

A community-based cross-sectional study to assess the prevalence of post-partum depression: Why are the mothers depressed?

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ABSTRACT

Introduction: Post-partum depression can have adverse long term effects. For the mother, the episode can be the precursor of chronic recurrent depression. For her children her on going depression can contribute to emotional, cognitive and interpersonal problems in their later life. In the present study, we aimed to identify the incidence of depression in post-partum period and explore the underlying etiological factors responsible for the same. **Materials and Methods:** A cross sectional study was conducted on 250 post-natal mothers covered under UHTC, Tripuri, Patiala. The data collection was done through one to one interview technique with mental evaluation done by Edinburgh Postnatal Depression Scale instrument. Based upon the results, the cases were classified either as normal or presence of psychiatric morbidity. Psychiatry referral was provided to those requiring it. Association of post-partum depression with various socio-demographic and medical correlates was then sought through statistical analysis. **Results:** Post-partum depression was observed in 82 out of 250 females (32.8%). On univariable analysis family income, illiteracy, history of depression, caesarean section, death in family, were significantly associated with post-partum depression. On multi-variable analysis, poverty, female gender of baby, domestic violence and were observed as true predictors of depression in post-partum period ($p < 0.05$). **Conclusion:** Depression was prevalent among almost one-third of postnatal females. Poverty, Cesarean section, domestic violence and poor spousal support have been identified as major contributors towards psychiatric morbidities. Taking care of these largely modifiable risk factors can prevent development of postpartum depression.

Keywords: Caesarean section, domestic violence, illiteracy, post-partum depression, pregnancy, screening

Introduction

Childbearing is one of the most challenging experiences of human life from the psychological point of view.^[1] Recently delivered mothers are vulnerable to the whole spectrum of general psychiatric disorders, as well as those resulting from

the physical and psychological changes of childbirth. The range of emotions during postpartum period is wide, and includes transient mood lability, irritability, tendency to cry, delusions, and confusion. The symptoms of postpartum psychiatric disorders include feelings of sadness, mood lability, tearfulness, anxiety, irritability in postpartum blues, depressed or sad mood, loss of interest in usual activities, feelings of guilt, feelings of worthlessness or incompetence, fatigue, sleep disturbance, change in appetite, poor concentration, suicidal thoughts in postpartum depression (PPD), rapidly shifting

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depressed or elated mood, disorientation or confusion, erratic or disorganized behavior, delusions and hallucinations in post-partum psychosis. Postpartum mental disorders are not classified as a separate clinical diagnostic entity in the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5). DSM-5 defines Peripartum depression under category of Unspecified Depressive Disorders.^[2] PPD is the commonest psychiatric disorder encountered in the postpartum period and is difficult to differentiate from depression occurring at any other time in a women's life. Also there may be feelings of guilt about inadequacy to care for the infant and engrossment with infant's well-being.^[3]

Postpartum psychiatric disorders have been classified into five classes: (i) Postpartum Blues, (ii) PPD, (iii) postpartum psychosis, (iv) postpartum post-traumatic stress disorder, and (v) postpartum anxiety and obsessive-compulsive disorder.^[3]

There are various stressors for psychiatric morbidity during the postpartum period. These include endocrine changes, changes of body image, activation of unconscious psychological conflicts, and intrapsychic recognition of becoming a mother. In the light of these changes, etiological factors are classified into biological, psychological, social, and interpersonal factors. The most accepted biological factors for postpartum psychiatric disorders are the sudden change in reproductive hormonal levels, past and family history of depressive disorder, and sleep pattern changes. The most common psychosocial and interpersonal factors for PPD in the Indian setup are gender bias which includes preference for a male child, domestic violence, financial difficulties, past psychiatric illness, and poor spousal support.^[4]

Perinatal mental illness is largely underdiagnosed and undertreated.^[5] A multi-country study that analyzed data from Young Lives study reported that 30.5% of Indian women faced mental distress between 6 and 18 months after birth of a child.^[6] This represents a significant burden and health risk on the women, the society and also impacts the future of the child. Hence, early diagnosis and management of PPD is extremely crucial.

Untreated PPD can have adverse long term effects. For the mother, the episode can be the precursor of chronic recurrent depression. For her children, a mother's on going depression can contribute to emotional, cognitive and interpersonal problems in later life. There is a relative lack of emphasis on post-partum psychiatric disorders. The national program in India catering to the health and well-being of mothers lacks specific component addressing the mental health status and emotional need of mothers. To prioritize maternal mental health care the present study was planned to identify the prevalence of depression in the post-partum period and find out the associated risk factors.

Material and Methods

A cross-sectional, descriptive study was conducted from May-October 2020 on post-natal mothers covered under

Urban Health Training Centre, in Patiala city of India using the Edinburgh Postnatal Depression Scale.^[7] The study included postnatal mothers with infants from one month to less than one year of age. Ethical permission was obtained from Institutional Ethics Committee on 15/05/2020.

Inclusion criterion

- (i) Postpartum mothers with phenotypically normal singleton delivery.

Exclusion criteria

- (i) Mothers with history of known psychiatric morbidity and on medication for a psychiatric illness.
- (ii) Mothers with multiple gestational deliveries.
- (iii) Mothers delivered post infertility treatment.
- (iv) Mothers with new-born having congenital abnormalities.
- (v) Mothers unwilling to participate in the study.

Sample size

The population covered was 14,673. A literature search was done and the range of prevalence of PPD was found to be 11.45–31.4%.^[8-15] Taking prevalence of PPD from past literature to be 20%, at 95% confidence limits, $Z = 1.96$ and maximum allowable error to be 5% a sample size of 250 (approx.) was calculated, using $n = Z^2P(1-P)/D^2$.

Methodology

The data collection was done using a pretested questionnaire by paying house-to-house visits using one to one interview technique. The procedure included detailed history, socio-demographic variables antenatal, intranatal findings, and postnatal mental evaluation of mother by diagnostic interview technique using the Edinburgh Postnatal Depression Scale (EPDS). The EPDS is a short structured validated screening scale of choice in the community setup with a sensitivity of 95% and specificity 93% which was chosen over the Beck Depression Inventory scale with a sensitivity of 68% and specificity of 88%.^[7] The EPDS consists of 10 questions each having 4 point Likert type agreement scale options as responses. Responses are scored 0, 1, 2, or 3 according to increased severity of the symptom of questions 1, 2 and 4, with 3, 5-10 being scored reverse. The mother was asked about the 1 of 4 possible responses that comes the closest to how she has been feeling in the previous 7 days. To attain the right response the scale was used in the respondents' respective vernacular language using the validated translated versions in the Hindi and Punjabi language. The following severity ranges were used on adding the score of each question out of the maximum score of 30 points:

None or minimal depression (0–6 points)

Mild depression (7–13 points)

Moderate depression (14–19 points)

Severe depression (20–30 points)

A psychiatric referral and consultation were reserved for the cases with presence of psychiatric morbidity. Association of PPD with various socio-demographic and medical correlates was then sought through statistical analysis.

Statistical analysis

The quantitative data was represented as their mean ± SD. Categorical and nominal data was expressed in frequency and percentage. The *t* test was used for analyzing quantitative data, categorical data were analyzed using Chi-square test and multiple logistic regression was used for identifying independent predictors of PPD. The significance threshold of *P* value was set at <0.05. All analysis was carried out by using SPSS software version 21.

Results

Among the 250 participants interviewed, the mean age of the study group was 26.16 ± 4.69 years with most of them being between 20 and 30 years of age, only 66 (26.4%) were literate and more than half, that is, 141 (56.4%) belonged to the upper-lower socioeconomic status of Modified Kuppuswamy socioeconomic scale (revised 2020) [Figure 1]. Approximately half of the respondent mothers, 135 (54%), had undergone normal delivery [Figure 2] with 54% having a female child and 46% male child [Figure 3], 165 (66%) mothers gave positive history of depression in their previous pregnancy. Out of all the

mothers, 64 (25.6%) had faced domestic violence and 23 (9.2%) had strained relation with their husband.

PPD was observed in 82 out of 250 mothers (32.8%). Mild depression was seen in 36 mothers (14.4%) while moderate depression was seen in 46 (18.4%) mothers and none were found to be severely depressed [Figure 4]. 168 (67.20%) mothers had none or minimal depression.

On univariable analysis, family income, illiteracy, history of depression in past pregnancy, cesarean delivery, female gender of baby, domestic violence, non-supportive spouse, death in family and financial issues were observed as significantly associated with PPD [Table 1].

On multi-variable analysis, Female gender of baby (OR 3.32; 95% CI: 1.42-7.75), domestic violence (OR-6.35; 95% CI: 2.15-18.77), and Financial crisis (OR- 2.22; 95% CI: 1.08-4.55) were identified as significant independent predictors of depression in post-partum period [Table 2].

Discussion

Prevalence of PPD was observed to be 32.8%, of which 14.4% of mothers were mildly depressed, while 18.4% of mothers

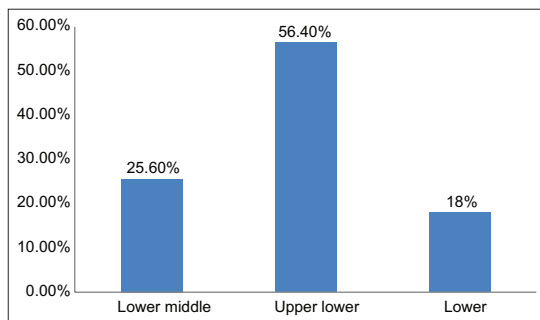


Figure 1: Distribution of participants according to their socioeconomic status (n = 250)

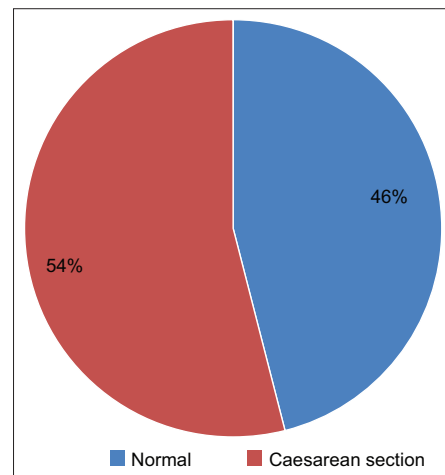


Figure 2: Distribution of participants as per mode of delivery (n=250)

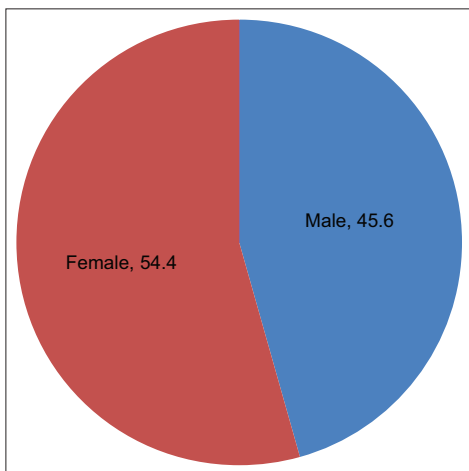


Figure 3: Distribution of participants according to sex of child (n=250)

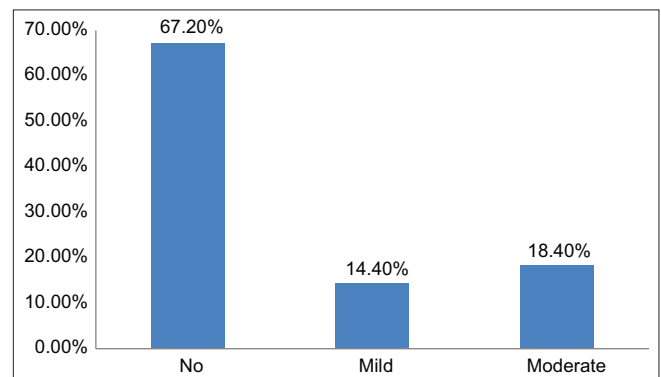


Figure 4: Distribution of study participants as per post-partum depression (n = 250)

Table 1: Univariable analysis for predictors of post-partum depression

Variables	t/Chi-square value	P
Age of Mother	1.14	0.25
Years of Marriage	1.12	0.27
Family Income	3.35	<0.01
Religion	0.30	0.59
Illiteracy	42.28	<0.01
Service Job	24.37	<0.01
Type of Family	2.50	0.11
Co-morbidities	1.17	0.28
H/o depression in previous pregnancy	8.20	<0.01
Unplanned Pregnancy	3.12	0.08
Mode of Delivery	66.70	<0.01
Female Baby	4.56	0.03
Chronic Health Problem to baby	1.13	0.29
Ante-natal Complications	0.21	0.64
Domestic Violence	36.26	<0.01
Strained Relation with husband	13.75	<0.01
Non-supportive Husband	13.90	<0.01
Serious Illness/Death in the Family	4.16	0.045
Financial Problems	10.51	<0.01

Table 2: Multivariable analysis for predictors of post-partum depression

Variable	Adjusted Odds ratio	95% Confidence Interval	P
Gender of Baby	Male	1.00	-
	Female	3.32	1.42-7.75
Domestic Violence	No	1.00	-
	Yes	6.35	2.15-18.77
Strained relation with husband	Yes	1.00	-
	No	0.93	0.24-3.56
Death in the family	Yes	1.00	-
	No	2.02	0.76-5.33
Financial Crisis	Yes	1.00	-
	No	2.22	1.08-4.55

*Significant, **Highly significant

were moderately depressed. Similar results were seen in a study by Shivalli *et al.*^[8] where a prevalence of 31.4% was observed in postnatal women of southern India. Results from a study done by Hiremath *et al.*^[9] in Maharashtra, India revealed prevalence of Postnatal depression to be 13.2%. It is a hospital-based study that included only primiparous women, and excluded those with Caesarean delivery. These factors may be responsible for the comparatively lower prevalence of PPD. Studies from the west have revealed lower rates of postnatal depression.^[10,11] Variations in prevalence are observed in studies from different parts of the world. Higher prevalence of depression was observed in our study as compared to western studies. Indian women face societal/familial pressures regarding gender of child. Lack of health facilities and health insurance leads to apprehension regarding arrangements for delivery. Also women have increased aspirations with respect to their carriers which may be set back by the pregnancy. Many of the women, especially the lower socio-economic class, have to keep working before and after

delivery leading to poor health outcome and fatigue. All these factors may be responsible for the higher prevalence of PPD observed in the present study.

Deshmukh *et al.*^[12] in Maharashtra observed that the prevalence of all psychiatric morbidities in postpartum primipara subjects was found to be 27.08%. There was a higher prevalence of depression (11.45%) as compared to anxiety (9.37%) and psychosis (4.16%). All the participants in their study were primiparous women and majority of the participants belonged to the rural background unlike our study setting. Modi *et al.*^[13] in Gujarat, India reported prevalence of PPD to be 20.4% in a tertiary care hospital-based study. The higher prevalence of 32.8% in the present study may be due to different settings: Community based (with 56.4% belonging to the upper-lower socioeconomic status) versus tertiary care hospital based. This points towards undiagnosed cases of PPD in the community. Kumar *et al.*^[14] reported the prevalence of Depressive disorder NOS (not otherwise specified) as 26% among 152 patients in a tertiary maternity care hospital. Their subjects were interviewed using Mini International Neuropsychiatric Inventory. A higher rate of prevalence in our study might be due to a different assessment scale being used and it being a community-based study.

The mean age of mothers was 26.16 years ± 4.69 years, with most of them being between 20 and 30 years of age. A majority of the Indian women conceive during this part of the childbearing age. Upadhyaya *et al.*^[15] in a Psychiatry department-based study in Uttarakhand, India reported mean age to be 26 years which is similar to the present study. Other demographic variables of their study were also comparable to the present study, most of the females were homemakers and belonged to low socioeconomic status.

A significant association between mode of delivery, that is, Cesarean delivery and prevalence of depression in mothers is observed, similar to the study by Barbadoro *et al.*^[16] in Italy. The procedure involving a surgical intervention, risk, possibility of complications related to caesarean section may have led to the association with depression. However, Sankapithilu *et al.*^[17] reported that there was no significant difference in the frequency of depression between normal and Cesarean delivery cases. They report that 16% of those delivering by normal delivery had depression as compared to 20% delivering by Cesarean section. Kaya *et al.*^[18] reported that EPDS (Edinburgh Postnatal Depression Scale) scores were not linked with desired and performed modes of delivery, induction, episiotomy and spinal anesthesia. Similar to our results, studies by Fisher *et al.*^[19] Mallikarjun *et al.*^[20] and Gaillard *et al.*^[21] showed that depression in post-partum period is significantly associated with domestic violence/physical abuse and strained marriage ($P < 0.05$). Similar to our study findings, another study done in Addis Ababa, Ethiopia on 618 post-partum women reported that victims of domestic violence and those dissatisfied with their marriages were at significantly greater risk of PPD.^[22] In addition, other studies from Canada,^[23] China,^[24] Chile^[25] and

Iran^[26] stated that participants with some sort of intimate partner abuse before or during pregnancy presented with the symptoms of postpartum mental health problems.

In present study, we observed a significant association between gender of the child i.e. girl child and prevalence of depression in mothers. The reason could be preference for male child due to a male dominated patriarchal society, with social insecurities in bringing up a girl child, and burden of dowry at marriage of a girl. Another Indian study done by Zaidi *et al.*^[27] also revealed higher rates of depression among women who delivered the female child.

Studies in India by Patel *et al.*^[28] and in Hong Kong by Lee *et al.*^[29] also suggested that disappointment with the gender of the baby was significantly associated with development of PPD. Therefore, disappointment with sex of child may possibly result in PPD.

Conclusion

Poverty, cesarean section, domestic violence and poor perceived spousal support are associated with postpartum psychiatric morbidities. A collaborative-care approach involving community health workers, social workers, psychiatrists and obstetricians taking care of the largely modifiable risk factors will be effective in mitigating the problem of PPD. Family counseling for resolution of marital and family conflicts, gender equality, financial strengthening management, should be addressed before conception. Such integrated care pathways to identify, support and manage at risk women incorporated in the maternal and child health programs will go a long way in improving the wellbeing of the mothers, mother-infant relationship, child growth and development.

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Conflicts of interest

There are no conflicts of interest.

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