Original Article

Postpartum depression burden and associated factors in mothers of infants at an urban primary health center in Delhi, India

Saurav Basu, Nidhi Budh*, Suneela Garg, Mongjam Meghachandra Singh, Akashdeep Sharma

Department of Community Medicine, Maulana Azad Medical College, New Delhi, India

ABSTRACT

Objective: Postpartum depression is a nonpsychotic mental health condition that impairs both the immediate and long-term health of both the mother and her child. **Materials and Methods:** We conducted a cross-sectional study from January to June 2019 at a primary care clinic in Delhi, India, to estimate the burden of postpartum depression in women having an infant child. The Hindi version of the Edinburgh Postnatal Depression Scale was used to screen for the depression in the participants. Data were analyzed with IBM SPSS software version 25. $P < 0.05$ was considered statistically significant. **Results:** A total of 210 women were screened, and 61 (29%) were detected with postpartum depression. On multivariate analysis, women reporting low and medium levels of perceived social support had significantly higher odds of having postpartum depression. However, depressive symptoms were not associated with the sex and age of the infant or even the sex composition of the women's other children. **Conclusion:** Postpartum depression represents a major public health challenge in India. Regular, mandatory screening for postpartum depression is needed at primary health facilities in resource-constrained settings for an extended period postchildbirth.

KEYWORDS: *Edinburgh Postnatal Depression Scale, India, Postpartum depression, Social support*

INTRODUCTION

*P*ostpartum depression is a nonpsychotic mental health condition that affects an estimated 100–150 women/1000 births worldwide [1]. The onset of postpartum depression usually occurs after 6 weeks' postpartum, but it can present within the first 12 months after childbirth [2-4]. It is characterized by depressive symptoms in mothers indicating persistent low mood and feeling of worthlessness with easy fatigability, loss of interest, poor appetite, and sleep deprivation [4,5]. Women with untreated postpartum depression have a significantly higher likelihood of experiencing recurrent depressive episodes later in life while language and cognitive development is possibly delayed in their children [6]. Furthermore, the mother's ability to take care and nurture the baby through crucial activities such as breastfeeding can also be impaired due to postpartum depression [3].

There is growing recognition that the burden of postpartum depression is more in the low- and middle-income countries [7]. A systematic review and meta-analysis of postpartum depression in India reported a pooled prevalence of 22% (95% confidence intervals 19–25) [8]. However, there is a paucity of studies for the estimation of postpartum depression in women living in Northern India and in the Indian capital city of Delhi, which has a population of nearly 19 million. Furthermore, most Indian studies have not ascertained the risk of postpartum depression in women who had childbirth more than 6 months ago.

We conducted the present study with the objective of estimating the burden of postpartum depression and associated factors in women having an infant child.

MATERIALS AND METHODS

Design and setting

We conducted a cross-sectional study at urban primary care, public health center located in a resettlement colony of an urban slum known as the Gokalpuri locality in the North-East district of Delhi, characterized by low and moderate socioeconomic and educational status of the inhabitants. The present study was conducted from January to June 2019.

*Address for correspondence:
Dr. Nidhi Budh,
Department of Community Medicine, Maulana Azad Medical College, 2 Bahadur Shah Zafar Marg, New Delhi - 110 002, India.
E-mail: nidhib81in@gmail.com

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Participants

We enrolled adult women who were mothers of an infant child (aged <1 year) could communicate in the Hindi language and who lived in the area for at least 6 months. Women with previously diagnosed depression were excluded from the study.

Sample size

At 95% confidence levels, 5% margin of error, and considering 15% as the estimated prevalence of postpartum depression among women living in northern India [8] and also accounting for 10% nonresponse, the final sample size was calculated to be 215.

Sampling

The participants were contacted at the immunization and well-baby special clinic which is conducted twice a week at the health center. The women meeting the selection criteria were enrolled consecutively with approximately 5–10 women enrolled in a session.

Study instruments

We collected sociodemographic data from the participants using an interview schedule. We screened the women for postpartum depression applying the Hindi version of the Edinburgh Postnatal Depression Scale (EPDS) by Cox *et al.*, which is considered globally as one of the most reliable screening instruments for the estimation of postpartum depression [9,10]. The EPDS consists of ten Likert-scale items that assessed emotional experiences among women during the previous 7 days. In the EPDS, questions 1, 2, and 4 are scored 0, 1, 2, 3 for top-to-bottom response, whereas the questions 3 and 5–10 are reverse coded with bottom-to-top response scored 3, 2, 1, and 0. The maximum score is 30 with a cutoff score of ≥10 indicating the presence of postpartum depression with higher scores suggestive of increasing the severity of depression.

We assessed perceived social support among the women using the multidimensional scale of perceived social support (MPSS) by Zimet *et al.* [11]. The MPSS consists of 12 items, each rated on a five-point Likert scale that assesses the social support of the individual from three sources: family, friends, and a significant other. The MPSS score was calculated by summing the item responses across all 12 items and dividing by 12. We trichotomized the MPSS score of the respondents into three equal groups with the lowest score group designated as having low perceived support, the middle score group as medium perceived support, and the high-scoring group as having high perceived support.

The English version of the MPSS was linguistically validated into the local language Hindi. The translation process included: (a) forward translation of the original MPSS into Hindi by a native speaker; (b) the back translation into English was conducted by another native speaker; (c) this forward and back translation process was continued until the back-translated version matched with the original English version of the MPSS; and (d) the translated version was pretested in 10 women who were not included in the study to assess its comprehension.

The socioeconomic status (SES) classification of the women was based on the revised BG Prasad social classification scale applying the Indian consumer price index for industrial workers for the year 2019. The scale classifies a person as belonging to either of five socioeconomic classes with Class I signifying the highest SES and Class V the lowest SES [12,13]. We dichotomized SES into two categories: high/middle SES consisting of respondents belonging to Class I and II and low SES having respondents from Class III, IV, and V.

Statistical analysis

We analyzed the data with IBM SPSS Statistics for Windows, Version 25.0. (IBM Corp., Armonk, NY). Data were expressed in frequency and proportions for categorical variables and mean and standard deviation for quantitative variables. The association between the categorical variables was ascertained using the Chi-square test.

$P < 0.05$ was considered as statistically significant. We included the variables associated with the presence of postpartum depression in a stepwise binary logistic regression model. The final model was tested for goodness of fit by the Hosmer–Lemeshow test.

Ethics

The study was approved by the Institutional Ethics Committee of the medical college affiliated with the health clinic (F.1/IEC/MAMC/(64/04/2018/No/352). We took written and informed consent from all the study participants. Screening for postpartum depression was not part of standard care offered to mothers at the study site. Hence, the women detected with the presence of suspected postpartum depression on screening were subsequently counseled toward its causes, ways of coping, and when to seek help. In addition, the women who reported higher scores on the EPDS, especially on item-10 self-harm), were also referred to mental health specialists at a higher facility for further evaluation and management.

RESULTS

We enrolled a total of 210 married women having infants aged <1 year. The response rate of the survey was 100%, with none of the eligible women declining participation in the study.

Sample characteristics

The age of the participants ranged from 19 to 38 years, with a mean (standard deviation [SD]) age of 25.95 (3.74) years. One hundred and sixteen (55.2%) participants were educated until high school or beyond (≥10 years). There were 14 (6.6%) working women among the study participants, whereas the rest were homemakers. A total of 93 (44.3%), 70 (33.3%), 36 (17.1%), 9 (4.3%), and 2 (1%) participants were classified as belonging to the socioeconomic class I, II, III, IV, and V respectively.

Postpartum depression burden

The EPDS had a good level of internal consistency, as determined by a Cronbach's alpha of 0.80. The mean (±SD) EPDS score of the participants was 7.5 (±6.1). A total of

61 (29%) participants were detected with postpartum depression (EPDS score ≥10).

Social support

The internal consistency of the MPSS to measure social support was excellent (Cronbach's alpha 0.9). Social support was reported as low 57 (27.2%), medium 70 (33.3%), and high by 83 (39.5%) respondents.

Predictors of postpartum depression

On bivariate analysis, postpartum depression was more likely in women with lesser education (<10 years), lower SES, and those having more than one child, but the relationship was not statistically significant. However, the proportion of women detected with postpartum depression in those reporting low and medium levels of social support was higher as compared to women reporting higher levels of social support, and this difference was statistically significant ($P < 0.001$) [Table 1]. On running a binary logistic regression analysis, with three predictor variables ($P < 0.3$), only the level of social support was significantly associated with postpartum depression [Table 2]. The logistic regression model correctly classified 71.9% of cases and was statistically significant ($P < 0.001$). The Hosmer–Lemeshow goodness of fit test statistic had a P value of 0.89 from which we concluded that the model estimates the data acceptably.

DISCUSSION

Postpartum depression is increasingly being recognized as a major public health challenge in low- and middle-income countries. In the present study, more than one in four mothers (29%) having infant children were detected with postpartum depression on screening with the EPDS. The prevalence of postpartum depression identified in our study is significantly higher as compared to previous studies in northern India (15%) and also the other parts of India (22%) [8]. A study in Ethiopia by Toru *et al*. reported 22.4% of women exhibiting postpartum depression [4]. However, a systematic review by Fisher *et al*. estimated the weighed prevalence of perinatal mental health disorders in community-based studies from lower-middle countries to be 39%, much higher compared to the present study [7].

Postpartum depression has been reported to occur in women experiencing motherhood at a younger age, of low educational and low SES [8,14]. None of these sociodemographic factors were found to be significant predictors of postpartum depression in our study. Moreover, in contradiction to some previous studies [8,15], we did not find the birth of a girl child during the last pregnancy to be associated with postpartum depression in the mother. This finding indicates the potential emergence of pro girl-child societal worldviews. The Indian government had launched several pioneering social mobilization initiatives under the "Beti Bachao Beti Padao" program (3BP) in 2015 with the objective of saving and educating the girl child [16]. There exists a correlation with a similar experience in the neighboring state of Haryana, where 3BP was effective in significantly improving sex ratio at birth [17].

Table 1: Postpartum depression in study participants, Delhi, 2019 (n=210)

Variable	Total (*n*=210)	Postpartum depression present (*n*=61)	*P*
Age (years)			
18-29	170 (81)	49 (28)	0.85
≥30	40 (19)	12 (30)	
Education (years)			
<10	94 (44.8)	31 (33)	0.26
≥10	116 (55.2)	30 (25.8)	
Family type			
Joint	140 (66.7)	40 (28.5)	0.83
Nuclear	70 (33.3)	21 (30)	
Occupation			
Working	14 (6.7)	4 (28.5)	0.97
Homemaker	196 (93.3)	57 (29)	
SES			
Upper/middle	163 (77.6)	45 (27.6)	0.39
Lower	47 (22.4)	16 (34)	
Total number of children			
1	100 (47.6)	24 (24)	0.13
>1	110 (52.4)	37 (33.6)	
Age of the infant child (months)			
≤6	124 (59)	33 (26.6)	0.36
>6	86 (41)	28 (32.5)	
Number of male children			
Nil	59 (28.1)	14 (23.5)	0.29
≥1	151 (71.9)	47 (31.1)	
Number of female children			
Nil	80 (38.1)	24 (30)	0.81
≥1	130 (61.9)	37 (28.4)	
Social support			
Low	57 (27.2)	28 (49.1)	<0.001
Medium	70 (33.3)	24 (34.3)	
High	83 (39.5)	9 (10.8)	

SES: Socioeconomic status

Table 2: Distribution of factors associated with postpartum depression in study participants (binary logistic regression analysis)

Variable	Adjusted OR (95% CI)	*P*
Low social support	7.7 (3.2-18.6)	<0.001
Medium social support	4.1 (1.7-9.8)	0.001
High social support	1 (reference)	
Education <10 years	1.15 (0.6-2.1)	0.66
Education ≥10 years	1 (reference)	
Having at least one male child	1.4 (0.68-2.9)	0.34
No male children	1 (reference)	

OR: Odds ratio; CI: Confidence intervals

Social support refers to the perception of being cared about and respected by people in an individual's network involving family, friends, and significant others [18]. There is growing recognition of the association of low levels of perceived social support and postpartum depressive symptoms [19,20]. In our study, women with low levels of perceived social support were 7.7 times, and those with medium support were 4.1 times

at higher risk of having postpartum depression compared to women with high levels of social support. Furthermore, factors such as domestic violence, marital conflict with husband, or in-laws diminish social support and are also well-established risk factors for postpartum depression in mothers [21,22]. However, to reduce nonresponse, these factors were not evaluated in the present study and instead social support was used as a proxy for the other variables which comprises a study limitation. Another limitation of the present study was the cross-sectional design that precluded the detection of ongoing changes in the emotional and mental health status of the women for the entire duration of the extended postpartum period that constitutes the period of risk.

Our study results highlight the need for screening all postpartum women for depression at primary health facilities with enhanced focus on protecting women lacking social resources as they are more at risk. Future research can identify the potential role of frontline health workers like the Accredited Social Health Activists in India who already provide home-based postnatal care, in the screening, detection, and referral of women having postnatal depression [23].

Conclusion

Regular, mandatory screening for postpartum depression at primary health facilities in resource-constrained settings for an extended period postchildbirth is essential for the early detection and management of the neglected burden of postpartum depression.

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Conflicts of interest

There are no conflicts of interest.

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