

# Postpartum depression in Gujarat, India: Associations with social support, breastfeeding attitudes, and self-efficacy

Bhumika Surati<sup>1</sup>, Yogesh M<sup>1</sup>, Raza Munshi<sup>2</sup>, Roshni Vamja<sup>1</sup>

<sup>1</sup>Department of Community Medicine, Shri M P Shah Government Medical College, Jamnagar, Gujarat, India, <sup>2</sup>Department of General Medicine, GMERS, Navsari, Gujarat, India

## ABSTRACT

**Background:** Postpartum depression (PPD) is a significant public health concern with detrimental effects on maternal and child well-being. Social support, breastfeeding attitudes, and self-efficacy have been identified as potential protective or risk factors for PPD. This study aimed to investigate the associations between PPD, social support, breastfeeding attitudes, and self-efficacy among postpartum women in Gujarat, India. **Methods:** A cross-sectional study was conducted among 403 postpartum women in Gujarat, India. Data on sociodemographic characteristics, obstetric factors, PPD (assessed using the Edinburgh Postnatal Depression Scale), social support, breastfeeding attitudes, and self-efficacy were collected through structured interviews. Bivariate and multivariate logistic regression analyses were performed to examine the associations between PPD and the independent variables. **Results:** The prevalence of PPD in the study population was 50.1% (n = 202), with 28.8% (n = 116) experiencing mild depression, 16.6% (n = 67) moderate depression, and 4.7% (n = 19) severe depression. Lower educational level (n = 120, 29.8%; AOR: 1.72, 95% CI: 1.04–2.85), lower socioeconomic status (n = 242, 60%; AOR: 1.84, 95% CI: 1.12–3.02), non-exclusive breastfeeding (n = 167, 41.4%; AOR: 1.68, 95% CI: 1.11–2.54), low social support (n = 101, 25.1%; AOR: 2.51, 95% CI: 1.57–4.02), and a history of depression (n = 93, 23.1%; AOR: 2.94, 95% CI: 1.82–4.75) were significantly associated with higher odds of PPD in the multivariate analysis. In addition, negative breastfeeding attitudes and low self-efficacy levels were associated with increased odds of PPD. **Conclusions:** The findings highlight the significant associations between PPD and various sociodemographic, obstetric, and psychosocial factors among postpartum women in Gujarat, India. Interventions targeting social support, breastfeeding attitudes, and self-efficacy, as well as targeted support for women with identified risk factors, may help mitigate the burden of PPD and promote maternal well-being.

**Keywords:** Breastfeeding attitudes, India, maternal mental health, postpartum depression, self-efficacy, social support

## Introduction

Postpartum depression (PPD) is a significant public health concern affecting a substantial proportion of women after childbirth. It is characterized by a range of symptoms, including

depressed mood, loss of interest or pleasure, feelings of worthlessness or guilt, sleep disturbances, and diminished ability to think or concentrate.<sup>[1]</sup> PPD not only impacts the mental well-being of the mother but also has adverse consequences for the newborn, such as impaired mother-infant bonding, suboptimal breastfeeding practices, and potential long-term developmental and behavioral issues.<sup>[2,3]</sup>

The prevalence of PPD varies across different populations and regions, with estimates ranging from 10% to 20% in developed

**Address for correspondence:** Dr. Yogesh M,  
New PG Hostel, Shri MP Shah Medical College campus, GG  
Hospital, Patel Colony Post, Jamnagar, Gujarat - 361 008, India.  
E-mail: yogeshbruce23@gmail.com

Received: 14-05-2024

Revised: 16-05-2024

Accepted: 04-07-2024

Published: 09-12-2024

### Access this article online

#### Quick Response Code:



**Website:**  
<http://journals.lww.com/JFMPC>

**DOI:**  
10.4103/jfmpe.jfmpe\_816\_24

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Surati B, Yogesh M, Munshi R, Vamja R. Postpartum depression in Gujarat, India: Associations with social support, breastfeeding attitudes, and self-efficacy. J Family Med Prim Care 2024;13:5689-96.

countries and up to 40% in some developing countries.<sup>[4]</sup> In India, the reported prevalence rates of PPD range from 11% to 34%, highlighting the significant burden of this condition in the country.<sup>[5,6]</sup>

Several factors have been implicated in the development of PPD, including biological, psychological, and social determinants<sup>[7]</sup> Among these, social support, breastfeeding attitudes, and self-efficacy have been identified as potential protective or risk factors for PPD.<sup>[8,9]</sup>

Social support, encompassing emotional, instrumental, and informational support from family, friends, and healthcare providers, has been associated with lower rates of PPD.<sup>[10]</sup> Women who perceive strong social support are more likely to cope better with the challenges of the postpartum period and experience lower levels of stress and anxiety, reducing their vulnerability to PPD.<sup>[11]</sup>

Breastfeeding attitudes and self-efficacy have also been linked to PPD. Positive attitudes toward breastfeeding and higher self-efficacy in managing breastfeeding challenges have been shown to promote successful breastfeeding practices and reduce the risk of PPD.<sup>[12,13]</sup> Conversely, negative attitudes and low self-efficacy may contribute to breastfeeding difficulties, leading to increased stress and anxiety, which can exacerbate depressive symptoms.<sup>[14]</sup>

Understanding the associations between PPD, social support, breastfeeding attitudes, and self-efficacy is crucial for informing targeted interventions and support strategies for postpartum women, particularly in regions with a high burden of PPD, such as Gujarat, India.

This study aims to investigate the associations between PPD, social support, breastfeeding attitudes, and self-efficacy among postpartum women in Gujarat, India. The findings from this study will contribute to the existing knowledge and provide valuable insights for healthcare professionals, policymakers, and community stakeholders in developing culturally appropriate interventions and support systems to promote maternal mental health and well-being.

## Methodology

### Study design and population

This study employed a cross-sectional study design to investigate the associations between PPD, social support, breastfeeding attitudes, and self-efficacy among postpartum women in Gujarat, India from April 2023 to April 2024.

### Study setting and participants

The study was conducted in the district of Jamnagar, Gujarat, India. The study population consisted of postpartum women who had given birth within the past 12 months and were residents of Jamnagar district.

### Sample size calculation

The sample size was calculated using the formula for estimating a single proportion, considering a 95% confidence level (CI), a margin of error of 5%, and an anticipated prevalence of PPD of 31% based on previous studies.<sup>[15]</sup> Taking the non-responsive rate as 20%, the calculated sample size was 403 postpartum women.

### Sampling technique

A two-stage cluster sampling technique was employed for participant recruitment. In the first stage, primary health centers (PHCs) in Jamnagar district were selected using probability proportional to size sampling. In the second stage, a fixed number of postpartum women were randomly selected from each selected PHC by using systematic random sampling from the list of eligible women registered at the PHC.

Eligibility criteria: The following criteria were used to determine the eligibility of participants for inclusion in the study:

### Inclusion criteria

1. Women who had given birth within the past 12 months before the data collection period.
2. Residents of Jamnagar district, Gujarat, India.
3. Aged 18 years or older.
4. Able to understand and communicate in the local language(s) used for data collection.

### Exclusion criteria

1. Women with a history of severe mental illness (e.g., psychotic disorders, bipolar disorder) or intellectual disability that could interfere with their ability to respond to the study questionnaires.
2. Women with newborns who were hospitalized or had severe medical complications that could significantly impact the postpartum experience.

### Data collection

Data were collected through structured interviews conducted by trained research assistants. The interviews were carried out at the participants' homes or at the respective PHCs, depending on the preference of the participants.

The following information was gathered from the participants:

1. Sociodemographic characteristics: Age, educational level, employment status, socioeconomic status, and parity.
2. Obstetric factors: Mode of delivery (vaginal or cesarean section) and breastfeeding status (exclusive or non-exclusive breastfeeding).
3. PPD: A validated screening tool, such as the Edinburgh Postnatal Depression Scale (EPDS), was used to assess the presence and severity of PPD. The EPDS has demonstrated good reliability and validity across various cultures, with a Cronbach's alpha ranging from 0.76 to 0.88 and a sensitivity of 70%–85% and specificity of 76%–97% for detecting major depression.<sup>[16,17]</sup>

4. Social support: The Multidimensional Scale of Perceived Social Support (MSPSS), a 12-item scale that measures perceived social support from three sources: family, friends, and significant others. The MSPSS has shown good internal consistency (Cronbach's alpha = 0.88) and test-retest reliability ( $r = 0.85$ ).<sup>[18,19]</sup>
  5. Breastfeeding attitudes: A 14-item instrument that assesses attitudes and beliefs toward breastfeeding. The BABS has demonstrated adequate internal consistency (Cronbach's alpha = 0.70) and construct validity.<sup>[20]</sup>
  6. Self-efficacy: A 33-item scale that measures a woman's confidence in her ability to breastfeed. The BSES has exhibited good internal consistency (Cronbach's alpha = 0.96) and predictive validity for breastfeeding duration.<sup>[21]</sup>
  7. History of depression: Information about any previous episodes of depression was collected.
7. History of depression: Defined as a self-reported previous episode of clinically diagnosed depression, as assessed by a structured questionnaire.

### Ethical considerations

The study protocol was reviewed and approved by an institutional review board or ethics committee (Shri MP Shah Medical College and Guru Gobind Govt. Hospital) (Ref No.: 261/03/2023). Informed written consent was obtained from all participants before data collection, ensuring their voluntary participation and confidentiality.

Data quality assurance and control: Several measures were taken to ensure the quality and integrity of the data collection process. Standardized training was provided to all research assistants involved in data collection to ensure consistent administration of the interviews and scales. Pilot testing of the data collection instruments was conducted before the main study to identify and address any potential issues or ambiguities. Regular monitoring and supervision of the data collection process were carried out by the research team to maintain quality standards. Data entry was performed by trained personnel, and random checks were conducted to identify and correct any errors or inconsistencies. Appropriate measures were taken to maintain the confidentiality and privacy of the participants' data.

### Operational definitions

1. PPD: Defined as a score of 10 or higher on the Edinburgh Postnatal Depression Scale (EPDS), which is a widely used and validated screening tool for PPD. The EPDS consists of 10 items, and a higher score indicates a higher likelihood of PPD.
2. Self-efficacy level: The Breastfeeding Self-Efficacy Scale (BSES) scores were used to categorize self-efficacy levels as follows:
  - Low self-efficacy: BSES score in the lower 25<sup>th</sup> percentile of the study sample.
  - Moderate self-efficacy: BSES score between the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the study sample.
  - High self-efficacy: BSES score in the upper 25<sup>th</sup> percentile of the study sample.
3. Breastfeeding attitude: The Breastfeeding Attitude and Belief Scale (BABS) scores were used to categorize breastfeeding attitudes as follows:
  - Negative breastfeeding attitude: BABS score in the lower 25<sup>th</sup> percentile of the study sample.
  - Neutral breastfeeding attitude: BABS score between the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the study sample.
  - Positive breastfeeding attitude: BABS score in the upper 25<sup>th</sup> percentile of the study sample.
4. Social support level: The Multidimensional Scale of Perceived Social Support (MSPSS) scores were used to categorize social support levels as follows<sup>[19]</sup>
  - Low social support: MSPSS score in the lower 33<sup>rd</sup> percentile of the study sample.
  - Moderate social support: MSPSS score between the 33<sup>rd</sup> and 66<sup>th</sup> percentiles of the study sample.
  - High social support: MSPSS score in the upper 33<sup>rd</sup> percentile of the study sample.
5. Exclusive breastfeeding: Defined as feeding an infant only breast milk, without any additional food or drink, including water, except for oral rehydration solution, vitamins, minerals, or medicines.
6. Non-exclusive breastfeeding: Defined as feeding an infant breast milk in addition to other liquids or solid foods.

### Data analysis

Descriptive statistics, such as frequencies and percentages, were used to summarize the sociodemographic characteristics, PPD levels, social support levels, breastfeeding attitudes, and self-efficacy levels. Bivariate analyses, using Chi-square tests or *t*-tests, were performed to examine the associations between PPD and the independent variables (sociodemographic factors, obstetric factors, social support, breastfeeding attitudes, and self-efficacy). Multivariate logistic regression analyses were conducted to assess the independent associations between PPD (the dependent variable) and the independent variables while adjusting for potential confounding factors. Odds ratios (ORs) and 95% CIs were calculated to quantify the strength of the associations. *P* values were used to determine statistical significance, typically at a level of 0.05. Correlation analyses, with Pearson's correlation coefficients, were employed to examine the relationships between PPD, social support, breastfeeding attitudes, and self-efficacy.

## Results

### Demographic characteristics of participants

The study sample consisted of 403 postpartum women from Gujarat, India. The age distribution showed that approximately half (49.9%) of the participants were aged 26–30 years, followed by 25.3% aged 25 years or younger, and 24.8% aged 31 years or older. In terms of educational attainment, nearly half (49.1%) had completed secondary education, while 29.8% had primary

or lower education, and 21.1% had tertiary or higher education. The majority (58.6%) of the participants were unemployed, and 41.4% were employed. Regarding socioeconomic status, 60% belonged to the lower socioeconomic stratum, while 40% were from the upper socioeconomic stratum. The levels of social support varied, 25.1% reporting low support with 43.7% reporting moderate support, and 31.2% reporting high support. Concerning breastfeeding attitudes, a substantial proportion (70.5%) had a positive attitude, 22.1% had a neutral attitude, and 7.4% had a negative attitude toward breastfeeding. Self-efficacy levels were moderate for 52.4% of participants, high for 28.3%, and low for 19.4% [Table 1].

**PPD levels**

The prevalence of PPD among the study participants was assessed. Nearly half (49.9%) of the women did not experience PPD, while 28.8% had mild depression, 16.6% had moderate depression, and 4.7% had severe depression. These findings highlight the significant burden of PPD in this population [Table 2].

**Table 1: Demographic characteristics of participants**

Variable	Frequency (n)	Percentage (%)
Age (years)		
≤25	102	25.3
26–30	201	49.9
≥31	100	24.8
Educational Level		
Primary or below	120	29.8
Secondary	198	49.1
Tertiary or above	85	21.1
Employment Status		
Employed	167	41.4
Unemployed	236	58.6
Socioeconomic Status		
Lower	242	60
Upper	161	40
Social Support Level		
Low	101	25.1
Moderate	176	43.7
High	126	31.2
Breastfeeding Attitude		
Positive	284	70.5
Neutral	89	22.1
Negative	30	7.4
Self-Efficacy Level		
Low	78	19.4
Moderate	211	52.4
High	114	28.3

**Table 2: Postpartum depression (PPD) levels**

PPD Level	Frequency (n)	Percentage (%)
No Depression	201	49.9
Mild Depression	116	28.8
Moderate Depression	67	16.6
Severe Depression	19	4.7

**Correlation heatmap**

The correlation heatmap displayed in Figure 1 provides a visual representation of the relationships between four key variables related to postpartum experiences: PPD, social support, breastfeeding attitude, and self-efficacy. Each cell in the heatmap shows the correlation coefficient between the variables, ranging from -1 to 1, where 1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates no correlation.

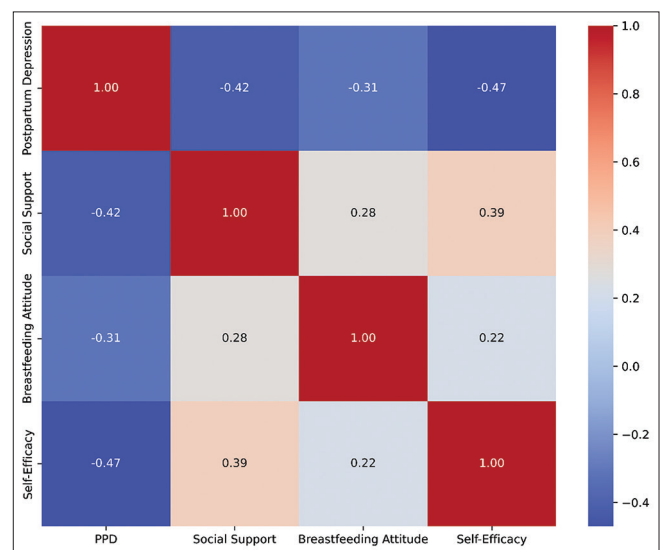
From the heatmap, we observe several notable relationships:

- There is a strong negative correlation between PPD and social support (-0.42), suggesting that higher levels of social support may be associated with lower levels of PPD.
- PPD also shows negative correlations with breastfeeding attitude (-0.31) and self-efficacy (-0.47), indicating that more positive attitudes toward breastfeeding and higher self-efficacy may contribute to lower depression levels postpartum.
- Conversely, social support shows positive correlations with breastfeeding attitude (0.28) and self-efficacy (0.39), which implies that increased social support could enhance positive breastfeeding attitudes and self-efficacy among new mothers.

The heatmap is color-coded from blue to red, where blue represents negative correlations and red represents positive correlations [Figure 1].

**Association between PPD and sociodemographic and obstetric factors**

The association between PPD and various sociodemographic and obstetric factors was examined using bivariate and multivariate logistic regression analyses. In the bivariate analysis, several factors were found to be significantly associated with higher odds of PPD, including older age (≥31 years), lower educational level (primary or below), unemployment, lower socioeconomic status, non-exclusive breastfeeding, low social support, and a history of depression. After adjusting for other



**Figure 1: Correlation heatmap**



variables in the multivariate analysis, the factors that remained significantly associated with higher odds of PPD were lower educational level (primary or below), lower socioeconomic status, non-exclusive breastfeeding, low social support, and a history of depression [Table 3].

In addition, the analysis revealed that a negative breastfeeding attitude was associated with higher odds of PPD compared to a positive attitude. Furthermore, a low self-efficacy level was associated with higher odds of PPD compared to a high self-efficacy level.

The *P* values and ORs with 95% CIs provided in the table indicate the statistical significance and strength of the associations between the variables and PPD.

## Discussion

The present study investigated the associations between PPD, social support, breastfeeding attitudes, and self-efficacy among postpartum women in Gujarat, India. The findings revealed several significant associations that have important implications for maternal mental health and postpartum care.

### Sociodemographic and obstetric factors

In line with previous research, certain sociodemographic factors were found to be associated with an increased risk of PPD. Lower educational level and lower socioeconomic status emerged as significant risk factors for PPD, even after adjusting for other variables in the multivariate analysis. These findings are consistent with studies from various contexts, suggesting that women with

**Table 3: Association between postpartum depression (PPD) and sociodemographic and obstetric factors by using bivariate and multivariate logistic regression**

Variable	Depression (Yes/No) COR (95%CI)	Bivariate Analysis <i>P</i>	AOR (95%CI)	Multivariate Analysis <i>P</i>
Age (years)				
≤25	1.52 (0.98–2.36)	0.062	1.27 (0.77–2.10)	0.349
26–30	Reference		Reference	
≥31	1.84 (1.16–2.92)	0.009*	1.61 (0.96–2.70)	0.071
Educational Level				
Primary or below	2.14 (1.38–3.33)	0.001*	1.72 (1.04–2.85)	0.034*
Secondary	Reference		Reference	
Tertiary or above	0.68 (0.41–1.13)	0.135	0.82 (0.47–1.44)	0.491
Employment Status				
Employed	Reference		Reference	
Unemployed	1.63 (1.13–2.35)	0.009*	1.29 (0.86–1.93)	0.218
Household Income				
Lower	2.27 (1.46–3.53)	<0.001**	1.84 (1.12–3.02)	0.016*
Upper	Reference		Reference	
Parity				
Primiparous	Reference		Reference	
Multiparous	1.29 (0.90–1.86)	0.167	1.08 (0.72–1.63)	0.711
Mode of Delivery				
Vaginal	Reference		Reference	
Cesarean Section	1.47 (1.01–2.14)	0.046*	1.19 (0.78–1.81)	0.420
Breastfeeding Status				
Exclusive Breastfeeding	Reference		Reference	
Non-exclusive Breastfeeding	1.92 (1.32–2.79)	0.001*	1.68 (1.11–2.54)	0.014*
Social Support				
Low	3.28 (2.14–5.03)	<0.001**	2.51 (1.57–4.02)	<0.001**
Moderate	1.76 (1.19–2.60)	0.004*	1.52 (1.00–2.31)	0.049*
High	Reference		Reference	
History of Depression				
Yes	3.67 (2.37–5.68)	<0.001**	2.94 (1.82–4.75)	<0.001**
No	Reference		Reference	
Breastfeeding attitude				
Positive	Reference	<0.001**	Reference	<0.001**
Negative	2.28 (1.2–5.4)		2.02 (1.3–5.5)	
Self-Efficacy Level				
Low	2.24 (1.04–4.2)	<0.001**	2.1 (1.12–5)	<0.001**
Moderate	1.12 (0.3–2)	0.43	1.4 (0.5–1.3)	0.33
High	Reference		Reference	

*P*<0.05\*-significant, *P*<0.001\*\*-highly significant

lower educational attainment and socioeconomic disadvantages may face greater challenges in accessing resources and support, leading to increased vulnerability to PPD.<sup>[22,23]</sup>

Regarding obstetric factors, non-exclusive breastfeeding was significantly associated with higher odds of PPD. This finding aligns with existing literature highlighting the potential impact of breastfeeding difficulties on maternal mental health.<sup>[24,25]</sup> Women who experience challenges with exclusive breastfeeding may experience heightened stress and anxiety, contributing to the development or exacerbation of depressive symptoms during the postpartum period.

### Social support

The study findings underscored the crucial role of social support in mitigating the risk of PPD. Both low and moderate levels of social support were associated with higher odds of PPD compared to high levels of support, even after adjusting for potential confounders. This finding corroborates previous research emphasizing the protective effects of social support on maternal mental health.<sup>[26,27]</sup> Adequate support from family, friends, and healthcare providers can buffer against the stress and challenges faced by postpartum women, reducing their vulnerability to PPD.

### Breastfeeding attitudes and self-efficacy

Negative breastfeeding attitudes and low self-efficacy levels were significantly associated with increased odds of PPD. These findings are consistent with previous studies highlighting the importance of positive breastfeeding attitudes and self-efficacy in promoting successful breastfeeding and reducing the risk of PPD.<sup>[9,12]</sup> Women with negative attitudes toward breastfeeding or low confidence in their ability to manage breastfeeding challenges may experience greater stress and frustration, contributing to the development of depressive symptoms.

History of depression: Unsurprisingly, a history of depression emerged as a strong risk factor for PPD in the present study. This finding aligns with the well-established evidence that women with a prior history of depression are at an increased risk of experiencing PPD.<sup>[28,29]</sup> Targeted screening and support for women with a history of depression during the perinatal period may be warranted to mitigate the risk of PPD.

### Implications

The findings of this study have important implications for maternal mental health care and support services in Gujarat and other regions with a high burden of PPD. Interventions aimed at improving social support networks, promoting positive breastfeeding attitudes, and enhancing breastfeeding self-efficacy may be effective in reducing the risk of PPD. In addition, targeted screening and support for women with lower educational levels, lower socioeconomic status, and a history of depression could aid in the early identification and management of PPD. While the findings of this study also

highlight the need for interventions targeting social support, breastfeeding attitudes, and self-efficacy, implementing such interventions in resource-limited settings like Gujarat may pose challenges. Barriers such as limited access to mental health services, cultural stigma surrounding mental health issues, and constraints on healthcare resources and funding may hinder the successful implementation and sustainability of support programs. Addressing these challenges will require a multipronged approach, including community awareness and education efforts, capacity-building for healthcare providers, and collaboration with local stakeholders and policymakers to allocate adequate resources for maternal mental health initiatives. In addition, leveraging community-based support systems and integrating interventions into existing maternal and child health services could potentially mitigate some of the resource constraints

### Limitations

While the present study provides valuable insights, it is important to acknowledge its limitations. The cross-sectional nature of the study design precludes the establishment of causal relationships between the variables. Another limitation of this study is the potential influence of confounding variables that were not accounted for in our analyses, such as a history of anxiety disorders, quality of marital relationship, and the presence of stressful life events. These factors have been previously associated with an increased risk of PPD and may have influenced the observed associations in our study. In addition, our study relied on standardized scales for assessing PPD, social support, breastfeeding attitudes, and self-efficacy, which may not have been specifically validated or culturally adapted for our study population in Gujarat, India. Future research should prioritize the validation and cultural adaptation of these assessment tools to ensure their applicability and accuracy in the local context. Future research should consider incorporating these variables to further disentangle their potential effects on PPD and the relationships with social support, breastfeeding attitudes, and self-efficacy. Longitudinal studies are needed to better understand the temporal relationships and potential bidirectional effects between PPD and the investigated factors. In addition, the study relied on self-reported measures, which may be subject to recall bias or social desirability bias. Future studies should aim to explore the potential influence of additional confounding variables, such as a history of anxiety disorders, quality of marital relationship, and the presence of stressful life events, on PPD and its associations with social support, breastfeeding attitudes, and self-efficacy. While our study was conducted in one of the districts of Gujarat in India, the findings may have broader implications for other regions or populations within India, as well as other low- and middle-income countries with similar sociocultural and economic contexts. However, it is important to note that the generalizability of the findings should be interpreted with caution as local and regional variations in cultural norms, healthcare systems, and socioeconomic factors may influence the specific associations observed in our study.

## Future research

Future research should explore the effectiveness of interventions targeting the identified risk factors, such as social support programs, breastfeeding education and counseling, and strategies to enhance self-efficacy. Longitudinal studies investigating the dynamic interplay between PPD, social support, breastfeeding attitudes, and self-efficacy over time would further deepen our understanding of these associations. In addition, qualitative research could provide valuable insights into the lived experiences and contextual factors influencing these relationships. Future research should investigate the intersectionality of various sociodemographic factors, such as age, parity, income, and education, and their combined effects on PPD and associated factors such as social support, breastfeeding attitudes, and self-efficacy. Understanding the complex interplay of these factors can inform the development of tailored interventions and support strategies for specific subgroups of postpartum women.

## Conclusion

In conclusion, the present study highlights the significant associations between PPD and various sociodemographic, obstetric, and psychosocial factors among postpartum women in Gujarat, India. Lower educational level, lower socioeconomic status, non-exclusive breastfeeding, low social support, negative breastfeeding attitudes, low self-efficacy, and a history of depression emerged as significant risk factors for PPD. These findings underscore the importance of comprehensive and culturally appropriate interventions that address these multifaceted determinants of maternal mental health. By providing targeted support and addressing the identified risk factors, healthcare professionals and policymakers can contribute to improved maternal well-being and better postpartum outcomes for both mothers and their infants.

## Acknowledgments

We acknowledge and are grateful to all the patients who contributed to the collection of data for this study. We are also thankful to Dr. Nandini Desai (Dean and Chairman of MDRU), Dr. Dipesh Parmar (Professor and Head, Department of Community Medicine) and Dr. Manish Mehta (Professor and Head, Department of Medicine) of our institute – Shri M P Shah Government Medical College, Jamnagar, India.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. First M. Diagnostic and statistical manual of mental disorders, 5th edition, and clinical utility. *Journal of Nervous & Mental Disease* 2013;201:727-9. <https://doi.org/10.1097/nmd.0b013e3182a2168a>.
2. Field T. Postpartum depression effects on early interactions, parenting, and safety practices: A review. *Infant Behav Dev* 2010;33:1-6.
3. Stein A, Pearson RM, Goodman SH, Rapa E, Rahman A, McCallum M, *et al.* Effects of perinatal mental disorders on the fetus and child. *Lancet* 2014;384:1800-19.
4. Shorey S, Chee C, Ng E, Chan Y, Tam W, Chong Y. Prevalence and incidence of postpartum depression among healthy mothers: A systematic review and meta-analysis. *J Psychiatric Res* 2018;104:235-48.
5. Upadhyay R, Chowdhury R, Salehi A, Sarkar K, Singh S, Sinha B, *et al.* Postpartum depression in India: a systematic review and meta-analysis. *Bulletin of the World Health Organization* 2017;95:706-717C. <https://doi.org/10.2471/blt.17.192237>.
6. Parsons CE, Young KS, Rochat TJ, Kringelbach ML, Stein A. Postnatal depression and its effects on child development: A review of evidence from low- and middle-income countries. *Br Med Bull* 2012;101:57-79.
7. Norhayati MN, Hazlina NHN, Asrenee AR, Emilin WMAW. Magnitude and risk factors for postpartum symptoms: A literature review. *J Affect Disord* 2015;175:34-52.
8. Razurel C, Kaiser B, Sellenet C, Edhzer E. Relation between perceived stress, social support, and coping strategies and maternal well-being: A review of the literature. *Women Health* 2013;53:74-99.
9. Fallon V, Groves R, Hallett V, Bennett K, Harrold JA. Postpartum anxiety and infant-feeding outcomes: A systematic review. *J Hum Lact* 2016;32:229-46.
10. Leahy-Warren P, McCarthy G, Corcoran P. First-time mothers: Social support, maternal parental self-efficacy and postnatal depression. *J Clin Nurs* 2012;21:388-97.
11. Dennis CL, Dowswell T. Psychosocial and psychological interventions for preventing postpartum depression. *Cochrane Database Syst Rev* 2013;2013:CD001134.
12. Zubaran C, Foresti K. The correlation between breastfeeding self-efficacy and maternal postpartum depression in southern Brazil. *Sex Reprod Healthc* 2013;4:9-15.
13. Lau Y, Chan KS. Perinatal depressive symptoms, sociodemographic correlates, and breast-feeding: A 2-year longitudinal study. *J Perinat Med* 2009;37:134-42.
14. Dennis CL, McQueen K. The relationship between infant-feeding outcomes and postpartum depression: A qualitative systematic review. *Pediatrics* 2009;123:e736-51.
15. Dubey A, Chatterjee K, Chauhan VS, Sharma R, Dangi A, Adhvaryu A. Risk factors of postpartum depression. *Ind Psychiatry J* 2021;30(Suppl 1):S127-31.
16. Cox J, Holden J, Sagovsky R. Detection of postnatal depression. *Br J Psychiatry* 1987;150:782-6.
17. Shrestha S, Pradhan R, Tran T, Gualano R, Fisher J. Reliability and validity of the Edinburgh postnatal depression scale (EPDS) for detecting perinatal common mental disorders (PCMDs) among women in low-and lower-middle-income countries: A systematic review. *BMC Pregnancy Childbirth* 2016;16:72.
18. Dahlem NW, Zimet GD, Walker RR. The multidimensional scale of perceived social support: A confirmation study. *J Clin Psychol* 1991;47:756-61.
19. Belay S, Astatkie A, Emmelin M, Hinderaker S. Intimate partner violence and maternal depression during pregnancy: A community-based cross-sectional study in Ethiopia. *PLoS*

- One 2019;14:e0220003.
20. Mora A, Russell D, Dungy C, Losch M, Dusdieker L. The Iowa infant feeding attitude scale: Analysis of reliability and validity. *J Appl Soc Psychol* 1999;29:2362-80.
  21. Dennis CL. The breastfeeding self-efficacy scale: psychometric assessment of the short form. *J Obstet Gynecol Neonatal Nurs* 2003;32:734-44.
  22. McCauley M, Zafar S, Broek N. Maternal multimorbidity during pregnancy and after childbirth in women in low- and middle-income countries: A systematic literature review. *BMC Pregnancy Childbirth* 2020;20:637.
  23. Shi P, Hui R, Hong L, Dai Q. Maternal depression and suicide at immediate prenatal and early postpartum periods and psychosocial risk factors. *Psychiatry Res* 2018;261:298-306.
  24. Dias CC, Figueiredo B. Breastfeeding and depression: A systematic review of the literature. *J Affect Disord* 2015;171:142-54.
  25. Tani F, Castagna V. Maternal social support, quality of birth experience, and postpartum depression in primiparous women. *J Matern Fetal Neonatal Med* 2020;33:739-44.
  26. Chojenta C, Loxton D, Lucke J. How do previous mental health, social support, and stressful life events contribute to postnatal depression in a representative sample of Australian women? *J Midwifery Womens Health* 2012;57:145-50.
  27. Inekwe J, Lee EE. Perceived social support on postpartum mental health: An instrumental variable analysis. *PLoS One* 2022;17:e0265941.
  28. Robertson E, Grace S, Wallington T, Stewart DE. Antenatal risk factors for postpartum depression: A synthesis of recent literature. *Gen Hosp Psychiatr* 2004;26:289-95.
  29. Cheng C, Chou Y, Chang C, Liou S. Trends of perinatal stress, anxiety, and depression and their prediction on postpartum depression. *Int J Environ Res Public Health* 2021;18:9307.