

**PSYCHIATRIC MORBIDITY IN MOTHERS OF INFANTS IN THE NEONATAL  
INTENSIVE CARE UNIT (NICU)**

**Dr Arunava Mukherjee<sup>1</sup>, Dr Manish Kumar<sup>2\*</sup>**

1. *Head of Department, Department of Psychiatry, Military hospital, Jaipur Rajasthan, India -302006*
2. *Head of Department, Department of Pediatrics, Military hospital, Jaipur, Rajasthan, India -302006*

Submitted on: November 2017

Accepted on: November 2017

For Correspondence

Email ID:

[drkumarmani0@gmail.com](mailto:drkumarmani0@gmail.com)

**Abstract**

**Background:** The hospitalization of the infant to Neonatal intensive care unit is a stressful situation for a mother. It can lead to increase in rate and severity of postpartum psychiatric illnesses in the mother.

**Aim:** To assess psychiatric morbidity in a mother whose infants are admitted to the neonatal intensive care unit.

**Settings and Design:** The study is an observational analytic study. The study was conducted in neonatal intensive care unit of a tertiary hospital.

**Methods and Material:** Sample for the study comprised of fifty (50) consecutive mother, including 36 preterm and 14 terms whose infant were admitted to Neonatal intensive care unit and who provided written informed consent were included in the study. They were followed-up from 2 weeks post-delivery to 3 months post-discharge by phone and when they came for review in pediatric out-patient Department (OPD).

**Statistical analysis used:** SPSS 16.

**Results:** The mothers with preterm infants had significantly higher rate of psychiatric morbidity during hospitalization than the group with full-term infants but the morbidities reduced significantly after discharge.

**Conclusions:** The health staff in a neonatal intensive care unit should not only be aware of infants' clinical status but also of the mothers' emotional state.

**Key messages:** In a conventional scenario of Neonatal intensive care unit (NICU) focus is always the infant and mother's psychological health is not recognized or not taken into account despite it is grossly affected. The emotional distress of the mother negatively affects the relationships between parent and child and development of the child in early childhood and at school age. Hence, screening of these mothers for psychiatric morbidity should be made mandatory for appropriate intervention.

**Keywords:** Postpartum disorder, NICU mother, PTSD, Postpartum depression, Postnatal Psychiatric morbidities in Preterm birth, Maternal Psychological stressors.

**Introduction:**

In a conventional scenario of Neonatal intensive care unit (NICU) focus is always the infant and mother's psychological health is not recognized or not taken into account. The emotional distress of the mother negatively affect the relationships between parent and child and development of the child in early childhood and at school age.<sup>[1]</sup> NICU mothers experience multiple stressors related to preterm birth, medical condition of the baby, the complexity of the NICU environment and perceived vulnerability of the infant, in addition to stressors associated with the normal transition process to parenthood<sup>[2]</sup>. Maternal stress in NICU setting is often a neglected area. There are very few Indian studies quantifying stress and assessing psychiatric morbidity in NICU mothers. This is one of those kinds of Indian study aiming this important issue.

Flavia et al, in their study compared presence and severity of Postpartum Anxiety and Depression in 50 mothers of preterm and of 25 mothers of low birth weight full-term infants. Using STAI and BDI they found, 32% mothers with preterm infants had Postpartum Anxiety compared to 4% in the mother of a full-term infant and 14% preterm had postpartum depression compared to 8% term during hospitalization. At 3 month 14% mothers with preterm infants had Postpartum Anxiety and 8% preterm had postpartum depression<sup>[3]</sup>.

Kersting et al., in their study using BDI found, at 2 wk 10.6%, preterm mothers were depressed compared to 4.7% term mother, at 24 wk 6.3%, preterm mothers were depressed compared to 4.1% term mother and at 60 wk 8.5%, preterm mothers were depressed compared to 4.0% term mother using BDI.<sup>[4]</sup>

Adewuya et al. carried out a study in Nigeria to compare postpartum depression rate in preterm and term mother and to recognize risk factor. He assessed mother at

6 wk postpartum using EPDS. Finding was 33% preterm mother were depressed compared to 10.8% of term mother.<sup>[5]</sup>

LM Davis et al carried out a study on the impact of very premature birth on the psychological health of mothers. Forty percent of the mothers reported significant depressive symptoms on the Edinburgh Postpartum Depression Scale (EPDS) and logistic regression analysis indicated that high maternal stress resulted in an increased likelihood of depressive symptoms (OR 1.15, CI 1.04–1.26,  $p < 0.01$ ).<sup>[6]</sup>

Dudek-Shriber L et al, investigated the stress experienced by parents in the neonatal intensive care unit (NICU) using Parental Stress Scale: Neonatal Intensive Care Unit (PSS-NICU). The highest levels of stress experienced were in the relationship with baby–parental role area, and regarding how the baby looked and behaved.<sup>[7]</sup>

Kersting et al, in their study investigated post-traumatic stress responses of mothers with premature infants admitted in NICU using Impact of Events Scale (IES) at 1–3 days, 14 days, 6 months and 14 months post birth. Mothers of premature infants showed significantly ( $p < .05$ ) higher rates of traumatic symptoms at all time points.<sup>[8]</sup>

Shaw et al examined the prevalence of PTSD in parents 4 months after the birth of preterm or sick infants and examined the relationship between PTSD and ASD symptoms immediately following birth. 9% of mothers met criteria for PTSD and ASD symptoms highly correlated with development of PTSD.<sup>[9]</sup>

**Materials and Methods:**

The study was conducted in a large tertiary care hospital. After obtaining approval from the institution's Ethics Committee participants were enrolled. Mother whose infants were admitted in NICU for more than 2 week after birth.

Mothers having past history of psychiatric illness and Mothers with severe physical illness which affect psychological health were excluded. NICU Sample for the study comprised of fifty (50) consecutive mother, including 36 preterm and 14 term whose infant was admitted to Neonatal intensive care unit and who provided written informed consent were included in the study. They were followed-up from 2 weeks post-delivery to 3 months post-discharge by phone and when they came for review in paediatric out-patient Department (OPD). Each person was clinically interviewed under the guidance of psychiatrist and diagnosis was made using DSM IV criteria by Psychiatrist. One semi-structured Performa containing a socio-demographic profile of mother and infant profile was administered. Data collection from the study was carried out over two stages. In Stage 1, during hospitalization in NICU, PSS NICU - Parental stressor scale for neonatal intensive care unit was used for measuring the level of stress experienced and to identify stressor in NICU. STAI (State-Trait Anxiety Inventory), BDI-II (Beck Depression Inventory), IES-R (Impacts of event scale-revised) were applied to evaluate symptoms of anxiety, depression & Acute Stress Disorder. In the second stage, the mother was reassessed 3 months after discharge of the infant using STAI and BDI-II and IES-R. This stage happened during the first follow-up program for premature babies at 3

months in pediatric department. The study was carried out over 27 months (Aug 2011-Oct 2013). The study was an observational analytic study.

**Results:**

Table 1 shows that younger maternal age, prematurity of baby were significantly associated with higher maternal stress. Gravida, education, and occupation did not significantly affect the stress level of NICU mothers. The findings in the present study are similar to that by Dudek-shriber et al. [7]

Table 2 shows a comparison of prevalence of psychiatric morbidity between preterm and term mother during NICU hospitalization. Major Depressive Disorder was seen in a total of 22% mother and was of higher rate in preterm but the difference was not significant. Anxiety Disorder and Acute Stress Disorder (ASD) was seen in a total of 28%, 16% mother respectively and was significantly higher in preterm. (P <0.05)

Table 3 shows a comparison of prevalence of psychiatric morbidity between preterm and term mother at 3-month post-NICU discharge. Major Depressive Disorder was seen in a total of 2% mother and was of higher rate in preterm but the difference was not significant. Anxiety Disorder and Post Traumatic Stress Disorder (PTSD) was seen in a total of 8%, 6% mother respectively and was higher in preterm but the difference was not significant.

**Table 1:** Maternal Stress level in relation to Socio-demographic Parameter

	Groups	n	Mean subscale stress score			P value
			Sights & sounds	Looks & behavior	Parental role alteration	
Age	16-25	26	2.93	3.81	3.84	<.05
	26-35	24	2.42	3.66	3.65	
Education	Primary	24	2.71	3.77	3.78	>.05
	Secondary	21	3.12	3.58	3.60	
	College	5	3	4.39	4.39	
Gravida	Primi	33	2.87	3.84	3.88	>.05
	Multi	17	2.33	3.53	3.48	

“Psychiatric morbidity in mothers of infants in the neonatal intensive care unit (NICU)”

Gender of baby	Male	24	2.7	3.74	3.77	>.05
	Female	26	2.68	3.70	3.72	
Type of delivery	Vaginal	26	2.67	3.78	3.62	>.05
	Caesarian	24	2.7	3.86	3.88	
Length of stay	Short(<15)	25	2.6	3.6	3.66	>.05
	Long(>15)	25	2.78	3.88	3.84	
Maturity of baby	Preterm	30	2.84	4.11	4.07	<.05
	Term	20	2.45	3.18	3.27	
Mode of feeding	Direct	43	2.62	3.64	3.67	>.05
	Expressed	7	3.01	4.34	4.25	
Family	Nuclear	42	2.35	3.57	3.47	>.05
	Extended	8	2.75	3.77	3.80	

**Table 2:** Comparison of prevalence of psychiatric morbidity in preterm vs term mother at NICU hospitalization

	Preterm Mother	Term Mother	Total	P value
	No (n=30)	No (n=20)	No (n=50)	
Major Depressive Disorder	8 (26.67%)	3 (15 %)	11 (22%)	.49
Anxiety Disorder	10 (33.33%)	3 (15%)	13 (28%)	.01
Acute stress Disorder (ASD)	5 (16.67%)	3 (15%)	8 (16%)	1.00

**Table 3:** Comparison of prevalence of psychiatric morbidity in preterm vs term mother at 3 months after NICU discharge

	Preterm Mother	Term Mother	Total	P value
	No (n=30)	No (n=20)	No (n=50)	
Major Depressive Disorder	1 (3.33%)	0	1 (2%)	1.00
Anxiety Disorder	3 (10%)	1 (5%)	4 (8%)	.64
Post Traumatic Stress Disorder (PTSD)	2 (6.67%)	1 (5%)	3 (6%)	1.00

**Table 4:** PTSD and subclinical PTSD in Preterm and term mother at 3 months after NICU discharge

IES R	Preterm Mother	Term Mother	Total	Remarks
	No (n=30)	No (n=20)	No (n=50)	
Intrusion	2 (6.67%)	1 (5%)	3	PTSD – 3 Subclinical PTSD (Hyperarousal)- 3
Hyper arousal	5 (16.67%)	1 (5%)	6	
Avoidance	2 (6.67%)	1 (5%)	3	

**Discussion:**

This study is an observational analytic study conducted in the tertiary care

hospital in collaboration with Department of Paediatrics. Analysis of age distribution in the present study (Table no.1) reveals higher

stress, psychological morbidity rate in 16-25 age group and in preterm delivery. This result is in conformity to observation by Chaurasia, Flavia et al <sup>[10,3]</sup>.

In the current study, a most stressful aspect of the NICU for mothers was an alteration in the parent-infant relationship and the infants' appearance. The sight and sounds of the NICU caused lesser stress. The mean subscale stress score was the highest for parental role alteration (3.75) followed by looks and behavior (3.74) of the baby and sights and sounds (2.68). (Table-1) The results of this study are consistent with others (Dudek-Shriber et al., Miles et al.), <sup>[7,11]</sup> which indicate that the most stressful aspect of having an infant in the NICU is an altered parent role and relationship with their baby. Analysis of specific sources of stress in the NICU showed that alteration in the parental role—including not being able to help, hold, or care for the infant, protect the infant from pain, or share the infant with other family members—was causing maximum stress in this mother. This alteration is particularly stressful for younger mothers and mother of premature infants. (Table-1) Each of these findings is important to treating physician and this study substantiates that intervention that focuses on the parents' role with their infant should be a priority.

The present study provides a cross-cultural validation of the study by Singer, et al. <sup>[12]</sup>, a prospective-longitudinal controlled study of emotional symptoms in mothers with infants of very low birth weight. As has been well-established, mothers of preterm infants showed higher anxiety and depression during the hospitalization of their babies. In contrast to previous studies, the current study has advanced knowledge of this issue. In the current study, symptoms of both anxiety and depression of the mothers were analyzed using clinical criteria, which permits one to focus on the intensity or severity of the symptoms rather than just mean scores. The mothers of preterm and

very low birth weight babies who had psychiatric antecedents were excluded; this is an important methodological consideration, as psychiatric disorders will increase the likelihood of mothers who show moderate to severe clinical symptoms.

A significant decrease in the percentage of psychiatric morbidity was seen after discharge in mothers of preterm infants (Table 3). This finding confirms the results of the prospective study of Flavio Helena et al <sup>[3]</sup> involving mothers of preterm and full-term infants with high anxiety during hospitalization of their infants in Neonatal Intensive Care Unit, which was reduced at 3 months after infants' discharge. As the clinical status of babies improved so they could go home, mothers were better able to regulate their emotional state.

There was no statistically significant difference between mothers of preterm infants and mothers of full-term infants on clinical symptoms of depression, despite the somewhat higher percentage of mothers with symptoms of depression in those with preterm infants than full-term infants (Table 2, 3). Among mothers of preterm infants, 26.67% showed symptoms of depression during hospitalization of their babies. This proportion of depression is similar to the prevalence rate of 26% reported for mothers' puerperal depression in the preterm population of developing countries. <sup>[13]</sup> Apart from this, the percentage of mothers with symptoms of depression in the present study was lower than those reported previously as was found, respectively, 28% (Lambrenos et al 1996), 40% (Davis, et al., 2003) of mothers scoring as depressed after delivery. <sup>[14, 6]</sup> To understand this result better, one must realize that in the present study mothers with any history of psychiatric antecedents were excluded; this exclusion criterion may have contributed to the lower percentage of depression in mothers. It might also explain the relatively low incidence (15%) of mothers with clinical symptoms of Depression in the full-



term infant group (Table 2). In addition, the mothers of preterm infants exhibited a moderate or high state of anxiety which functions as an alarm from arousal to reaction. This is a state with some characteristics contrary to the depressive mood which may inhibit one from reacting.

This is one of the first studies to document ASD (Acute Stress Disorder) symptoms in parents of NICU infants, although previous studies have identified parents of premature infants as being at higher risk of posttraumatic stress reactions.<sup>[15,16,17]</sup> 16% of the mothers (Table 2) in this study met full symptom criteria for a diagnosis of ASD, which is consistent with previous findings on the development of ASD after a traumatic event.<sup>[18]</sup> The nature of the symptoms endorsed by the parents was consistent with many of the clinical observations of NICU parents; these included symptoms of hyperarousal mostly, flashbacks related to the event of the birth and NICU hospitalization, and avoidance of contact with the NICU. Post Traumatic Stress Disorder (PTSD) was found in 6% of the total mother at three months of discharge from NICU (Table 3). This finding is similar to a study by Shaw et al (2009) who found 9% met criteria of PTSD after discharge.<sup>[9]</sup> Wijma et al in another study found, 8% had elevated scores on at least one of the three dimensions of PTSD.<sup>[19]</sup> Our finding is in accordance with the studies by Wijma et al as subclinical PTSD has been seen in another 6% mother. (Table 4)

#### **Conclusion:**

The present findings emphasize that a preterm birth with very low birth weight—and consequently hospitalization of such babies—may generate negative emotions in the mother. The mother's personal resources may be exhausted, and she may have difficulty in failing to cope with the psychological demands of the postpartum period. The effect of preterm birth on mothers represents a threat to mental health and if the feeling persists for a long time, it

could be considered an important risk factor for the mental health of the mother and child. Severe and chronic symptoms of anxiety in mothers should be detected and assessed to permit adequate preventive intervention soon after the birth. Psychological intervention should promote problem-focused coping strategies related to the effect of the premature birth of the mother. This study endorsed the finding of other studies that NICU mothers especially preterm mothers are really stressed out and have significant psychological morbidity and they have a high risk of PTSD also. The study provides an initiative through which steps may be taken to allay the psychological morbidity among NICU mother so that long-term psychological morbidity can be prevented.

#### **References**

1. Carole Muller Nixa, Margarita Forcada-Guexb, Blaise Pierrehumberta, Lyne Jauninb, Ayala Borghinia, Francois Ansermeta. Prematurity, maternal stress, and mother-child interactions. *Early Human Development*. 2004;79( 2):145–158.
2. Miles, Margaret Shandor RN, Holditch-Davis, Diane RN, Schwartz, Todd A. Depressive Symptoms in Mothers of Prematurely Born Infants. *Journal of Developmental & Behavioral Pediatrics*. 2007;28(1):36-44.
3. Flavia Helena, Pereira Padovani, Maria Beatriz Martins Linhares, et al. Maternal Concepts and Expectations regarding a Preterm Infant. *The Journal of Psychology*. 2008;11( 2):581-592.
4. Kersting A, Dorsch M, Wesselmann U, Ludorff K, Witthaut J, Ohrmann P, et al. Maternal posttraumatic stress response after the birth of a very low-birth-weight infant. *J Psychosom Res* 2004;57:473–6.
5. Adewuya AO, Fatoye FO, Ola BA, Ijaodola OR, Ibigbami SM. Sociodemographic and obstetric risk factors for postpartum depressive

- symptoms in Nigerian women. *J Psychiatr Pract.* 2005;11:353–8.
6. Davis L, Edwards H, Mohay H, Wollin J. The impact of very premature birth on the psychological health of mothers. *Early Hum Dev.* 2003;73(1-2):61–70.
  7. Dudek-Shriber, L. Parent stress in the neonatal intensive care unit and the influence of parent and infant characteristics. *Am J Occup Ther.* 2004;58:509–520.
  8. Kersting, A., Dorsch, M., Wesselmann, U., et al. Maternal posttraumatic stress response after the birth of a very low-birth-weight infant. *Journal of Psychosomatic Research.* 2004; 57:473–476.
  9. Shaw RJ, Bernard RS, DeBlois T, Ikuta LM, Ginzburg K, Koopman C. The Relationship between acute stress disorder and posttraumatic stress disorder in the neonatal intensive care unit. *Psychosomatic.* 2009;50:131-137.
  10. Chourasia N, Surianarayanan P, Bethou A, Bhat V. NICU admission and maternal stress level. *India. J Pediatrics.* 2013 May;80(5):380-384.
  11. Miles MS, Funk SG, Carlson J. Parental Stressor Scale: neonatal intensive care unit. *Nurs Res.* 1993;42(3):148-152.
  12. Singer, L.T., Fulton, S., Kirchner, H.L., Eisengart, S., Lewis, B., Short, E., et al. Longitudinal predictors of maternal stress and coping after very low birthweight birth. *Archives of Pediatrics & Adolescent Medicine.* 2010; 164(6):518-524.
  13. Vieira Filho. Mental disorders in pregnancy and puerperal period. *Women's mental health.* 2004:41-47.
  14. Lambrenos K., Weindling M., Calam R., Cox AD. The effect of a child's disability on mother's mental health. *Archives of Disease in Childhood.* 1996; 74: 115-120.
  15. Pierrehumbert B, Nicole A, Muller-Nix C, et al. Parental posttraumatic reactions after premature birth: implications for sleeping and eating problems in the infant. *Arch Dis Child Fetal Neonatal.* 2003; 88:400–404.
  16. Holditch-Davis D, Bartlett TR, Blickman AL, et al. Posttraumatic stress symptoms in mothers of premature infants. *J Obst Gynecol Neonatal Nurs.* 2003; 32:161–171.
  17. DeMeir RL, Hynan MT, Harris HB, et al. Perinatal stressors as predictors of symptoms of posttraumatic stress in mothers of infants at high risk. *J Perinatol.* 1996; 16:276–280.
  18. Classen C, Koopman C, Hales R, et al. Acute stress disorder as a predictor of posttraumatic stress symptoms. *Am J Psychiatry.* 1998; 155:620–624.
  19. Wijma K, Soderquist J, Wijma B. Posttraumatic stress disorder after childbirth: a cross-sectional study. *J Anxiety Disord.* 1997;11:587– 597.