Research Report

PROPORTION OF POST-PARTUM DEPRESSION AND ANXIETY SYMPTOMS AMONG WOMEN IN A TERTIARY CARE SETTING: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Postpartum depression (PPD) and anxiety are mental health problems in the postpartum period, and many factors predispose the occurrence of this illness. This study aimed to assess the prevalence of postpartum depression and anxiety and to identify the contributing risk factors among the study population. **Materials and Methods:** A cross-sectional study was conducted among 200 women admitted to a tertiary care hospital in North India between March 2023 and April 2023. The Edinburgh Postnatal Depression Scale (EPDS) and the Patient Health Questionnaire 4 (Anxiety) were used to estimate the post-partum depression and anxiety, respectively. **Results:** The mean age of the study subjects was 26.41 (± 5.292), and most of them belonged to rural backgrounds (64%). The prevalence of postpartum depression and anxiety was 30.5% (EPDS score of 10 and above) and 24% (PHQ-4 score of ≥3), respectively. Younger age (less than 35 years), rural background, low family income, complications during pregnancy, and low birth weight of the child were significantly associated with post-partum depression and anxiety in this setting ($p < 0.05$). **Conclusion:** Depression is often not diagnosed during postpartum, which emphasizes the need for similar screening practices in obstetrical and primary care.

Keywords: Postpartum, Depression, Anxiety, Women's Mental Health, Screening

INTRODUCTION

Women have an increased risk of experiencing anxiety and depressive disorders during pregnancy, and the risk is even greater during the postnatal period. Postpartum psychological distress is a mental health problem that is unrecognized, yet devastating.[1] World Health Organization (WHO) reported that depression is the leading cause of disease burden for women in the reproductive age group.[2] Untreated psychological morbidities disrupt the early mother-infant relationship, necessitating the need for early identification and management.[3] Post-partum depression and anxiety could lead to adverse effects on the entire family, with serious implications for the developmental and psychological outcomes of the child.[4] Apart from these, untreated depression is associated with poor maternal health outcomes on a long-term basis and increases the risk of physical and cognitive impairment.[5]

Many factors predispose women to post-partum depression, like lack of social and family support, intimate partner violence, planned or unplanned pregnancy, preference for the gender of the baby, poor relationship with a partner or family, low socioeconomic status, previous personal history of depression or anxiety, poor physical health of the baby, such as low birth weight, premature

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birth etc.[6,7] Even though there are effective psychological and pharmacological treatment strategies, most of the women who suffer from postpartum depression and anxiety do not take advantage of them.[8] This study seeks to offer new empirical insights into the proportion of postpartum depression and anxiety in a tertiary care setting in North India, and to identify its contributing risk factors.

MATERIALS AND METHODS

A cross-sectional study was conducted among women admitted to a tertiary care hospital in North India, with data collection conducted between March 2023 and April 2023 after Institutional Ethics Committee approval. The reporting structure of the study follows the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) initiative. Postpartum depression was operationally defined as the type of depression that happens within 6 weeks of giving birth. Individuals who can understand and communicate in Hindi and English without any impairment were included in the study. Women admitted to the post-natal ward of a tertiary care hospital in North India were considered study subjects. Mothers who do not have any present history or are not taking treatment for any mental illness and who are in the postpartum period within 6 weeks of delivery were included in the study. Participants with a history of cognitive impairment, those who did not give consent, and those unwilling to participate or unable to respond to instructions were excluded from the study.

The prevalence of the target condition was assumed to be 6% based on a previous study using similar research scales and settings.[9] Considering the 95% confidence interval and absolute precision of 5% in the estimated prevalence with a design effect of 2, the minimum sample size required was calculated to be 174 using Open Epi version 2.3, developed by the Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA. (Source:- https://www.openepi.com/SampleSize/SSPropor.htm) Assuming a nonresponse and duplicate-response rate of 10%, the minimum total sample size was estimated at 191, and we planned to continue recruitment until we reached a rough estimate of 200.

Socio-demographic data were collected using a data sheet that included the age, religion, domicile, marital status, occupation, education, family type, and income. The Edinburgh Postnatal Depression Scale (EPDS) and the Patient Health Questionnaire 4 (Anxiety) were used to estimate the post-partum depression and anxiety, respectively. **Edinburgh Postnatal Depression Scale (EPDS)**: The 10-question Edinburgh Postnatal Depression Scale (EPDS) is a valid and efficient tool for identifying patients at risk for maternal depression. The following cut-off scores were used for estimating the severity of depression: none or minimal depression (0–6), mild depression (7–13), moderate depression (14–19), and severe depression (19–30).[10] **Patient Health Questionnaire 4 (Anxiety):** The PHQ-4 is a valid ultra-brief tool that consists of a 2-item depression scale (PHQ-2) and a 2-item anxiety scale (GAD-2). The present study used the 2-item anxiety scale and a total score of ≥3 for the first two questions for the estimation of anxiety.[11]

After obtaining written informed consent, consecutive participants satisfying the inclusion criteria were given the socio-demographic data sheet. Following this, the Edinburgh Postnatal Depression Scale (EPDS) and the Patient Health Questionnaire 4 (Anxiety) were completed, and the principal investigator clarified any difficulty with completing the forms or understanding any questions.

Means and standard deviations were reported for continuous variables, whereas categorical variables were presented as frequencies and percentages. The association between postpartum psychological distress and the related factors was analyzed using the Chi-square test/ Fisher exact test. Data were analysed with the use of a statistical program- IBM's Statistical Package for the Social Sciences (SPSS for Windows version 20.0 software, IBM, Chicago Inc., IL, USA). A statistical significance of 0.05 ($p< 0.05$) was adopted throughout the study.

RESULTS

In total, 250 potential subjects were invited to participate in the study, of whom 200 completed the full questionnaires. The mean age of the study subjects was 26.41 (SD = 5.23), and more than half of the study subjects were in the 21-35-year age group (58.3%). Most of them were Hindu (97%), lived in nuclear families (65.5%), and were from rural backgrounds (64%). About 8.5% of them were illiterate, and 30.5% of them had low financial status. (Table 1)

Table 1: Socio-Demographic Profile of Participants

Variable	Frequency	Percentage
Age (in years)		
17-20 years	78	39%
21-35years	109	54.5%
Above 35 years	13	6.5%
Religion		
Hindu	194	97%
Muslim	6	3%
Others	0	0%
Place of residence		
Rural	128	64%
Urban	72	36%
Type of family		
Joint	69	34.5
Nuclear	131	65.5
Education		
Illiterate	17	8.5%
Secondary school	67	33.5%
Graduation	82	20%
Above graduation	34	17%
Family monthly income		
Below 20,000	61	30.5%
20,000 to 50,000	119	59.5%
More than 50,000	20	10%

The proportion of possible depression among the study women (an EPDS score of 10 and above) was found to be 30.5%. The proportion of major depression (a score of 13 and above) was found to be 20% (40/200). Out of 200, 48 women had a total score of ≥3 in the first two questions of PHQ-4, with a prevalence rate indicating 20% of post-partum anxiety in the study subjects.

Individuals aged 21-35 have the highest proportion of depression and anxiety compared to other age groups ($p =0.01$), while those with a nuclear family had a higher proportion of depression ($p = 0.04$). Individuals with low educational status ($p=0.01$) and low family income ($p=0.01$) have the highest proportion of depression and anxiety. There is no substantial variation in the frequency of depression and anxiety based on the residential status. Religion, place of residence, and type of family do not show significant differences in anxiety and depression scores. (Table 2)

Table 2: Association of Post-partum Depression and Anxiety with Socio-demographic Variables

Demographic Variable	EPDS <10 (f)	EPDS >10 (f)	X2 p	PHQ <3 (f)	PHQ >3 (f)	X2 p
Age						
17-20 years	13	7	18.01 0.01*	15	5	9.21 0.01*
21-35years	123	43		131	35	
Above 35 years	3	11		6	8	
Place of residence						
Rural	86	42	0.96 0.61	94	34	1.28 0.25
Urban	53	19		58	14	

Type of family						
Joint	41	28	5.64 0.04	48	21	2.39 0.12
Nuclear	98	33		104	27	
Education						
Illiterate	5	12	28.69 0.01*	10	7	12.93 0.01*
Secondary school	41	26		44	23	
Graduation	70	12		72	10	
Above graduation	23	11		26	8	
Family monthly income						
Below 20,000	25	36	39.19 0.01*	33	28	24.52 0.01*
20,000 to 50,000	101	18		104	15	
More than 50,000	13	7		15	5	

Significant differences are observed across several factors. A family history of depression, poor relationships with husbands, lack of family support, financial difficulties, unplanned pregnancies, pregnancy complications, preterm or low birth weight (LBW) babies, and a strong gender preference are all more common in the group with EPDS >10. For instance, financial difficulties are significantly higher in the EPDS >10 group compared to the EPDS <10 group, with a p-value of 0.01. Key findings indicate significant association between higher anxiety scores and several factors. A family history of depression is more common in individuals with higher scores on anxiety component of PHQ-4 (X^2 = 16.23, p = 0.01). Similarly, a poor relationship with the husband, lack of family support, and financial difficulties are significantly associated with higher anxiety scores, with X^2 values of 29.84 (p = 0.01), 52.80 (p = 0.01), and 81.45 (p = 0.01) respectively. Pregnancy-related factors, such as unplanned pregnancy and complications during pregnancy, also show a significant association with higher anxiety scores, as do preterm or low birth weight (LBW) babies and strong gender preference, with X^2 values indicating strong significance (p = 0.01). Taken together, the findings revealed that the presence of financial difficulties, complications during delivery, and preterm or low birth weight were significantly associated with the likelihood of developing self-reported depressive and anxiety symptoms among postpartum women in this setting. (Table 3)

Table 3 Association of Depression and Anxiety with Socio-Clinical Factors

Variable	EPDS <10 (f)	EPDS >10	X^2/Fisher Exact p	PHQ <3	PHQ >3	X^2/Fisher Exact P
History of Depression						
Present Absent	0 139	1 60	4.02 0.13	0 152	1 47	3.18 0.07
Family History of Depression						
Present Absent	0 139	5 65	20.51 0.01*	0 152	5 43	16.23 0.01*
Relationship with Husband						
Poor Good	1390	529	37.70.01*	1520	399	29.840.01*
Family Support						
Poor Good	1390	3526	68.680.01*	1475	2721	52.800.01*
Financial Difficulties						
Present Absent	7 132	44 17	100.74 0.01*	15 137	36 12	81.45 0.01*
Pregnancy-Related Factors						
Planned Unplanned	1381	412221	49.14 0.01*	1475	3216	35.03 0.01*
Complications During Pregnancy						
Present Absent	6 133	5110	131.54 0.01*	18134	399	86.24 0.01*
Gestational Status						
Preterm Term	11 128	578	128.96 0.01*	24128	444	93.59 0.01*
Strong Gender Preference						
Yes No	0 139	3724	62.19 0.01*	4148	2820	52.6 0.01*

DISCUSSION

In this hospital-based cross-sectional study done among 200 women in the post-natal ward of a tertiary care hospital in Northern India, the proportion of depression and anxiety during the postpartum period was found to be 30.5% and 24% respectively. The research on maternal depression reports a wide variation in the prevalence of post-partum depression across the globe.

A systematic review of studies conducted in high-income countries reported a pooled prevalence of 12.9% (95% CI: 10.6–15.8) of depression at three months postpartum.[12] Similar data from studies conducted in low- and middle-income countries reported a pooled proportion of 19.2% post-partum depression.[13] Strikingly, a meta-analysis of the burden of postpartum depression in Indian mothers reported the overall pooled estimate of the prevalence of postpartum depression as 22% (95% CI: 19–25).[14] In addition, the prevalence of depression in this study was different from that found in the regional studies conducted in India (19.8%- 23%)[15,16] and also in other countries such as China (27.6%), Australia (16.9%), and Lisa Segre (15.7%).[17-19]

We found the proportion of anxiety among postnatal mothers as 24% (48/200). A study from Qatar, based on the Depression, Anxiety, and Stress Scale, reported the prevalence of postpartum anxiety as 13%.[20] A study done in the North-East region of India reported 11% of generalized anxiety disorders in mothers attending the postpartum clinic.[21] These differences in the proportion could be interpreted with various study contexts, such as differences in methodology, screening tools, and cut-off scores, time of data collection concerning delivery, and diverse socio-cultural factors. To cite, the present study used the first two items of the PHQ-4 to screen for anxiety; therefore, the anxiety level should be interpreted based on the impression of this ultra-short anxiety screener.

The present study identified that younger age (less than 35 years), rural background, low family income, financial constraints, complications during pregnancy, and low birth weight of the child were significantly associated with post-partum depression and anxiety in this setting ($p < 0.05$). This might be due to sampling bias in the hospital setting, as more individuals from these specific backgrounds may be accessing care at this facility. However, these factors could be compared to those reported as risk factors for post-partum depression in a study conducted in the Indian setting.[22] A study from North India identified low birth weight as a predisposing factor for PPD.[23] Psychosocial factors have a direct bearing on maternal mental health. Desire or preference for a male baby, which is deep-rooted in the rural settings of India, causes stressful events during the gestational period, and the risk of depression becomes even greater if a girl child is born. Thus, our findings corroborate previous studies conducted in the Indian setting.[24] Mental health professionals have a crucial role in screening for post-partum depression as it prevents distressing consequences on mother and child. Women in the postpartum period are likely to have close contact with the health system, so nurses and general physicians are well placed to identify the warning signs and symptoms of PPD and could thus provide an adjunct to screening for the benefit of women, infants, and families.[25] Therefore, they should be trained in the correct knowledge and necessary tools to find optimal solutions to PPD.

The present study is the first of its kind in Haryana, a northern state in India which will not only give valuable inputs to the extent of this disease entity but shall also apprise the policymakers to assign resources for capacity building in maternal mental health care by evolving and executing new guidelines/protocols for effective screening, management and the ultimate reduction of the burden of PPD. This

was a hospital-based study, which may not be representative of the true population and is therefore prone to selection bias, hindering extrapolation to the general population. Larger community-based studies on PPD are thus warranted. Using a single scale to gauge the presence of probable depression is yet another limitation since EPDS is a screening tool for PPD and not a confirmatory one. However, abortion or stillbirth cases did not turn up for follow-up during the study period, and consequently, their association with PPD could not be assessed. The psychiatric clinical diagnosis for those who are identified as at risk for psychological distress was not carried out due to logistical reasons.

CONCLUSION

The findings of the present study revealed that nearly 20%-30% of study subjects had postpartum psychological distress in this setting. Depression is often not diagnosed during postpartum, which emphasizes the need for better screening in obstetrical and primary care. Given the magnitude of the PPD, more studies should be conducted across diverse settings to build an evidence base to support screening practices in routine clinical settings.

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