involution of the uterus after childbirth.¹ The postpartum period is crucial in ensuring the health of both the mother and the newborn. However, there are relatively few studies that address the full range of postpartum health problems that affect the mother and the child.² This is especially true for the psychosocial ailments that many mothers experience during their postpartum period. Changes experienced during the postpartum period may cause emotional and mental health disturbance, which if not addressed, may progress to a condition called postpartum depression (PPD).³

The concept of childbirth-related depression, known today as postpartum depression (PPD), has been a matter of debate ever since the first modern reliable clinical observations of puerperal psychiatric illness were made by Marce in 1858⁴. Diagnoses of postpartum disorders were not included in the Diagnostic and Statistical Manuals of Mental Disorders (DSM) until the DSM-IV, which identifies “postpartum onset” as a modifier in the development of major depression, and is now classified as “Major Depressive Disorder, with peripartum onset”

in the DSM-5, given that symptom manifestation begins during pregnancy in about a third of patients with postpartum depression.^{5,6}

Postpartum depression is an umbrella term, which encompasses several mood disorders that follow childbirth within 4 weeks at a critical moment in a woman's life or even 3-12 months and can continue for long periods. It is one of the major underestimated public health problems in the maternal and mental health.⁴ The likelihood of depressive episodes can be 2-3 times as compared to other periods of a woman's life. PPD often go undetected and untreated, wreaking havoc on partners as well as the emotional and cognitive growth of infants and adolescents.⁷

In studies exploring the topic in developed countries, it has been seen that the prevalence of PPD varies from 10-15% during the first year after child birth. It has been estimated though that this prevalence is significantly higher in the low- and middle-income countries, where attitudes towards post-childbirth and mental health of mothers are still largely unfavorable.⁸ Despite the recent increase in empirical and clinical attention to PPD among young women and the launch of India's national mental health program, there is a paucity of research addressing the problem of PPD among women. The availability of mental health specialists is limited in peripheral health-care facilities. Furthermore, currently no data are routinely collected on the proportion of perinatal women with postpartum depression.

In this context, the present study was conducted with an objective of assessing the burden and risk factors of postpartum depression among women delivering at a tertiary care teaching hospital of Maharashtra, a state in Western India.

II. Material And Methods

Study design: The present study was an observational study with a cross-sectional design.

Study area: The study was carried out in the post-natal ward of the department of Obstetrics and Gynecology of a tertiary care teaching hospital of Maharashtra, a state of Western India.

Study duration: The study was conducted for 18 months, from April 2021 to October 2022.

Study population and inclusion criteria: The study was carried out among mothers delivering in the study institution via either spontaneous vaginal delivery or lower segment cesarean section and in the post-natal period, admitted to the study institution during the period of study.

Exclusion criteria: The exclusion criteria for the present study were:

1. Patients not willing to participate in the study.
2. Patients with pre-diagnosed psychiatric illnesses such as anxiety disorders, neurotic disorders, phobias, psychoses, personality disorders etc.
3. Mothers on current or past antipsychotic treatment.

Sample size and sampling technique: The sample size for the present study was calculated using the Cochran's formula for calculation of sample size from an anticipated proportion of outcome. Considering prevalence of postpartum depression as the outcome variable, the anticipated proportion was considered to be 20%, as reported by Cooper and Murray in their study.⁹ At 95% confidence level and 5% allowable error, the minimum calculated required sample size was 245, which was rounded off to 300. A consecutive sampling method was utilized. All mothers meeting the inclusion criteria and not excluded from the study were consecutively recruited into the study till the required sample size was met.

Study methodology: After the recruitment of the eligible women into the study group, a written informed consent form was utilized to obtain written informed consent. After obtaining the consent, a pre-designed and pre-tested proforma was utilized to obtain data pertaining to the socio demographic characteristics of the study participants. Clinical and obstetric characteristics of the participants were also obtained during this period using the proforma.

The postpartum depression (PPD) characteristics of the participants were elicited using the Edinburg Postpartum Depression Scale. It a 10-item questionnaire, each question having 4 possible responses. The responses to each question are marked 0,1, 2 and 3 according to the increased severity of the symptom. The total score is determined by adding together the scores for each of the 10 items. The mothers were first assessed at 7th day of postpartum period, and then they were re-assessed again at 6 months to obtain data pertaining to the progression of the condition.

Statistical analysis: The data thus collected were entered in a MicrosoftTM Excel spreadsheet and analyzed using the Statistical Package for the Social Sciences (SPSS) software version 25.0. The data were presented as proportions and percentages for categorical variables and mean and standard deviation for continuous variables. Principles of analytical statistics were followed to compare between the two groups. A p-value of <0.05 was considered to be statistically significant.

Ethical considerations: Clearance and appropriate permissions for the present study were obtained from the administration and the institutional ethics committee of the study institution before conducting it

(MUHS/EC/38/2021). Written informed consent was obtained from each of the study participants. Anonymity and confidentiality of the information was ensured.

III. Result

In the present study, 300 mothers were examined. The mean age of the mothers was 26.3±4.6 years, with most of the mothers being more than 20 years old (84%). A majority were multigravida (58.3%), and generally belonged from joint families (84.3%). It was observed that both the women as well as their husbands were educated, with above 90% literacy rates for both. At the time of admission to the study institution, 90.3% of the women reported that they had regular menstrual habits. (Table 1)

Table 1. Sociodemographic and clinical characteristic of the study participants (n=300)

| Parameter | Frequency | Percentage |
|-------------------------|-----------|------------|
| Age (years) | | |
| ≤20 | 48 | 16 |
| >20 | 252 | 84 |
| Gravidity | | |
| Primigravida | 125 | 41.7 |
| Multigravida | 175 | 58.3 |
| Type of family | | |
| Joint | 253 | 84.3 |
| Nuclear | 47 | 15.7 |
| Wife Educational status | | |
| Illiterate | 16 | 5.3 |
| Literate | 284 | 94.7 |
| Husband education | | |
| Illiterate | 17 | 5.7 |
| Literate | 283 | 94.3 |
| Menstrual history | | |
| Regular | 271 | 90.3 |
| Irregular | 29 | 9.7 |

When the pregnancy-related characteristics of the study participants were elicited, it was observed that 11% of the women had bad obstetric history, and almost half of the women had some maternal or fetal complications during the present pregnancy (46.7%). As a result, more than 60% of the mothers delivered via lower segment cesarean section (LSCS, 64.3%). Of the neonates born to the mothers, 33.3% developed some degree of neonatal complications. (Table 2)

Table 2. Pregnancy and postpartum depression related characteristic of the study participants (n=300)

| Parameter | Frequency | Percentage |
|------------------------------------|-----------|------------|
| EPDS score | | |
| <10 | 269 | 89.7 |
| ≥10 | 31 | 10.3 |
| Bad obstetric history | | |
| Present | 33 | 11 |
| Absent | 267 | 89 |
| Complications in present pregnancy | | |
| Present | 140 | 46.7 |
| Absent | 160 | 53.3 |
| Mode of delivery | | |
| SVD | 107 | 35.7 |
| LSCS | 193 | 64.3 |
| Neonatal complications | | |
| Present | 100 | 33.3 |
| Absent | 200 | 66.7 |

The prevalence of postpartum depression among the mothers in the present study was found to be 10.3%. On analyzing the different socio demographic, clinical, and obstetric characteristics as potential risk factors of PPD among the women, it was found that age group of ≤20 years, joint family, lower socioeconomic class, illiteracy of both the women and their husbands were the demographic factors significantly associated with an increased risk of developing PPD. A poor relationship with either the husband or the in-laws, desire for male children, and a positive history of domestic violence were the social factors which were found to be significantly associated with higher proportions of PPD among the women. Among the clinical characteristics, primigravida status, a bad obstetric history, and presence of neonatal complications were found to be statistically significant predictors of the development of postpartum depression among the women. (Table 3)

Table 3. Factors associated with postpartum depression (PPD) (n=300)

| Risk factor | Frequency (%) | | p-value ^a |
|---|--------------------|--------------------|----------------------|
| | PPD present (n=31) | PPD absent (n=269) | |
| Age ≤20 years | 18 (58.1) | 30 (11.2) | <0.001* |
| Joint family | 10 (32.3) | 37 (13.8) | <0.001* |
| Lower socioeconomic class | 23 (74.2) | 167 (62.1) | 0.021* |
| Wife illiterate | 11 (35.5) | 5 (1.9) | <0.001* |
| Husband illiterate | 10 (32.2) | 7 (2.6) | <0.001* |
| Primigravida | 19 (61.3) | 106 (39.4) | 0.033* |
| Present pregnancy complications present | 30 (96.8) | 110 (40.9) | <0.001* |
| LSCS delivery | 20 (64.5) | 173 (64.3) | 0.911 |
| Bad obstetric history present | 11 (35.5) | 22 (8.2) | <0.001* |
| Relationship with husband good | 25 (80.6) | 9 (3.3) | <0.001* |
| Relationship with in-laws good | 8 (25.8) | 256 (95.2) | <0.001* |
| Desired male child | 19 (61.3) | 59 (21.9) | 0.002* |
| Substance abuse present | 24 (77.4) | 26 (9.7) | <0.001* |
| Neonatal complications present | 27 (87.1) | 73 (27.1) | <0.001* |

^a Chi-square tests done

*Statistically significant

IV. Discussion

A significant public health concern is postpartum depression in mothers, which has been found to have an impact on pregnancy outcomes, maternal mental health, and the behavioral and emotional growth of children. In this study, the incidence and associated factors of PPD were assessed in a sample of 300 mothers delivering at a tertiary care hospital of Western India. These mothers were young, literate, and belonging to primarily joint families, findings which are consistent with the current socioeconomic condition of the state as reported by the latest National Family Health Survey (NFHS-5) data.¹⁰ Among these mothers, the incidence of postpartum depression among the mothers was found to be 10.3%. This is much higher than the 5.5% and 6% incidences reported by Nielsen et al. and Dubey et al. in their respective studies.^{11, 12} However, it is lower than what has been reported by Gupta et al. and Webster et al.^{13, 14} The finding of the present study is also much lower than that of a 2017 meta-analysis of postpartum depression in India by Upadhyay et al. which estimated an incidence of 22% of the condition.⁸

In studies conducted elsewhere, it has been postulated that the development of PPD in a woman can be attributed to a number of risk factors.⁸⁻¹³ These include social, cultural, and clinical determinants. The present study examined a number of these factors in context of PPD development among the women. It was observed that PPD was associated with younger age group, lower socioeconomic status, illiteracy, and joint families. Age is an important factor that has been observed to be associated with PPD risk. The findings of the present study confirm those reported by Bradshaw et al. and Okunola et al., who reported that the risk of PPD decreases with increasing age of the women.^{15, 16} Similar to age, illiteracy and lower socioeconomic status have been found to be independent predictors of depression. Poverty and illiteracy both lead to lack of resources and opportunities, which in turn translate to increased social isolation, which can lead to lowering the threshold of depression.^{17, 18} The findings of the present study reiterate this, with mothers belonging to poorer families and mothers who or whose husbands were illiterate being found to have a statistically significantly higher risk of developing PPD. Continuing with the context of social isolation being a predictor for depression, little interpersonal and social support from the families and friends. This might lead to the onset of depressive symptoms, such as that observed in the present study and also reported by Green et al.¹⁹ Pertinently, similar to the findings reported by studies done elsewhere, social support, particularly a lack of them, were found to be significant predictors of PPD. It was seen that poor relationship with the husband, in-laws, and a positive history of domestic violence were significant predictors of postpartum depression. A desire for a male child also predisposed mothers to developing symptoms of PPD. These observations can be explained by the traditional social structure of the Indian family system. In most Indian families, women stay at their in-laws' houses and abide by the rules of the house. Therefore, poor communication and relationship with the husband or the in-laws can lead to social isolation, alienation, and mental stress, which can predispose them to developing postpartum depression. It has been documented in literature that lack of social support, especially from the close family members, can be devastating to a woman's mental health in a high-risk situation such as the postpartum period.^{20, 21} The findings of the present study confirm these reports. Furthermore, the traditional Indian family system, especially in the poorer sections of the society, also emphasizes on women to have male children. So, most Indian women are put under mental pressure to have a male child, an event they have no control over. This creates additional mental stress, which is amplified if they deliver a female baby, which can lead to them being blamed for 'misfortune' by their family members, and can thus lead to PPD.^{12, 22} A statistically significant association observed in the present study with desire for a male child and the development of PPD substantiate these postulations.

When associations between clinical characteristics and PPD incidence were examined, it was seen that PPD was significantly higher among primigravida mothers as compared to their multi-gravida counterparts. These findings echo those reported by Ria et al., and Lindayani et al., who also found that primigravida mothers were more likely than their multi-gravida counterparts to experience postpartum depression.^{21, 23} This might be due to the fact that multiparous mothers have experienced previous labor event beforehand and also gone through an infant caring role previously, which helps mitigate much of the anxiety and stress experienced during the present labor. The presence of bad obstetric history as well as complications in the current pregnancy were also found to be statistically significant predictors of postpartum depression among the women. Bad obstetric history and pregnancy complications have both been well-documented as stressors in present pregnancy.¹² These events put the mother in an apprehensive state in the present pregnancy, therefore lowering the threshold for the depressive symptoms to appear in the postpartum period.²⁴ Similar phenomena also occurs when the neonate born to the mother suffers from some complications. This is a traumatic event, and it often leads to the mother suffering from severe stress, which can lead to the development of PPD.

V. Conclusion

The present study found that the incidence of postpartum depression was high among mothers delivering at the study institution, with poor demographic, social, and clinical characteristics being significantly associated with the increased risk of developing the condition. Proper education, socioeconomic upliftment, and clinical management protocols during their pregnancies can lead to prevention and mitigation of the burden of the problem among these women.

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