



ORIGINAL ARTICLE

Postpartum Depression and Anxiety: Prevalence and Associated Factors Across the Perinatal Period in a Tertiary Care Hospital

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Abstract

Introduction: The most common psychological conditions affecting women during their postnatal period are Postpartum depression and anxiety. Both conditions have a significant implication on maternal and infant health. There is a complex interplay of biological, psychological, and social factors that are attributed to the condition. Early identification is advocated in order to prevent adverse outcomes. However, the proportion of undiagnosed cases are still high. **Materials and Methods:** This was a prospective observational study. It was conducted among 500 postnatal women who attended a tertiary care hospital in southern Tamil Nadu. All the Participants who fulfilled the inclusion and exclusion criteria were recruited if willing after obtaining informed consent. Prior institutional ethical committee approval was obtained. A structured questionnaire was developed to capture the data on sociodemographic characteristics, obstetric history, and postnatal factors. **Results:** Most participants were in the age group of 21–30 years (72.8%). A High risk of depression was noted among 35.4% of participants, while another 30.4% and 34.2% had moderate risk and low risk, respectively. When applied State-Trait Anxiety Inventory (STAI), we observed that 30.6% had high levels, another 37.4% had moderate, and 32% had low levels of anxiety. Psychological distress (moderate to high) was observed among a substantial proportion of women. However, there was no statistically significant association between sociodemographic, obstetric, or postnatal factors and Depression/Anxiety. **Conclusion:** Prevalence of Postpartum depression and anxiety among postnatal women is on the rise. The absence of any significant associations with specific risk factors highlights the multifactorial nature of these conditions and also underscores the need for universal screening and early intervention of anxiety and depression so to improve maternal and neonatal outcomes.

Keywords: Postpartum depression, Postpartum anxiety, EPDS, STAI, Maternal mental health

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Graphical Abstract

Postpartum Depression and Anxiety: Prevalence and Associated Factors Across the Perinatal Period in a Tertiary Care Hospital

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Introduction

The most common psychological conditions affecting women during their postnatal period are Postpartum depression and anxiety. Both conditions have a significant implication on maternal and infant health. There is a complex interplay of biological, psychological, and social factors that are attributed to the condition. Early identification is advocated in order to prevent adverse outcomes. However, the proportion of undiagnosed cases are still high.

Methods

This was a prospective observational study. It was conducted among 500 postnatal women who attended a tertiary care hospital in southern Tamil Nadu. All the Participants who fulfilled the inclusion and exclusion criteria were recruited if willing after obtaining informed consent. Prior institutional ethical committee approval was obtained. A structured questionnaire was developed to capture the data on sociodemographic characteristics, obstetric history, and postnatal factors

Distribution of study population according to Socio Demographics

Category	Sub classification	Frequency	Percentage (%)
Age Distribution	<20 YEARS	70	14
	21-25 YEARS	184	36.8
	26-30 YEARS	180	36
	31-35 YEARS	56	11.2
	36-40 YEARS	10	2
Education	School	278	55.6
	College	222	44.4
Employment status	Employed	196	39.2
	Unemployed	304	60.8
Marital Conflict	Yes	280	56
	No	220	44



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Conclusions: Prevalence of Postpartum depression and anxiety among postnatal women is on the rise. The absence of any significant associations with specific risk factors highlights the multifactorial nature of these conditions and also underscores the need for universal screening and early intervention of anxiety and depression.

Introduction

Postpartum depression (PPD) is one of the most frequently observed psychiatric disorder in the postnatal period. The symptoms of PPD are persistent low mood, loss of interest in previously pleasurable activities, disturbances in sleep, myalgia, fatigue and impaired mother–baby bonding, usually within the first year following childbirth, most common till the 3rd month following delivery. Post partum depression is classified under the broader category of peripartum depression, encompassing depressive episodes that begin during pregnancy or within four weeks after delivery by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [1,2]. Postpartum depression is different from transient “baby blues,” as PPD is more severe, prolonged, and if not treated, can cause significant functional impairment.

Post partum depression affects women of all age groups, from all cultures and ethnicities, irrespective of their

socioeconomic strata. The incidence of PPD globally is 6.5% to 20% among all post partum women, with higher percentages reported in low- and middle-income countries [3]. Along with depression, anxiety symptoms are also being recognized as an important part of postpartum psychological morbidity, with prevalence rates of postpartum anxiety disorders ranging from 8.4% to 13.7% [4]. These are frequently found together and may have a compounded effect on maternal well-being. Maternal depression and anxiety can adversely affect infant growth, neurodevelopment, feeding practices, and emotional bonding and hence extends the impact, further to the family unit from the mother and child [4].

Post partum depression has a multifactorial causation, with a complex play of biological, psychological, and social factors. A sudden hormonal fluctuation following delivery characterised by the decline in estrogen and progesterone levels is postulated. It plays

an important role in precipitating depressive symptoms in susceptible women. In addition, the dysregulation of neuroendocrine pathways namely the hypothalamic–pituitary–adrenal (HPA) axis and neurotransmitter systems such as gamma-aminobutyric acid (GABA), has shown to affect the pathophysiology [5]. History of depression in earlier age, lack of social support, presence of familial conflicts, financial burden, and any prior adverse life events aggravates the risk of developing postpartum mental health disorders [6–8].

Underlying risk factors for postpartum depression could be present pre pregnancy, start during pregnancy, or begin in the postpartum period. The Pre-pregnancy risks include poor education, low socioeconomic conditions, and any previous history of psychiatric diseases. During pregnancy, co existing illnesses like diabetes, hypertension, fetal abnormalities, and high-risk obstetric conditions are likely to cause increased psychological distress. Postnatal factors include complications during birthing, neonatal intensive care unit (NICU) admission, breastfeeding problems, and inadequate social support [6,7]. The additive effect of these risk factors highlights the need for a comprehensive assessment across all stages of the perinatal period.

Recognising the danger signs early with timely intervention are very important to counteract the adverse consequences of postpartum depression and anxiety. For routine screening of perinatal women, Edinburgh Postnatal Depression Scale (EPDS) is one of the many screening tools which are advocated by American College of Obstetricians and Gynaecologists (ACOG), the American Academy of Pediatrics (AAP) and also the American

Academy of Family Physicians (AAFP) [4]. In spite of multiple effective screening and treatment methods being available, a higher percentage of mothers still remain undiagnosed due to stigma, lack of awareness, and restricted access to mental health services [9]. This necessitated the need for understanding distribution and determinants of postpartum psychological morbidity which is essential for planning any targeted interventions.

In this context, the present study was done to assess postpartum depression and anxiety among mothers, to understand potential risk factors occurring before, during, and after pregnancy among post natal mothers attending a tertiary care hospital.

Materials and Methods

After approval from the Institutional Ethics Committee, the patients were recruited for the study at Government Thoothukudi Medical College Hospital. This study was conducted between November 2022 and November 2023 in the department of OBGYN. All the ethical principles as explained in the Declaration of Helsinki were followed. Postnatal mothers between the age group of 18 to 40 years of any gravida, with singleton or even multiple pregnancies, who delivered in our Institution were included. Women who had been diagnosed with psychiatric or neurological illness, hypothyroidism, those who delivered in other institution and came for higher level of care were excluded from the study.

All the eligible participants who satisfied the inclusion and exclusion criteria were approached in the postnatal ward and outpatient follow-up clinic by the principal investigator and the participant information sheet was handed over to them. The aim,

purpose and the study procedure, rights of the participants, option to withdraw at any stage, voluntariness were detailed in their local vernacular language. Written informed consent was obtained from each participant after they gave their oral consent and were enrolled to our study. Confidentiality and privacy of the study participants were strictly maintained.

A total of five hundred postnatal women were included in this study. A structured and pretested proforma was instituted to collect a detailed information from each participant. Sociodemographic data including age, educational status, employment status, and marital conflict if any were recorded. Obstetric and pregnancy-related variables such as parity, planned or unplanned pregnancy, presence of hyperemesis gravidarum, medical disorders, fetal complications, bad obstetric history, and frequency of antenatal admissions were asked and documented. Postnatal factors including gender of the newborn, any admissions, complications if any, mode of delivery, and feeding satisfaction were also recorded.

To assess the psychological outcome, Edinburgh Postnatal Depression Scale (EPDS), Tamil version was used. It consisted of 10 items evaluating depressive symptoms experienced over the previous one week. Anxiety among post natal was assessed using the State-Trait Anxiety Inventory (STAI). Study participants were evaluated during the postnatal period, and their responses were recorded systematically. Based on the EPDS scores calculated, participants were categorized into low, moderate, and high risk for depression. Similarly, the STAI scores

were also categorized into low, moderate, and high levels of anxiety. For inferential analysis, both depression and anxiety variables were further categorized into binary outcomes (present/absent) by combining moderate and high categories as “present” and low category as “absent”.

All the data collected were coded in Microsoft Excel and was analyzed using Statistical Package for Social Sciences (SPSS) version 27. Descriptive data were expressed as frequencies and percentages. For categorical variables and Mean \pm SD for continuous variables. Chi-square test was conducted to assess the association between categorical variables. Binary logistic regression analysis was applied to identify predictors for depression and anxiety. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 500 participants were included in the study. The majority of women belonged to the 21–25 years age group (36.8%, n=184) and 26–30 years (36%, n=180), together accounting for 72.8% of the study population, indicating that most participants were in the early reproductive age group. Only 14% (n=70) were below 20 years and 13.2% (n=66) were above 30 years. More than half of the participants had education up to school level (55.6%, n=278), while 44.4% (n=222) had college-level education. A higher proportion of women were unemployed (60.8%, n=304) compared to employed (39.2%, n=196). Marital conflict was reported by 56% (n=280) of participants, indicating a considerable psychosocial burden in the study population (Table 1).

Table 1. Distribution of study population according to Socio Demographics

Category	Sub classification	Frequency	Percentage (%)
Age Distribution (years)	<20	70	14
	21-25	184	36.8
	26-30	180	36
	31-35	56	11.2
	36-40	10	2
Education	School	278	55.6
	College	222	44.4
Employment status	Employed	196	39.2
	Unemployed	304	60.8
Marital Conflict	Yes	280	56
	No	220	44

Among the 500 participants, primigravida constituted 51.4% (n=257) and multigravida 48.6% (n=243), showing a nearly equal distribution. Unplanned pregnancy was observed in 49.4% (n=247) of cases. Hyperemesis gravidarum was reported by 50.2% (n=251) of women.

Regarding medical disorders, 52.2% (n=261) had no associated illness, while gestational diabetes mellitus (21.2%, n=106) and gestational hypertension (16.6%, n=83) were the most common conditions, followed by anaemia (4.2%, n=21) (Table 2).

Table 2. Distribution of study population according to obstetrics and Pregnancy factors

Category	Sub classification	Frequency	Percentage (%)
Parity	Primi	257	51.4
	Multi	243	48.6
Unplanned pregnancy	Yes	247	49.4
	No	253	50.6
Hyperemesis gravidarum	Yes	251	50.2
	No	249	49.8
Medical disorders	Anaemia	21	4.2
	Chronic hypertension	12	2.4
	Gestational diabetes	106	21.2
	Gestational Hypertension	83	16.6
	Heart disease	11	2.2

	Overt Diabetes	6	1.2
	Normal	261	52.2
Bad obstetric history	Yes	233	46.6
	No	267	53.4
Frequent antenatal admission	Yes	250	50
	No	250	50

Postnatal characteristics showed that 51.8% (n=259) of newborns were female and 48.2% (n=241) were male. Nearly half of the neonates required NICU admission (48%, n=240), reflecting a substantial level of neonatal morbidity. Delivery complications were reported in 52.2% (n=261) of cases, while 47.8% (n=239) had no complications. Birth

outcomes were equally distributed between normal vaginal delivery (50%, n=250) and lower segment caesarean section (50%, n=250). Feeding satisfaction was reported by 48.6% (n=243) of mothers, whereas a slightly higher proportion (51.4%, n=257) experienced feeding dissatisfaction (Table 3).

Table 3. Distribution of study population according to Post natal factors

Category	Sub classification	Frequency	Percentage (%)
Child gender	Male	241	48.2
	Female	259	51.8
Nicu admission	Yes	240	48
	No	260	52
Delivery complications	Yes	261	52.2
	No	239	47.8
Birth outcome	Labour natural	250	50
	LSCS	250	50
Feeding satisfaction	Yes	243	48.6
	No	257	51.4

With respect to psychological outcomes, 35.4% (n=177) of participants were classified as having a high risk of depression, while 30.4% (n=152) and 34.2% (n=171) had moderate and low risk, respectively. Thus, nearly two-thirds of the participants (65.8%) exhibited moderate to high risk of depressive symptoms.

Similarly, for anxiety, 30.6% (n=153) had high levels and 37.4% (n=187) had moderate levels, whereas 32% (n=160) had low levels of anxiety. Overall, 68% of participants demonstrated moderate to high anxiety levels, indicating a considerable burden of postpartum psychological distress in the study population (Table 4).

Table 4. Distribution of study population according to Outcome Variables

Risk of Depression	Low	171	34.2
	Moderate	152	30.4
	High	177	35.4
Risk of Anxiety	Low	160	32
	Moderate	187	37.4
	High	153	30.6

Inferential analysis using chi-square test and binary logistic regression was performed to assess the association between sociodemographic, obstetric, and postnatal factors with depression and anxiety. However, none of the variables demonstrated statistically significant association with depression or anxiety.

Discussion

The present study was conducted to assess the distribution of postpartum depression and anxiety and to evaluate their association with various sociodemographic, obstetric, and postnatal factors. The findings of our study demonstrated a considerable burden of psychological morbidity among postnatal women - 35.4% of participants categorized as having a high risk of depression and a substantial proportion exhibiting moderate to high levels of anxiety. Similar reports have been reported by other studies that have reported a significant prevalence of postpartum psychological disorders among postnatal mothers, emphasizing that postpartum depression and anxiety are major public health concerns affecting the maternal well-being [3].

Majority of our participants were in 21–30 years age group, which is the peak reproductive age. Though many studies indicate younger maternal age as a potential

risk factor for postpartum depression 20-23, no statistically significant association was observed in our present study. This finding contrasts with an earlier report which observed that younger mothers may be more vulnerable to psychological distress. Poor coping mechanisms and social support has also been observed [10]. Lack of association in our study shall be attributed to relatively homogeneous age distribution and similar sociodemographic characteristics among the study participants.

Educational status of the mother and employment status are often considered important determinants of maternal mental health. In our study, a higher proportion of women had education up to school level and were unemployed. Previous studies have demonstrated that poor education and unemployment are associated factors for postpartum depression and anxiety, possibly due to financial dependency on others and reduced autonomy [6–8,10]. However, in this present study, no significant association has been observed.

More than half of the mothers reported Marital conflict which indicates a substantial psychosocial burden. Previous studies have consistently identified poor support from partner and marital disharmony as significant predictors

[10,11]. Although a higher proportion of women in our study with marital conflict exhibited depressive and anxiety symptoms, the association was not statistically significant. Independent effect could have been influenced by other unmeasured psychosocial factors such as family support or cultural coping mechanisms.

Nearly half of the pregnancies were reported as unplanned, and hence a considerable proportion of women experienced various medical disorders and fetal complications. Unplanned pregnancy, high-risk pregnancy conditions, and adverse outcomes of pregnancy are associated with increased psychological distress [6,7,10].

Postnatal factors such as NICU admission, delivery complications, and feeding difficulties are known to influence maternal psychological health. In this study, nearly half of the neonates required NICU admission, and more than half of the mothers experienced delivery complications or feeding dissatisfaction. Previous studies have reported that NICU admission and breastfeeding difficulties are associated with increased maternal anxiety and depressive symptoms, primarily due to concerns regarding neonatal health and impaired mother–infant bonding [12,13].

A high prevalence of both depression and anxiety among postnatal women were observed in our. Similar studies have reported coexisting anxiety and depressive symptoms during the postpartum period, which highlights the need for comprehensive screening strategies [4,13]. Despite the presence of multiple potential risk factors, inferential analysis using chi-square test and logistic regression did not demonstrate statistically significant associations. Since the study

population was homogenous, a relatively high baseline prevalence of psychological distress, and a complex interplay of biological, psychological, and social determinants underlying postpartum mental health disorders can be attributed to.

Conclusion

A high prevalence of postpartum depression and anxiety among postnatal women were observed in our study, which highlights a substantial burden of psychological morbidity during the postpartum period. Though no risk factors can be attributed in our study, the study findings necessitates the importance of Structured screening for post natal depression and anxiety is advocated since multifactorial cause is involved. Early identification and intervention is a must to improve the maternal and neonatal outcomes.

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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