

An epidemiological study on depression among women during postpartum period in an urban slum of Bhubaneswar

Krishna Mishra, Ipsa Mohapatra, R.N. Rout

Department of Community Medicine, Kalinga Institute of Medical Sciences, KIIT University, Bhubaneswar, Odisha, India

ABSTRACT

Background and Aims: Depression accounts for the greatest burden of all mental health problems, and is expected to become the second-highest among all health problems by 2020. Postpartum depression (PPD) is a major public health problem with a peak incidence at 4-6 weeks postpartum, affecting 22% of women within a year of childbirth in India. It has an impact on the mother, her partner, the family, mother-baby bonding and the long-term emotional and cognitive development of the baby. The aim of the study was to: 1.To find out the prevalence of depression among women during the postpartum period 2.To identify the factors associated with depressive symptoms among them. **Methods:** A cross-sectional study was conducted in an urban slum of Bhubaneswar from July 2017 to January 2018, among a sample of 60 postnatal mothers who had delivered in the last six months; selected by simple random sampling technique. Edinburgh Postnatal depression scale (EPDS) was used to identify mothers at risk of postnatal depression. A score of ≥ 13 was considered as positive for depressive symptoms. **Results:** The prevalence of PPD was found to be 8.57%. Religion was found to be a statistically significant factor associated with PPD. Other factors like literacy status, socio-economic status, high parity, sex of the newborn, mode of delivery were also found to have an association with PPD. **Conclusion:** This study identified certain socio-demographic and obstetric risk factors for postnatal depressive symptoms in a community setting of an urban slum; screening of risk factors will help in designing preventive strategies for identifying PPD.

Keywords: Depression, EPDS, postpartum, screening, urban

Introduction

Postpartum depression (PPD) is a maternal morbidity having a significant impact on the woman, her child and family.^[1] PPD is defined as an episode of non-psychotic depression with onset within one year of childbirth.^[2] A WHO report states that about 25-85% of women experience postnatal blues, of

whom 7-17% develop clinical depression.^[3] Its prevalence in India is reported to be 7.4-18.6% in various studies.^[1,4-6] The prevalence is high in developing countries^[5] and this being a neglected entity lacks adequate reporting from this area. Hence this study was planned to find out the prevalence of depression during the postpartum period and to identify the associated factors.

Address for correspondence: Dr. Ipsa Mohapatra,
Department of Community Medicine, Kalinga
Institute of Medical Sciences, KIIT University,
Bhubaneswar - 751 024, Odisha, India.
E-mail: dr_ipsa@yahoo.co.in

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Methods

Type of study

It was a community based cross-sectional study. Institutional

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Ethics Committee approval was obtained on 19.09.2016 and the letter number for the approval is [KIMS/KIIT/IEC/66/2016].

Place of study

The study was undertaken in an urban slum of Bhubaneswar which is under the field practice area of a medical college.

Time period of the study

The study was carried out over a period of 6 months i.e. from July 2017 to January 2018.

Study population

The study population consisted of postpartum women in the age of >18 years and in the postpartum period (2-6 weeks), residing in the slums in the urban field practice area of a medical college.

Inclusion criteria

- Postpartum women aged more than 18 years.
- Postpartum women in the period of ≥ 2 weeks and ≤ 6 weeks following delivery.
- Postpartum women who had been residing in the study area for more than one year.
- Postpartum women willing to participate on voluntary basis after giving written informed consent.
- Postpartum women who had delivered a live healthy baby.

Exclusion criteria

- Women with previously known psychiatric disorder.
- Uncooperative women or family.

Sample size determination

The sample size was estimated to be 60, assuming the prevalence of postnatal morbidities as 18% based on the findings of Suguna *et al.*,^[6] with the confidence interval at 95% and allowable error of 10% using the formula:

$$[n = 4pq / d^2 = \frac{2 \times 2 \times 18 \times 82}{10 \times 10} = 59.04 \\ \approx 60]$$

[Where n = sample size, Z = 2, P = prevalence = 18%, q = 1-p = 82%, d = allowable error 10%]

Sampling technique

A list of postnatal mothers was collected from the health worker female. Those who were eligible for participation in the study were line-listed and required sample was selected by simple random technique using lottery method. Then the study participants were approached and explained about the purpose of the study. Those who gave written informed consent were included.

Data collection

Data was collected by house visit, using an interviewer-administered

questionnaire. If the participant was unable to understand the questions, she was explained in detail in local language. The participants were encouraged to provide answers to the questions without assistance from the family, to avoid bias. Outmost care was taken of the confidentiality of the participants.

Study tool

A semi-structured, pre-tested, pre-designed and interviewer administered questionnaire was used to collect relevant data. The study tool was validated by three subject experts.

The questionnaire had the following details:

- Part 1 - Socio-demographic information
- Part 2 - Antenatal, intra-natal, postnatal history
- Part 3 - EPDS scale (*Edinburgh Postnatal depression scale*)^[7]
- Part 4 - General physical examination of the mother and baby.

The EPDS scale is a widely used scale for screening of postnatal depression.

The scale has 10 questions with four choices/options. The scoring was done as per the participants' selected option based on 7 days recall period. The questions 1, 2, and 4 were scored 0, 1, 2 or 3 with top box scored as 0 and the bottom box scored as 3 whereas questions 3, 5-10 were reverse scored, with the top box (option) scored as a 3 and the bottom box scored as 0. The maximum attainable score was 30.

Scoring of <8- not likely, 9-11 – possible, 12-13- Fairly high possibility, 14 or higher- probable depression.

In this study, a score of ≥ 13 was considered for the presence of postnatal depression.

Data analysis

The collected data was entered into Microsoft Excel spreadsheet and analyzed using Epi info software [version 7.2.2.6]. Data was presented using descriptive statistics; Chi-square test and F-test (where appropriate) as the test of significance; taking a P value of <0.05 as statistically significant.

Ethical approval

The proposal for the study was presented in the Institutional Ethical Committee (IEC) and approval [KIMS/KIIT/IEC/66/2016] was obtained before initiation of the study. Informed written consent was obtained from the participant mothers, assuring their full confidentiality and voluntariness, that they had the right to refuse the participation at any stage of data collection.

The postnatal mothers diagnosed with PPD were referred to the psychiatrist present in the urban health center for further evaluation and management.

Results

Among the 60 mothers interviewed, the mean age was 24 ± 3.8 years. Most of respondents (61.67%) were in the age group of 21-30 years, followed by (33.33%) 30-40 years. Majority (81.67%) of the mothers were housewives, 8.33% of them were illiterate. About 53 (88.33%) were Hindus; 35 (58.33%) belonged to nuclear family. 43.33% belonged to Class IV socioeconomic status (Modified Kuppuswamy scale, year 2017). The details of the socio-demographic parameters are given in Table 1. The prevalence of depression was 8.57%. Two (10%) of the mothers in the age group of 31-40 years had PPD, followed by three (8.1%) in the age group of 21-30 years. The prevalence was highest (30%) among those who had an educational level of below primary school followed by those who had high school education (15.38%). The highest prevalence of postnatal depression was reported among the Muslims which was found to be highly statistically significant ($P = < 0.0001$). The prevalence was more among those staying in extended families, unemployed mothers and those belonging to upper-middle class. However, these socio-demographic features like type of family, occupation of the respondent and the socio-economic status of the respondent did not reveal any statistical significance.

Figure 1 depicts the monthly income of the family. This was not found to have a statistically significant association with the presence of PPD.

Around 44.44% of the study participants had a family income of 10001-15000. The prevalence of post-natal depression was found to be 8.57% using EPDS. The score of ≥ 13 was considered as the presence of depression. Table 2 shows the association between the various factors and the presence of PPD.

Various factors like the birth of a male child, time since delivery, mode of last delivery and high-risk pregnancy were associated with the presence of PPD. These factors were also found to be statistically significant. Some other factors like 'planned pregnancy', 'mother unhappy with in-laws' were also found to be significantly associated with the presence of PPD.

Discussion

In the present study, which was conducted among postpartum mothers residing in urban slums of Bhubaneswar, the prevalence of PPD was found to be 8.57%. In a study conducted in rural areas of Belagavi, Karnataka by K. Krutika *et al.* reported a prevalence of 13.6%.^[1] Another study conducted among women attending a rural maternity hospital in South India reported a higher prevalence of 18%;^[6] these differences in prevalence can be because the present study was a community-based study done in an urban area, whereas others were rural based studies with the last being a hospital-based one. An Ethiopian study revealed that the prevalence of PPD was much higher in their setting (33.82%).^[8] This difference in prevalence might be due to setting the cut-off score (≥ 10) at a lower level by them.

Table 1: Socio-demographic characteristics of the study participants

Characteristics	Depressed n (%) n=5	Not - depressed n (%) n=55	P
Age			
<20 (3)	0 (0)	3 (100)	0.8395
21-30 (37)	3 (8.1)	34 (91.9)	
31-40 (20)	2 (10)	18 (90)	
Education			
Illiterate (5)	0 (0)	5 (100)	0.066
Below primary school (10)	3 (30)	7 (70)	
Middle school (19)	0 (0)	19 (100)	
High school (13)	2 (15.38)	11 (84.62)	
Intermediate school (7)	0 (0)	7 (100)	
Graduate and above (6)	0 (0)	6 (100)	
Religion			
Hindu (53)	2 (3.77)	51 (96.23)	<0.0001
Muslim (5)	3 (60)	2 (40)	
Christian (2)	0 (0)	2 (100)	
Type of family			
Nuclear (35)	2 (5.71)	33 (94.29)	0.2478
Joint (22)	2 (9.09)	20 (90.91)	
Extended (3)	1 (33.33)	2 (66.67)	
Occupation			
Unemployed (49)	5 (10.20)	44 (89.80)	0.874
Unskilled worker (4)	0 (0)	4 (100)	
Semi-skilled worker (3)	0 (0)	3 (100)	
Skilled worker (1)	0 (0)	1 (100)	
Clerical/shopkeeper (3)	0 (0)	3 (100)	
Socio-economic status*			
Upper (I) (6)	0 (0)	6 (100)	0.463
Upper-middle (II) (13)	2 (15.38)	11 (84.62)	
Lower-middle (III) (15)	2 (13.33)	13 (86.67)	
Upper-lower (IV) (26)	1 (3.85)	25 (96.15)	

*Modified Kuppuswamy Scale 2017; none of the participants belonged to Lower SES

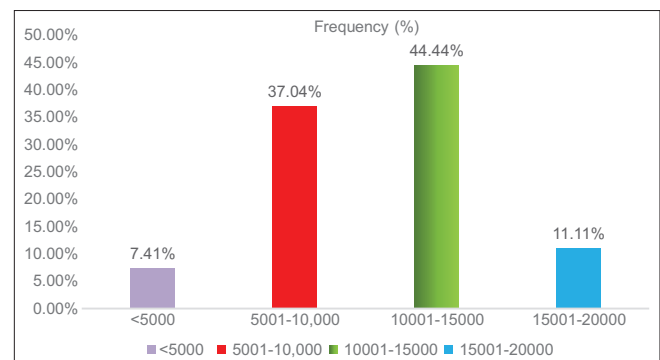


Figure 1: Distribution of study participants according to their family income (n = 60)

In the present study, among socio-demographic parameters only religion of the mother was significantly associated with the presence of PPD; whereas Krutika *et al.* reported that various factors like age, literacy status and socio-economic status had significant association with PPD.^[1]

In this study, various other risk factors associated with PPD were gender of the child, time since delivery, mode of delivery, unplanned pregnancy, high-risk pregnancy and 'unhappy with

Table 2: Association between various risk factors and the prevalence of postnatal depression among the study participants

Risk factors	Depressed n (%) n=5	Not-depressed n (%) n=55	P
Gravida			
Primigravida (32)	3 (9.37)	29 (90.63)	0.8875
Multigravida (28)	2 (7.14)	26 (92.86)	
Gender of the child			
Male (36)	4 (11.11)	32 (88.89)	0.6392
Female (24)	1 (4.17)	23 (95.83)	
Time since delivery			
2 - <4 weeks (10)	3 (30)	7 (70)	
4 - 8 weeks (5)	1 (20)	4 (80)	0.0099
>8 weeks- 6 months (45)	1 (2.22)	44 (97.78)	
Mode of delivery			
Normal (42)	1 (2.39)	41 (97.61)	
LSCS (16)	4 (25)	12 (75)	0.018
Assisted (2)	0 (0)	2 (100)	
Present pregnancy			
Planned (56)	2 (3.58)	54 (96.42)	<0.001
Unplanned (4)	3 (75)	1 (25)	
Family history of similar episodes of mental ill-health			
Yes (22)	4 (18.18)	18 (81.82)	
No (38)	1 (2.63)	37 (97.37)	0.10
High-risk pregnancy			
Yes (3)	2 (66.67)	1 (33.33)	
No (57)	3 (5.26)	54 (94.74)	0.0074
Un-happy with in-laws			
Yes (18)	4 (22.22)	14 (77.78)	
No (42)	1 (2.39)	41 (97.61)	0.040

in-laws'. Similar findings were reported in a study among postpartum mothers done in rural Karnataka, where the factors found to have a statistically significant association were gravida, sex of newborn, mode of delivery and unplanned pregnancy.^[1] Another study done by Suguna *et al.* in South India reported that risk factors found to be significantly associated with PPD were high risk pregnancy, being unhappy with in-laws, low income of the family, mood swings and low mood during pregnancy.^[6] In a study in Ethiopia risk factors which had a statistically significant association were unplanned pregnancy, maternal age between 15 and 24 years, chronic medical ailment, infant death and unstable marital condition.^[8] In a study among Sudanese women, it was reported that sex of the newborn was not a risk factor for the presence of PPD.^[9] The difference in results may be because of "preference for male child" still prevalent in our society. A similar study conducted in China using another scale [the centre for epidemiologic studies depression scale (CESD)] over a period of three years found out factors like educational level, family income, preparation for pregnancy, history of depression, type of relationship with husband and in-laws, amount of time spent with their husbands, parents and in-laws had a significant association with PPD.^[10] The results are different from the current study where no statistically significant association was found with educational level, family income or family history of similar mental ill-health. These differences may be due to the scales used to screen PPD.

In a study done in Rwanda on perinatal depression, around 63.6% of the women within the postnatal period had symptoms of possible depression which is more than the present study.^[11] Another similar study conducted in Ethiopia reported a prevalence of 25%. The factors associated were reported to be husband's occupation, income, number of living children, abortion history, weight of newborn, gestational age at birth, planned pregnancy, complication during last pregnancy, ANC and PNC visits, history of depression, happy with spouse had association of PPD. Similar association was found in the present study.^[12] Another similar study conducted in Riyadh reported a prevalence 38.50% of PPD with a significant association with unsupportive spouse and recent stressful life events.^[13] These finding is different than the findings of the present study; the common finding being the association of PPD with caesarian section.

The current study was done in a community setting; the participants were a vulnerable group living under compromised living conditions. Their mental health has rarely been researched upon. This is one of the strengths of the study. This study was undertaken in a field practice area of a medical college comprising a small part of the total slum population of the city. Better sampling design would have made the results more generalizable, this being the limitation of the study.

The study adds to the existing evidence on knowledge of the risk factors of PPD. Further longitudinal studies can be planned focusing on preventive intervention strategies during antenatal period. The study cohort can be followed for development of PPD. These studies will further help in designing preventive programs and add to the evidence based practice.

Conclusion

In this community-based study in an urban slum setting- a population with higher vulnerability because of compromised living conditions-the prevalence of PPD was found to be 8.57%. Various socio-demographic factors- increased maternal age, lower level of education (those below primary school), religion, extended type of family, unemployment and socio-economic status were associated with increased risks of PPD. Other risk factors like time since delivery, mode of delivery, unplanned pregnancy, high-risk pregnancy and 'unhappy with in-laws', were also found to have a statistically significant association with PPD.

Primary care physicians are usually the first point of contact between the patient and a health facility. Due to lack of awareness there is under-reporting of PPD by the community. EPDS scale can be used by the primary care physicians routinely in the OPD (Out-patient department) for each postnatal woman who comes for either immunization of the baby or for general PNC. Those with the disease can be managed there or referred to higher centres.

Family physicians, midwives and public health nurses have an important role to play not only in ensuring the physical well-being

of new-borns and women in the postpartum period, but also in early detection of PPD. Follow-up appointments occur much earlier than the standard six-week post-delivery check-up. For these postnatal women, screening for PPD as part of postnatal home visits can be an earlier opportunity for prompt and effective interventions.

Moreover, the risk factors found to be associated with this morbidity like unplanned pregnancy, age of the mother, family support, etc., can be effectively addressed by health education and birth preparedness. This reiterates the fact that there is a need for greater awareness among the public and healthcare professionals. The local resources available can be utilized for screening and identifying women through programs for prevention, early detection and treatment. Effects of PPD on mother-infant relationship and child growth and development should be based on sound evidence based on further research.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Key message

Postnatal depression is an unnoticed and under-reported morbidity that affects many mothers, thereby, adversely affecting the health of the mother as well as the baby. Routine planned screening strategies during postpartum and preventive strategies can aim at reducing the incidence of PPD. Community screening strategies hence devised will help community care physicians and other healthcare providers for screening, diagnosis and prevention of PPD early.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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