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Postpartum anxiety and its associated factors: A hospital based observational study

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Abstract

Background: Postpartum anxiety (PPA) remains relatively under-researched despite its significant impact on maternal well-being. This study aimed to assess the incidence of postpartum anxiety and identify associated demographic, obstetric, and medical risk factors leading to postpartum anxiety.

Methods: A prospective observational study was conducted on 738 postpartum women at Mahatma Gandhi Medical College & Hospital, Jaipur, from September 2022 to February 2024. Participants were evaluated for anxiety symptoms using the Perinatal Anxiety Screening Scale (PASS) immediately postpartum and at six weeks. Demographic, obstetric, and medical risk factors were analyzed for their association with occurrence of postpartum anxiety and gravity of anxiety symptoms.

Results: The incidence of postpartum anxiety was 21.7% immediately after delivery (20.3% mild-moderate, 1.4% severe) and decreased to 17.6% at six weeks postpartum (16.7% mild-moderate, 0.9% severe). Lower socioeconomic status, working status and multiple abortions showed significant relationship with postpartum anxiety. NICU admission, cesarean delivery and complications during childbirth were also significant risk factors. ($p<0.001$)

Conclusion: The study identified several modifiable risk factors for postpartum anxiety. Early screening and targeted interventions focusing on high-risk groups

could help reduce the prevalence and impact of postpartum anxiety.

Keywords: Postpartum Anxiety, Perinatal Mental Health, Risk Factors, PASS Scale, Obstetric Factors, Socioeconomic Factors

Introduction

The postpartum stage is a challenging period when a woman transitions into a new role as a mother and caring for a newborn. Though certain degree of anxiety in response to becoming a new mother is normal, and even adaptive.

Some mothers may experience anxieties that are excessive and debilitating. If these anxiety symptoms persist, it can cause an impairment in managing the abilities of day-to-day life.[1] Physiologic changes, such as alterations in inflammatory mediators, hormones, and even sleep during and after pregnancy, may play a role. During the first trimester, pro inflammatory helper T cells and cytokines, such as IL- 6 and TNF-α, proliferate to aid in the implantation and placentation of the fetus.[2] These inflammatory markers are involved in the up regulation of cortisol release, the primary stress hormone, from the adrenal cortex.[2] Genetic mediation also plays a role in the intergenerational transmission of both depression and anxiety partly. [3-7]

Physical symptoms associated with anxiety disorder include fatigue, irritability, difficulty in concentrating, and sleep disturbances.[1] These symptoms can be categorized by patient and provider as normal in the postpartum period, leading to a subsequent delay in diagnosis and treatment.[1]

General anxiety disorder (GAD) is clinically defined as a disproportionate and overwhelming worry that can result in deficiencies in functioning.[1]

As per Goldfinger et al. approximately 20−25% women suffer from anxiety during the transition to parenthood [2] of which 10−20% will have depressive episodes. [2]

Postpartum depression (PPD) symptoms can be experienced within four weeks after childbirth, commonly manifesting as crying spells, insomnia, depressed mood, fatigue & poor concentration, excessive sadness or feelings like mother can't take care of herself or her baby. [Sainz et. Al. 2013]

Postpartum anxiety is more prevalent than postpartum depression but is often underdiagnosed by patients and clinicians. Fairbrother et al. study found the incidence of postnatal anxiety was 17.1%, surpassing the incidence of postpartum depression at 4.8%. [8]

Women with history of GAD, Post-traumatic stress disorder, domestic abuse and also lack of education and social support are at higher risk for developing anxiety in the postnatal period.[9]

Postpartum anxious women are more likely to report concerns regarding their abilities as a parent [10] while perinatal women more likely to worry about others judgments of them.[10] It can be associated with disrupted mother–infant attachment, postpartum depression, reduced breastfeeding, increased risk of infant abuse, delayed cognitive and social development in infants, and an increased likelihood of anxiety in children. [11]

Postnatal anxiety may have short- and long-term consequences for both mother and child. Various studies report postpartum anxiety incidence estimates ranging from 3% to 43%.[12-14] Research suggests that elevated untreated perinatal anxiety may negatively impact maternal health, child development, and mother-infant relationships[15-17] Women with postpartum anxiety are more likely to discontinue breast-feeding or are less likely to initiate breast-feeding in the first place. [18-19]

On the other hand, anxiety suffered by fathers is associated with a child's long-term social–emotional and cognitive outcome through its impact on the parent–child interaction and with an increased risk of interparental conflict and higher levels of difficulties in infant temperament. (Ramchandani et al., 2005, 2011; Wilson and Durbin, 2010).

Screening & Diagnosis

The American Congress of Obstetricians and Gynaecologists recommends that anxiety, in addition to depression, be screened for at least once during the perinatal period with a standardized, validated instrument. [20]

Tools Available

Edinburgh Postnatal Depression Scale (EPDS)[21], State-Trait Anxiety Inventory-Form Y (STAI-Y-1)[22], Mini International Neuropsychiatric Interview (MINI)-6th Edition[23], Postpartum Social Support Questionnaire (PSSQ)[24], Postpartum Bonding Questionnaire (PBQ)[25], Inventory of Functional Status After Childbirth[26] P arental Stress Index-Short Form (PSI-SF) [27].

The Perinatal Anxiety Screening Scale (PASS)[28] is one of the very few scales developed for and validated with perinatal women. The PASS has 31 items that screen for a range of anxiety symptoms. At a cutoff score of 26, psychometric testing demonstrated an area under the curve of 0.7, with a sensitivity of 70% and specificity of 30%.

Methodology

We conducted this hospital-based prospective observational study at the Department of Obstetrics and Gynecology, Mahatma Gandhi Medical College & Hospital, Jaipur, over 18-month period from September 2022 to February 2024 after obtaining institutional ethics committee approval. Written informed consent was obtained from all participants before enrollment in the study.

Study Population and Sample Size

The study included 738 women who delivered at MGH, during the study period. The sample size was determined based on previous studies showing postpartum anxiety prevalence of approximately 20% in similar settings, with a 95% confidence interval and 5% margin of error. Women aged 18-40 year, up to 6 weeks postpartum, having alive and healthy baby, willing to participate were included in the study. Those women with a stillborn or congenitally malformed baby, having a concurrent diagnosis of any other major psychiatric disorder (other than depression and anxiety), substance dependence and receiving pharmacotherapy for the same were excluded from the study.

Data Collection Tools and Process

Data collection was performed using a comprehensive, pre-designed patient proforma including the Perinatal Anxiety Screening Scale (PASS). The proforma consisted of four distinct sections: demographic details (including age, religion, residence, education, family type, socioeconomic status, and occupation), current obstetric details (parity, period of gestation, mode of delivery, course of labour , any intrapartum or postpartum complications) neonatal outcome including maturity (term/ preterm) birth weight, neonatal sex, NICU admission, and any neonatal complications), past obstetric history (including previous deliveries, abortions, complications, and anxiety/depression history), and past medical/surgical history. The PASS, a validated 31-item self-report instrument, was used to screen for anxiety symptoms. This scale measures four key domains: acute anxiety and adjustment disorder, general worry and specific fears,

perfectionism/control/trauma, and social anxiety. Each item is scored from 0 ("not at all") to 3 ("almost always"), with a total possible score ranging from 0 to 93. Scores were categorized as asymptomatic (0-20), mild-moderate symptoms (21-41), and severe symptoms (42-93). The PASS was administered in both English and the local language (Hindi) to ensure proper understanding and accurate responses.

Assessment Timeline

Participants were evaluated at two time points: immediately after delivery during their hospital stay and at 6 weeks postpartum during their follow-up visit. For illiterate participants, the questionnaires were administered through interviews using the same proforma to maintain consistency in data collection.

Statistical Analysis

Data analysis was performed using Statistical Package for Social Sciences (SPSS) version 20. Quantitative data was presented as mean, median, standard deviation, and confidence intervals. Qualitative data was expressed as frequencies and percentages. The student t-test was used to assess quantitative independent variables. For qualitative independent data, Pearson Chi-Square and Chi-Square for Linear Trend tests were employed. A p-value of less than 0.05 was considered statistically significant. Factor structure analysis of the PASS was conducted using principal components analysis with oblique rotation. Diagnostic accuracy assessed through receiver operating characteristic (ROC) curve analysis to determine optimal cutoff scores.

Results

The analysis of data from 738 postpartum women revealed significant patterns in anxiety prevalence and associated risk factors. Age distribution showed a non-significant trend ($p=0.063$), we found higher mild-moderate anxiety rates in women >30 years (24.7%). Socio-economic status emerged as a significant factor ($p<0.000$), with lower socioeconomic groups showing notably higher rates of mild-moderate anxiety (24.0%) compared to middle (15.7%) and upper (19.4%) classes. Working status demonstrated the most striking association ($p<0.000$) with working women experiencing substantially higher rates of both mild-moderate (72.6%) and severe anxiety (11.3%) compared to non-working women (15.5% and 0.4% respectively) suggesting that occupational stress combined with postpartum responsibilities significantly increases anxiety risk. Family type showed similar anxiety distributions between joint and nuclear families, though joint families showed slightly higher rates of severe anxiety (2.1% versus 0.7%). The findings particularly highlight the vulnerability of working women and those from lower socioeconomic backgrounds indicating a critical need for targeted mental health support and interventions for these specific demographic groups during the postpartum period. This multifaceted analysis underscores the complex interplay of socio-demographic factors in postpartum anxiety development and emphasizes the importance of considering these variables in postpartum care planning (Table 1).

Table 1: Demographic Characteristics and Anxiety Severity (N=738)

Characteristic	Asymptomatic	Mild-Moderate	Severe	P-value
	n (%)	n (%)	n (%)	
Age Group				
≤20 years	22 (88.0%)	3 (12.0%)	0 (0.0%)	0.063
21-25 years	185 (79.7%)	42 (18.1%)	5 (2.2%)	
26-30 years	221 (79.2%)	55 (19.7%)	3 (1.1%)	
>30 years	150 (74.3%)	50 (24.7%)	2 (1.0%)	
Socioeconomic Status				
Lower	309 (75.0%)	99 (24.0%)	4 (1.0%)	0.000*
Middle	166 (84.3%)	31 (15.7%)	0 (0.0%)	
Upper	103 (79.8%)	20 (19.4%)	6 (0.8%)	
Working Status				
Working	10 (16.1%)	45 (72.6%)	7 (11.3%)	0.000*
Non-working	568 (84.0%)	105 (15.5%)	3 (0.4%)	
Family Type				
Joint	256 (77.3%)	68 (20.5%)	7 (2.1%)	0.267
Nuclear	322 (79.15)	82 (20.1%)	3 (0.7%)	

*Statistically significant ($p<0.05$)

Table 2: Obstetric Factors and Anxiety Severity

Factor	Asymptomatic n (%)	Mild-Moderate n (%)	Severe n (%)	P-value
Gravida				
Primigravida	376 (74.2)	121 (23.9)	10 (1.9)	0.000*
Multigravida	202 (87.4)	29 (12.6)	0 (0.0)	
Mode of Delivery				
LSCS	170 (69.4)	70 (28.6)	5 (2.0)	0.027*
Vaginal	408 (82.8)	80 (16.2)	5 (1.0)	
NICU Admission				
Yes	22 (40.7)	25 (46.3)	7 (13.0)	0.001*
No	556 (81.3)	125 (18.3)	3 (0.4)	
Previous Abortions				
No abortion	402 (85.3)	67 (14.2)	2 (0.4)	0.000*
Single	154 (77.4)	42 (21.1)	3 (1.5)	

Multiple	22 (32.4)	41 (60.3)	5 (7.3)	
Complication during/ following delivery				
Yes	0 (0.0)	143 (95.3)	0 (0)	0.001*
No	588 (100)	7 (4.7)	0 (0)	
Husband support during pregnancy				
Enough	307 (53.1)	84 (56)	5 (50)	0.148
Little	236 (40.8)	62 (41.3)	3 (30)	
Not at all	35 (6.1)	4 (2.7)	2 (20)	

*Statistically significant ($p<0.05$)

The analysis of obstetric factors in relation to anxiety severity revealed several statistically significant associations that provide crucial insights into the risk factors for postpartum anxiety. Parity emerged as a significant predictor of anxiety ($p<0.000$), with primigravida women showing markedly higher rates of both mild-moderate (23.9%) and severe anxiety (1.9%) compared to multigravida women, who demonstrated lower anxiety levels (12.6% mild-moderate, 0% severe). The mode of delivery significantly influenced anxiety levels ($p=0.001$) with women who underwent caesarean section experiencing higher rates of both mild-moderate (28.6%) and severe anxiety (2.0%) compared to those who delivered vaginally (16.2% mild-moderate, 1.0% severe). NICU admission demonstrated a particularly strong association with anxiety severity ($p=0.001$), with 46.3% of these mothers experiencing mild-moderate anxiety and 13.0% experiencing severe anxiety, compared to significantly lower rates in mothers whose babies did not require NICU admission (18.3% mild-moderate, 0.4% severe). Previous abortion history emerged as another significant factor ($p<0.000$), showing anxiety severity increased with the number of previous abortions. Women with multiple abortions showed the highest rates of both mild-moderate (60.3%) and severe anxiety (7.3%), followed by those with single abortions (21.1% mild-moderate, 1.5% severe), while women with no abortion history had the lowest rates (14.2% mild-moderate, 0.4% severe). These findings highlight the complex interplay between obstetric history and postpartum mental health, suggesting that women with complicated obstetric histories, particularly those involving multiple abortions, caesarean deliveries, or NICU admissions, may benefit from enhanced psychological support and closer monitoring during the postpartum period (Table 2). Complication during/following delivery showed mild-moderate anxiety among 95.3% mothers with significance($p=0.001$). Husband support during pregnancy, has maximum number of asymptomatic females (53.1%) Though not statistically significant ($p=0.148$), shows a trend where more support correlates with higher asymptomatic rates.

Table 3: Changes in Anxiety Severity according to PASS

Anxiety Severity Postpartum	Immediate (N=738) n (%)	6 Weeks Postpartum (N=530) n (%)
Asymptomatic	578 (78.3%)	436 (82.2%)
Mild-moderate	150 (20.3%)	89 (16.7%)
Severe	10 (1.4%)	5 (0.9%)

The temporal analysis of anxiety severity demonstrates a notable improvement in anxiety symptoms from immediate postpartum to the 6-week follow-up period. Initially, among the total 738 participants, 78.3% were asymptomatic, while 20.3% experienced mild-moderate anxiety and 1.4% experienced severe anxiety. At the 6-week follow-up assessment, despite a loss of 208 participants to follow-up, the remaining 530 women showed an encouraging trend toward symptom improvement. The proportion of asymptomatic women increased to 82.2%, while mild-moderate anxiety cases decreased to 16.7%, and severe anxiety cases reduced to 0.9%. This positive trend suggests a natural tendency toward anxiety symptom resolution during the postpartum period. However, the persistence of anxiety symptoms in approximately 17.6% (mild-mod-severe) of women at 6 weeks postpartum indicates the need for monitoring, proper treatment and support beyond the immediate postpartum period. The loss to follow-up of 208 participants (28.2% of the initial cohort) should be considered when interpreting these results, as it may affect the generalizability of the findings and could potentially represent a different pattern of anxiety progression in these women (Table 3).

Discussion

This comprehensive hospital-based observational study provides significant insights into the prevalence, patterns, and associated factors of postpartum anxiety in a tertiary care setting. The study revealed that 21.7% of women experienced anxiety symptoms immediately postpartum, with 20.3% having mild-moderate symptoms and 1.4% having severe symptoms. These findings broadly align with Dadhwal et al.[29] and Maria et al.[30], though our prevalence rates were higher than some previous studies, potentially due to different assessment methods, timing, and sociocultural contexts. The age distribution analysis in our study revealed that anxiety was common across all age groups, consistent with Lenze and Wetherell[31].

Socioeconomic status emerged as a significant factor, with lower status correlating with higher anxiety rates. This strongly supports findings by Melchior et al.[32] and McLaughlin et al.[33], who reported similar associations. Working status showed a particularly striking correlation with anxiety, with working women experiencing significantly higher rates. This robustly aligns with research by Melchior et al.[32] regarding work-related stress and mental health outcomes, possibly reflecting the challenges of balancing professional responsibilities with postpartum recovery and infant care.

Our finding that primigravida patients showed higher anxiety rates correlates to Figueiredo and Conde[34], who found higher anxiety in primigravida women. The association between previous premature births and anxiety supports findings by Bayrampour et al.[35] and Blackmore et al.[36] highlighting how past obstetric complications can influence current psychological well-being.

Mode of delivery significantly influenced anxiety levels, with cesarean sections associated with higher anxiety

rates. This supports findings by Xu et al.[37] and Tonei[38], possibly reflecting the impact of surgical intervention and extended recovery periods. The strong association between NICU admission and severe anxiety aligns with research by Alkozei et al.[39] and Matricardi et al.[40], underscoring how neonatal complications can significantly impact maternal mental health.

The temporal improvement in anxiety symptoms from immediate postpartum to 6 weeks (20.3% to 16.7% for mild-moderate symptoms) generally aligns with the natural course of postpartum anxiety reported by Wenzel et al[41] However, the persistence of symptoms in a significant proportion of women highlights the importance of continued monitoring, as emphasized by Paul et al.[42] This pattern suggests that while natural recovery occurs in many cases, a substantial subset of women may require ongoing support and intervention.

These findings underscore the complex interplay of socioeconomic, occupational, and obstetric factors in postpartum anxiety, suggesting the need for targeted screening and intervention strategies. The identification of specific risk factors provides valuable guidance for healthcare providers in developing preventive strategies and early interventions. The results also highlight the importance of long-term follow-up and support systems, particularly for high-risk groups such as working mothers, those from lower socioeconomic backgrounds, and women with complicated obstetric histories.

Conclusion

This comprehensive study on postpartum anxiety among 738 women has yielded significant insights into its prevalence, risk factors, and temporal patterns. The findings reveal that approximately one-fifth of women experience anxiety symptoms in the immediate postpartum period, with rates showing modest improvement by six weeks postpartum. Several key risk factors have been identified including lower socioeconomic status, working status, complicated obstetric history, and NICU admission of the newborn. Working women, in particular, demonstrated significantly higher rates of anxiety, suggesting the need for targeted support for this demographic group. The persistence of anxiety symptoms at six weeks postpartum in a significant proportion of women indicates the need for extended monitoring and support beyond the immediate postpartum period. The strong associations between anxiety and various obstetric complications, including previous abortions and cesarean deliveries, highlight the importance of comprehensive mental health support in obstetric care. This suggests the need for routine anxiety screening during postpartum care, particularly for women with identified risk factors. The development of targeted intervention strategies, especially for working mothers and those from lower socioeconomic backgrounds, could significantly improve postpartum mental health outcomes. Furthermore, the study underscores the importance of an integrated approach to postpartum care that addresses both physical and mental health needs.

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