*Research Report*

# POSTPARTUM DEPRESSION AND ITS ASSOCIATION WITH SOCIAL SUPPORT: A CROSS-SECTIONAL STUDY AT A MATERNITY HOSPITAL IN KERALA

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ABSTRACT

**Background**: Childbirth is associated with significant physiological changes as well as challenges related to psychiatric disorders. Postpartum depression (PPD) is one such condition associated with high levels of morbidity and mortality. Screening postpartum women for early identification of depression and its prompt treatment should be a crucial component of postnatal health care. Assessment of prevalence and correlates of postpartum depression hence becomes important. **Methods**: Cross-sectional assessment of mothers (n=250) during postnatal visits to the family planning clinics between four weeks and one year of delivery, using Edinburg Postpartum Depression Scale (EPDS), Social Support Questionnaire and a structured questionnaire for the assessment of psychosocial risk factors was carried out in a tertiary care postgraduate teaching hospital of north Kerala. Multivariate Regression Analysis was used to identify the risk factors for PPD. **Results**: 27.6% had postpartum depression (score of $\geq$11 in EPDS), and 18.4% had suicidal ideation. Factors associated with the presence of PPD included alcohol use of husband, marital discord, lack of family support and lack of physical help during the postnatal period. Difficulties during labour, the gender of the baby or postnatal complications did not have a significant association with PPD. Though there was a negative correlation between Social Support Scale (SSS) total score and EPDS score, it was not statistically significant. (Pearson's co-relation coefficient= -0.084, p= 0.186). **Conclusion**: Prevalence of depression in postnatal women is very high. Modifiable psychosocial factors have a close association with PPD, and these are opportunities for intervention as well. Considering the morbidity and mortality linked to untreated PPD, screening of postnatal women and routine provision of therapeutic services to them is suggested.

**Keywords**: depression, postpartum, screening, risk factors, psychosocial support

## INTRODUCTION

Postpartum depression (PPD) is defined as a clinical condition fulfilling the diagnostic criteria for a major depressive disorder and having its onset in the first four weeks of the postpartum period.[1] Although for definition, only the first four weeks are counted, the initial three months of the postpartum period has been identified to carry a high risk for new-onset depressive disorder.[2] The incidence of postpartum depression is 8-12% in the first nine weeks postpartum.[3] Greater than 60% of these patients have an onset of symptoms within

Access the article online:
https://kjponline.com/index.php/kjp/article/view/198
DOI: https://doi.org/10.30834/KJP.33.1.2020.198
Recieved:31/05/20. Web publication:25/07/2020

*QR code*

How to cite the article: Santhosh K, Dayal Narayan KTP, Vinaychandran S, Mini CH. Postpartum depression and its association with social support: a cross sectional study at a maternity hospital in Kerala. Kerala Journal of Psychiatry 2020, 33(2):

the first six weeks.[4] Operational definitions of depressive disorders with onset in the postpartum period more than four weeks after delivery have hence been discussed in the context of research.[5] Personal or family history of a mood disorder has often been linked to postpartum depression as well as depression during the pregnancy. With a prior history of PPD, the patient has a 50-62% chance of recurrence, a risk high enough to consider prophylactic treatment. The risk factors for postnatal depression are a past history of psychiatric disorder, psychiatric disorder during pregnancy, low socioeconomic status, complicated delivery, and poor marital relationship.[4] Two important studies done in India found that the prevalence of postpartum depression was 19.8% and 23% respectively.[6,7] Low income, the birth of a daughter when a son was desired, relationship difficulties with mother-in-law and parents, adverse life events during pregnancy and lack of physical help were risk factors for the onset of postpartum depression in the previous study, whereas economic deprivation, poor marital relationship and gender of the infant was implicative in the latter study which was the first hospital-based prospective study on the subject in South Asia.

The high prevalence of PPD points towards the need for accurately identifying mothers having symptoms through screening and providing them access to treatment. This has been highlighted by professional bodies like the American College of Obstetricians and Gynecologists (ACOG) in their guidelines.[8] However, screening for PPD is not practised universally, and estimates show that more than half the cases remain unidentified even in countries that had screening programs implemented for the same. Factors influencing such a low level of identification could include the inherent reluctance of a depressed person to seek help, lack of strict guidelines necessitating universal screening of postpartum women for PPD, inadequate awareness among obstetricians regarding the gravity of the problem, not using standardized tools for screening etc.[9]

The present study aimed to determine the prevalence of postpartum depression among postnatal women attending the Family Planning Clinic at Institute of Maternal and Child Health, Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode, Kerala. It also evaluated the factors associated with postnatal depression and the relationship between social support and the prevalence of postpartum depression.

## METHODS

The study was conducted in a tertiary care postgraduate teaching hospital of a government medical college in North Kerala. The research proposal was formally approved by the Institutional Review Board and the Institutional Ethics Committee. In a cross-sectional study design, postnatal females falling in the period ranging from at least four weeks postpartum up to a maximum of one year and attending the postnatal clinic at Family Planning Unit of the department of obstetrics and gynaecology during the year 2004-2005 were considered for enrolment. Three to four consecutive patients were recruited on two fixed days of a week during the study period based on inclusion and exclusion criteria. Participants were assigned unique identification numbers at the time of assessment to prevent multiple enrolments of the same person. The evaluation was done in the presence of a hospital nurse after complete description of the study procedure and after obtaining written informed consent. No incentives were paid to the study participants. Consenting mothers who had delivered a baby after carrying to the period of viability were reporting between four weeks to one year of delivery and were able to read and understand Malayalam were included in the study. Those mothers with any severe medical/surgical condition interfering with the use and advancement of the tools mentioned or those who had delivered earlier than four weeks or beyond one year from the time of assessment were excluded from the study. Author SK collected the data by face-to-face interview and from the postnatal card by application of the tools mentioned below.

Structured questionnaire: Author SK administered a specifically designed pre-tested structured questionnaire to collect data regarding sociodemographic characteristics and factors associated with PPD, based on previously reported risk factors. The structured questionnaire assessed the following variables: obstetric history and delivery related variables; perinatal stressors (emergency caesarean delivery, failed breastfeeding, neonatal admissions and/or death, prolonged postpartum hospital stay); infertility, miscarriages or termination of pregnancies in the past; demographic and socioeconomic factors (age,

marital status, education, unemployment, being a homemaker, financial constraints); gender-related variables (gender of the newborn, number and gender of elder children); past history of depression (related to or unrelated to pregnancy) and family history of psychiatric disorder; family and interpersonal relationships (marital dissatisfaction, poor support from and intimate-partner problems/violence (husband), husband's alcohol intake, family structure (joint or nuclear), problems with parents and/or mother-in-law; fears and expectations (wanted/unwanted pregnancy, desired gender of the child, pressure to have a male child).

Edinburgh Postpartum Depression Scale (EPDS): EPDS is one of the most widely used screening tool world over. The EPDS was chosen because of its brevity and because it has been validated in multiple countries.[10] Validated Malayalam version of the tool was used for the study. An EPDS score of > 11 identified 100% of women who became depressed in a British community sample comprising 86 recently delivered mothers[62] whereas a score of 12 had sensitivity of 86% and a 73% positive predictive value for identifying women with postpartum depression.[10,11] Hence Holden et al. [12] have suggested a cut off of >12 to provide the best compromise between the false positives and false negatives. Since the aim of our study was to detect the prevalence of postpartum depression in an unscreened population, it was necessary to keep the sensitivity high. Hence, the cut off was chosen as 11 or above.[13] Patients scoring beyond the cut off for depression in EPDS (score $\geq$ 11) were advised to attend the department of psychiatry for further care and this fact was noted in the postnatal card. For the patients who expressed suicidal ideation, an urgent psychiatry consultation was arranged after counselling the patient and her attendant.

Social Support Scale: Malayalam version of the Social Support Scale was used for measuring perceived social support. It measures seven relational provisions, namely, attachment, social integration, reassurance, reliable alliance, guidance and opportunity for nurturance and provision for psychological safety. The scale was administered individually. Each provision is assessed by four items, two that describe the presence and two that describe the absence of the provisions. The subjects are to indicate on a 4-point scale, ranging from 'completely true' to 'not at all true', the extent to which each statement describes their current relationships. For the scoring purposes, the negative items are reversed and summed together with the positive items to form a score for each social provision. Total social support perception score is derived by summing the seven individual provision score. The total score can fall on a range from zero to 28, with a score of 14 or lower considered to indicate low levels of social support. The internal consistency for the total score ranged from 0.81 to 0.90 across a variety of samples tested. Odd-even reliability of the full scale was established as 0.86. The internal consistency for the total score ranged from 0.81 to 0.90 across a variety of samples tested. Odd-even reliability of the full scale was established as 0.86 with a validity coefficient of 0.90.[14]

Sample size: Two important studies done in India found that the prevalence of postpartum depression was 19.8% and 23% respectively.[5,6] In view of the higher prevalence reported in the Indian studies; we anticipated a 20% prevalence of PPD among our population. The calculated sample size with a 5% error required for 95% confidence level was found to be 246.1, which was rounded to 250.

Statistical analysis of data was done using the Statistical Package for the Social Sciences, version 16.0 (SPSS Inc.) Quantitative data were expressed as Mean, Standard Deviation and numbers and percentages. Comparison between groups was done by using the Chi-square test or Fischer's exact test. Variables that were found to be associated with PPD at the Univariate level was further included in a Multivariate Regression Analysis to find out the risk factors for PPD. The risk was expressed as odds ratio (OR), and 95% Confidence interval (CI) was estimated for the same. Pearson's correlation was used to find the correlation between the Social Support Scale and EPDS, the two tools used in the study.

## RESULTS

The characteristics of the sample are summarised in table1. Mean age of the sample was 24.9 (SD, 4) years. Taking EPDS score of $\geq$ 11 as the cut-off, prevalence of PPD was 27.6%. Suicidal ideation was expressed by 46 subjects (18.4%). Factors significantly associated with PPD on the univariate analysis included being married to a manual labourer, serious problems from

Table 1: Basic characteristics of the study subjects

| Variable (N=250) | Frequency (%) |
|---|---|
| Occupation | |
| Homemaker | 227(90.8%) |
| Employed | 23(9.2%) |
| Education | |
| 6th grade or more | 245(98%) |
| Below 5th grade | 5(2%) |
| Husband occupation | |
| Daily wages manual labourers | 193(77.3%) |
| Salaried | 57(22.8%) |
| Shelter | |
| Shelter concerns present | 90(36%) |
| Income | |
| Income concerns present | 80(32%) |
| Family structure | |
| Extended or joint families | 171(68.4%) |
| Parity status | |
| Primiparous | 112(44.8%) |
| Para2 or more | 138(55.2%) |
| Sex preference for baby | |
| Male baby preferred | 42(16.8%) |
| Female baby preferred | 42(16.8%) |
| No sex preference | 166(66.4%) |
| Delivery in the hospital setting | 250(100%) |
| Caesarean delivery | 80(32. %) |

husbands, marital discord due to alcoholism of the husband, having low self-rating of marriage, lack of support from parents and mother-in-law, and lack of physical help at home in the post-delivery period. (Table 2)

Presence of relatives who were of help during problems was associated with a significantly lower risk of PPD (OR0.32, 95% CI 0.15 - 0.69, p=0.002). A feeling of being an unwanted member in the family (OR 1.9, 95% CI 0.98-3.9, p=0.054) or belief in god (OR 1.74, 95% CI 0.65–4.69, p=0.266) did not have any statistically significant association with PPD.

Gender of the current baby, antenatal complications, in-labour complications, or postnatal complications revealed no significant association with PPD. None of the mothers in the sample population reported a family history of depression. Only one patient gave a history of depression in the past and puerperium. Age of patient, level of education, duration of the marriage, residential location (rural or urban), parity or the number of living children, previous history of infertility or termination of pregnancy were not associated with PPD.

The factors significantly associated with PPD identified on univariate analysis were further subjected to Multivariate Regression Analysis to identify the risk factors for PPD. Thus, the ten factors listed in Table 2 were independent variables, and PPD was the dependent variable. The risk factors thus identified were serious problems from husband, lack of support from mother-in-law and rebellious attitude that was reflected as a dislike in obeying suggestions. (Table 3) Presence of close relatives with whom the mother could confide when problems arose was found to be protective from depression (OR 0.43, 95% CI 0.19-0.98, p=0.047).

The Social Support Scale (SSS) total score and EPDS score showed a negative correlation that was not statistically significant. (Pearson's co-relation coefficient= -0.084, p=0.186)

## DISCUSSION

Prevalence of postpartum depressive symptoms in the present study was 27.6% of the participants. In a recent systematic review and meta-analysis, the incidence of PPD was found to range from 3.4% to 34%.[15] A prospective Indian study (n=84) had estimated the prevalence of depression to be 8.3%, 20% and 12.8% at the third trimester of pregnancy, within three days of delivery and within four to eight weeks of delivery respectively.[16] The growing number of suicides as a cause of maternal mortality in Kerala has been identified in a confidential review of maternal deaths in Kerala.[17] The program 'Amma Manassu' implemented by the Department of Health and Family Welfare in Kerala is aimed at reducing the maternal deaths due to suicide.[18] The high prevalence of PPD along with the high reported rate of suicidal ideation in the study population underlines the importance of routine screening of postpartum women as suggested by professional organizations.[8]

The present study pointed towards serious intimate partner problems, including violence in a significant proportion of patients similar to some previous reports documenting as many as 12%-23% of mothers having encountered recent intimate partner violence.[19,20] Another study had demonstrated that 60% of mothers

Table 2 Psychosocial factors associated with PPD

| Factor associated with depression | Odds ratio (OR) | 95% CI | P-value |
|---|---|---|---|
| Being married to a manual labourer | 2.41 | 1.1- 5.2 | <0.001 |
| Serious problems from their husbands | 17.4 | 3.7- 80.79 | <0.001 |
| Marital discord related to husband's alcoholism | 8.4 | 1.6-42.8 | 0.002 |
| A low self-rating of the married life (<50/100) | 2.86 | 1.13-7.28 | 0.013 |
| Low level of support from parents | 2.87 | 1.09-7.6 | 0.05 |
| Lack of physical help at home during the postpartum period | 2.64 | 1.06-7.0 | 0.011 |
| A life isolated from relatives | 2.78 | 1.35-5.7 | 0.004 |
| Lack of supportive and guiding figures | 2.75 | 1.5-5.2 | 0.002 |
| Disliked obeying suggestions from others | 2.68 | 1.43-5.04 | 0.002 |
| Presence of helping relatives during problems | 0.32 | 0.15–0.69 | 0.002 |

Table 3 The risk factors for PPD

| Risk factors for depression | Adjusted Odds Ratio (AOR) | 95% CI | P-value |
|---|---|---|---|
| Serious problems from husband | 13.3 | 2.7-63.5 | 0.001 |
| Lack of support from mother-in-law | 3.2 | 1.5-6.8 | 0.002 |
| Rebellious attitude | 2.13 | 1.14-4.03 | 0.019 |

with intimate partner violence also had a positive postpartum depression screen.[21]

As most women live in a family that includes parents-in-law, the lack of support from mother-in-law as a risk factor is of practical significance. Being married to a manual labourer was identified as a risk factor, and this may be reflective of a low socioeconomic status related to such an occupation in the spouse. Although the birth of a daughter when a son was desired was found to be a risk factor for depression in a study conducted in Tamil Nadu, the present study did not reveal any such association.[6] This may be because Kerala occupies the top position in the list of Indian states with women preferring girl child and tops the list of Indian states ensuring proper educational avenues for girl children.[22,23] Importance of lack of social support as a major determinant of PPD has already been identified in previous studies.[24] Both univariate and multivariate regression analysis demonstrated that the presence of family members who are supportive was protective against PPD. Existing literature suggests that primiparous status, very young or old age of the mother, history of infertility, and having an infant with special needs or who is difficult to care for, are risk factors for PPD.[25] However none of the medical or surgical co-morbidities that occurred prior to or during or after the period of pregnancy was found to be significantly linked to PPD in the present study.

Although the past history of depression and/or anxiety is a recognized risk factor for PPD, only one patient in the present study gave a positive history of any psychiatric disease in the past. No one reported a family history of psychiatric illness.[26] Underreporting and its potential relation to the stigma of psychiatric diagnosis could not be ruled out in this regard.

The present study enrolling a sufficient sample of postnatal mothers attending the Family Planning Clinic of a maternity hospital and using validated objective tools have thus corroborated existing evidence of a relatively high prevalence of PPD and suicidal ideation. However, the nature of the population sampled and the cross-sectional nature of the evaluation, coupled with the use of a relatively lower threshold for diagnosing PPD limits the generalizability of the results.

## CONCLUSION

Prevalence of depression in postnatal women is high. Modifiable psychosocial factors have a close association with PPD, and these are opportunities for intervention as well. Considering the morbidity and mortality linked to untreated PPD, screening of postnatal women and provision of therapeutic services to them is suggested.

Future studies of prospective nature in a community sample can provide more realistic estimates of the prevalence of PPD, its clinical course and its impact on the health of mothers in terms of morbidity and suicidality.


## Acknowledgements

The authors would like to acknowledge the help and guidance provided by Dr Biju George (Associate Professor, Department of Community Medicine) and Dr Ajitha B K (Assistant Professor in Bio-statistics, Department of Obstetrics and Gynaecology) of Government Medical College, Kozhikode in statistical analysis. The authors would like to thank Dr C B Asha, Professor, Department of Psychology, the University of Calicut for giving kind permission to use the Social Support Scale and Dr Asha T Thomas for the help rendered in data analysis. The authors sincerely thank all the participants of the study for their wholehearted cooperation.

## Financial support and sponsorship

Nil

## Conflicts of interest

None declared


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