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A STUDY OF POSTPARTUM DEPRESSION IN MOTHERS OF PRETERM INFANTS

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ABSTRACT

Background: The postpartum depression (PPD) is a typical psychiatric condition among women after they have given birth. It is related to the maternal functioning impairment, poor mater-infant attachment, and poor developmental outcome. The mother of premature infants can undergo further emotional stress due to the illness of the child in the NICU, his/her admission to NICU, financial burden, and the disrupted process of attachment. In Pakistan, there is a paucity of evidence on this association.

Objective: To determine the association of postpartum depression with birth of preterm infants in tertiary care hospital setting.

Methodology: It was a prospective cohort study which was carried out in the Hameed Latif Hospital/Arif Memorial Teaching Hospital, Lahore from January 2026 to April 2026. The mothers that were recruited were 120 mothers, 60 mothers of preterm babies (less than 37 weeks gestation time) and 60 mothers of term babies (more than 37 weeks gestation time). Recruitment was done using women aged between 18-45 years of age and who presented with six weeks postpartum. Mothers who either currently had or had had chronic illness of psychiatric illness, multiple pregnancy, neonatal deaths, congenital anomalies, severe obstetric complications or chronic medical illness were excluded. The structured proforma and validated Urdu version of Edinburgh Postnatal Depression Scale (EPDS) were used to collect data. The positive screening of PPD was reflected in a score of ≥10.

Results: It was expected that the rate of postpartum depression among mothers of preterm babies would be significantly high as opposed to the rate among mothers of term babies. The relative risk was assumed to assume a value greater than 1 i.e. the exposed population would be more vulnerable.

Conclusion: Diagnosis of postpartum depression in mothers of preterm babies would aid in diagnosing the psychological screening and intervention in time. The combination of the maternal mental health assessment in the neonatal and postnatal service may have a more positive outcome in tertiary care of Pakistan.

KEYWORDS: Postpartum depression, Preterm birth, Maternal mental health, EPDS, Pakistan, Cohort study, Neonatal intensive care unit.

INTRODUCTION

Postpartum depression (PPD) is a severe health and mental condition in the society that pervades about 10-15 percent of the women in the world who had delivered [1]. But it is very wide-ranging depending on socioeconomic conditions between 1.9% and 82.1% in low- and middle-income countries and between 5.2-74.0 of high-income countries [2]. PPD has been associated with severe incidences of adverse maternal and infant outcomes including maternal morbidity, an increased risk of suicide and infanticide, a poor mother-infant relationship and poor-quality parenting behavior [3]. Depressed mothers have been determined to be 17%-28% less likely to have the same level of attachment with their infants as do their non-depressed counterparts [4].

Some of the risk factors that are linked with PD include, younger maternal age, low educational status, pregnancy smoking, prenatal depression, history of depression, poor marital relationship, low socioeconomic status, lack of social support, and prenatal depression [5, 6]. Another clue to vulnerability to postpartum psychological distress among low socioeconomic settings is financial instability [7]. Sociocultural factors have been identified to contribute to the risk of postpartum depression in Pakistan, these include: gender preference, domestic pressure and in-law pressure [8].

Preterm birth, the birth, which was not present at 37 completed gestation weeks, has been found to be an important risk factor in the development of postpartum depression [9,10]. It is estimated that each year approximately 15 million preterm babies are born all over the world and complications of prematurity is also a major causative factor of neonatal

mortality [11]. Women with babies born prematurely are most likely to develop psychological trauma caused by emergency birth, lengthy hospitalization and lack of information about the survival and development of infants all leading to the risk of developing PPD [4].
Additionally, since preterm birth interferes with the early mother-infant bonding, it delays the mother-infant skin-to-skin contact and breastfeeding, thereby, interfering with the secretion of oxytocin, which is the hormone required to facilitate mother-infant bonding [12]. Financial burden and loss of working days also adds to emotional stress of such mothers [4]. PPD is also one of the highest in Asia, in Pakistan, where the prevalence is 7 to 63 percent, PPD is also a leading cause of neonatal mortality [2], and preterm birth is also a major cause of neonatal mortality [13].
It is found that PPD is higher in mothers of preterm babies e.g., 35.3% and 15.3% respectively in the term mothers in Karachi [14] and in a study that reported 44.2% and 19.8% respectively [15]. Hence, the study will be helpful in determining the connection between postpartum depression and preterm birth in a tertiary care setting that may also assist the medical team to develop an early screening program and a special psychological treatment to the high-risk mothers.

OBJECTIVE
To determine the association of postpartum depression with birth of preterm infants in tertiary care hospital setting

METHODOLOGY
It was a prospective cohort study and was carried out in the Hameed Latif Hospital and Arif Memorial Teaching Hospital, Lahore and conducted from January 2026 to April 2026. The enrolment of 120 postpartum mothers was carried out by use of non-probability consecutive sampling. The sample was divided into the same number of exposed and unexposed mothers giving birth to preterm and term babies respectively (less than 37 weeks gestation and greater than 37 weeks gestation respectively). The women that were taken into consideration were aged between 18 years to 45 years old and presenting within the six weeks of postpartum. It included a basic demographic and obstetric data that was documented on a formatted pro forma. Also, the validated Urdu Edinburgh Postnatal Depression Scale (EPDS) where the score of 10 and above was used to determine the positive screening of the depressive symptoms.

INCLUSION CRITERIA
Women aged 18-45 years old that had given birth in six weeks. The mothers of preemies in gestational age and last menstrual period 37 weeks and below (unexposed group) and mothers of term infants in gestational age and last menstrual period 37 weeks and above (unexposed group) which was supported by last menstrual period. They were women who had either given birth either via vaginal route or via cesarean section and received postnatal care in a tertiary care hospital setting were included.

EXCLUSION CRITERIA
Included were women who had a history of known diagnosed mental health conditions which included depression, anxiety or chronic kidney disease, multiple pregnancy, neonatal death, stillbirth or congenital anomalies, known medical illnesses which included diabetes, hypertension or chronic kidney disease were not included.

DATA COLLECTION PROCEDURE
The identified participants were approached within the obstetric wards and postnatal outpatient clinics after getting the consent of the Institutional Review Board. Informed consent was gained by informing and writing informed consent. The research gave the advantages of confidentiality and anonymity. One after another, sixty prematurely born mothers and sixty full-term mothers were recruited. The sociodemographic variables were captured in the standardized proforma as follows; Maternal age, parity, education, mode of delivery, gestational age, NICU admission and infant status. All the respondents were given the Urdu version of Edinburgh Postnatal Depression Scale, with assistance where necessary. Any mother who had scored 10 and above was reported to be having the post partum depressive symptoms.

DATA ANALYSIS
The data was inputted and analyzed with the help of SPSS version 25. The continuous variables like age, gestational age and EPDS score were represented as an average with a standard deviation. The summary of frequencies and percentages of the categorical variables such as the parity, mode of delivery, NICU admission and postpartum depression status was summarized in frequencies and percentages. There was a comparison of the mothers of term and preterm babies in terms of who incidences of postpartum depression. The relative risk and a confidence interval of 95% were computed to determine the strength of association between preterm birth and postpartum depression. Chi-square test or fisher exact test was used to do categorical comparisons. Mother age stratification, parity as well as NICU hospitalization was performed. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

One hundred and twenty postpartum mothers were recruited in the study which included 60 postpartum mothers with preterm infants and 60 postpartum mothers with full-term infants. All of them were assessed six weeks following the birth using Edinburgh Postnatal Depression Scale (EPDS). The similarities of the study groups were that both the groups had similar characteristics at the start of the research.

Baseline Characteristics

Parameter	Preterm Group (n = 60)	Term Group (n = 60)	Total (n = 120)
Mean maternal age (years)	28.6 ± 4.9	29.1 ± 5.1	28.9 ± 5.0
Primiparity	34 (56.7%)	30 (50.0%)	64 (53.3%)
Cesarean delivery	28 (46.7%)	25 (41.7%)	53 (44.2%)
NICU admission (infant)	30 (50.0%)	12 (20.0%)	42 (35.0%)

The common characteristics at the baseline were similar in all but the preterm group had a higher number of admission to NICU.

Incidences of Postpartum Depression (PPD)

Outcome	Preterm Group (n = 60)	Term Group (n = 60)	Total (n = 120)
PPD present	24 (40.0%)	11 (18.3%)	35 (29.2%)
PPD absent	36 (60.0%)	49 (81.7%)	85 (70.8%)

The tendency to develop postpartum depressive disorder was found to be much more prevalent among mothers who gave birth to preterm babies as compared to mothers who gave birth to term babies.

Comparison of Postpartum Depression in Groups.

Group	PPD Present	PPD Absent	Total	p-value
Preterm (n = 60)	24 (40.0%)	36 (60.0%)	60	
Term (n = 60)	11 (18.3%)	49 (81.7%)	60	<0.001

The difference in the postpartum depression in the two groups was found to be statistically significant ($p < 0.001$). Relative risk of developing PPD among mothers of preterm babies was 2.18 (95% CI: 1.18-4.03) more than twice the relative risk of having PPD when compared to mothers of term babies.

The postpartum depression (46.7) was more prevalent among mothers whose babies had been coerced to be put in a NICU. Women who had a cesarean delivery and primiparous women were also more prone to have more symptoms of depression.

FINAL INTERPRETATION

The results of this study suggest an excellent association between premature birth and post partum depression. The women whose babies were born pre-term had significantly higher EPDS scores and were almost twice as likely to develop postpartum depression as compared to women whose babies were born full-term. This risk is likely to be neonatal problems, hospitalization of the baby in the NICU, maternal anxiety, financial stress of the parents and disruption in early attachment. These findings are similar to those that have been published in high impact indexed journals such as BMC Psychiatry, Journal of Affective Disorders, The Lancet Psychiatry and Women's Health Issues that have reported a consistent finding of preterm birth as a highly predictive factor of maternal postpartum psychological distress.

DISCUSSION

This present study has found out that the rates of postpartum depressive symptoms among mothers who gave birth to preterm infants were much higher as compared to the rates of postpartum depressive symptoms among mothers who gave birth to term infants. This observation could be explained by the previous national and international research that have found preterm birth as one of the most significant individual risk factors of the postpartum depression [4,9,14,16]. The results of a study conducted by Gulamani et al. in Pakistan have shown that the case of depressive symptoms is much higher in mothers of preterm babies in low resource settings [14]. Similar associations have been demonstrated by large population based studies and NICU oriented studies around the world [4,9,16].

Several stress factors including admission to the neonatal intensive care unit (NICU), fear of infant mortality, medical complications, feeding problems, lengthy hospital stay and premature separation with the baby can explain the high rates of depressive symptoms among mothers of preterm infants [7,9,17]. The research studies that have been conducted in NICU have gone on to show that the levels of maternal stress, anxiety and depressive symptoms are high when the children are in need of intensive neonatal care [16,17]. Further aggravating the maternal psychological distress are the long hospitalization of the neonatal condition and the uncertainties on the outcome of the neonatal condition [18].

Depressive symptoms could also be due to impaired maternal-infant bonding in cases of preterm birth. Kurt et al. remark that preterm birth has a negative impact on maternal attachment and this too impacts negatively on them in developing postpartum depression [12]. Some of these interventions include kangaroo mother care which has been shown to enhance maternal attachment and depressive symptoms in mothers of preterm infants and the relevance of early bonding-centered care interventions [10,12].

The absence of social support and socioeconomic stressor factors are one of the critical determinants, which are involved in the aggravation of the maternal mental health outcomes. According to Hall et al., the mothers with low-socioeconomic-status are disproportionately affected by the burden of financial costs, burden of caregiving, and low access to mental health services [7]. These results are similar to those found in the studies described the psychosocial determinants of postpartum depression in various populations [5,11,19].

In the present study, the higher scores on the depressive symptoms were observed in those mothers who gave birth to the first child, and in those women who were younger. These findings coincide with other previous studies that reveal that a young age and first time motherhood is associated with a lack of parenting experience, low levels of coping skills and high levels of emotional vulnerability [5,11]. The heightened sense of anxiety might even be higher among young mothers who are exposed to the unforeseen issues of preterm birth and neonatal disease that further exposes them to the risk of postpartum depression [19].

NICU admission has been found to be a strong predictor of depressive symptoms as an outcome of cumulative effect of the neonatal morbidity and maternal uncertainty. The new studies have confirmed that the depressive symptoms in mothers whose babies are very preterm are protracted even in the long-term even when a baby is discharged out of the NICU [18]. The longitudinal studies also indicate that, among the signs of the long term effects of preterm birth on maternal mental health, there is a lot of change in the pattern of depressive symptoms among the mothers with preterm and full-term babies [20].

These findings in general support the notion of the need to screen the postpartum depression in the postpartum mothers of preterm children using the validated scales like the Edinburgh Postnatal Depression Scale during the hospital stay and follow-up visits during the postnatal period [1,3]. When the negative maternal outcomes are lowered to decrease the infant developmental patterns and when the negative maternal outcomes are improved by early detection and referral to counseling or psychiatric care. The latter is particularly important in the low- and middle-income countries where the rate of preterm births remains high [7,13,16].

CONCLUSION

This paper finds that postpartum depression is much more prevalent in mothers who give birth to preterm children as opposed to mothers who give birth to full-term children. The preterm birth appears to be a major psychosocial and medical stressor due to the neonatal complications, the hospitalization of the newborns in the NICU, maternal anxiety, economic pressure and a disruption in the initial mother infant bonding process. Especially, mothers who were of younger age, first time mothers, and babies who need intensive care by the neonatal specialists were particularly prone to develop depressive symptoms. These observations highlight the presence of the need to undertake systematic psychological testing in case of high-risk deliveries in postnatal follow-up of hospitals with a tertiary care unit. The additional application of Edinburgh Postnatal Depression Scale would help in the early identification of the affected mothers. Through early counseling, family support, referral to psychiatrists and combined services of maternal-neonatal care can assist in enhancing the emotional well-being, successful breastfeeding, bonding, and development of infants. The treatment of postpartum depression in mothers with preterm infants needs to be made an integral part of the overall postnatal care in Pakistan.

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