

**The Study to Assess Parental Stress of Neonates Admitted in Neonatal ICU of Rajindra Hospital Patiala****Harshindar Kaur<sup>1</sup>, Aanshul Rai Gupta<sup>2</sup>, Richa Gupta<sup>3</sup>, Ketik Jain<sup>4</sup>, Harshita Sharma<sup>5</sup>, Dhanush Haridas<sup>6</sup>, Anu Bala<sup>7</sup>**<sup>1</sup>Professor, Department of Paediatrics, GMC, Patiala, Punjab, India<sup>2,3,4,5,6,7</sup>Junior Resident, Department of Paediatrics, GMC, Patiala, Punjab, India

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**Abstract:**

**Background:** The experience of parents of newborn admitted to the NICU is really stressful to the parents. Degree of stress experienced by parents, affects their mental health and relationship, and infants' development. This study aims to assess the stress levels experienced by parents of neonates admitted to NICU and to identify several factors influencing their stress levels.

**Materials and Methods:** This is a cross sectional study done on parents of neonates admitted in NICU of rajindra hospital patiala to assess the amount of stress experienced by parents of neonates admitted in NICU. Parents of neonates who were admitted in NICU for more than 24 h were included in the study (106 mothers and 44 fathers). A semi-structured validated interview-based questionnaire / proforma consisting of Parental Stressor Scale: NICU (PSS: NICU) comprising four sub-scales, and questions related to maternal and neonatal characteristics were used.

**Results:** If the four subscales are considered, most stressful for the parents is the NICU sight and sound (e.g., alarms, monitors), followed by relationship with baby and parental role. This is consistent with other studies by Carter et al. and Musabirema P et al. These studies state that sights, sounds, and the general environment of the NICU causes stress and panic in the parents. The second specific area that caused stress in this study is parents relationship with their child.

**Conclusion:** The results of this study support wider use in research and clinical practice to identify level of parental stress. Interventions can be developed to reduce its negative effects on individual, interpersonal, and societal levels. The stress score was not significantly different in between fathers and mothers of newborn admitted to NICU. Appropriate counseling should be directed toward both mother and father. Future studies should be planned in order to decrease the stress level in parents.

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**Introduction**

Preterm neonates can witness many problems which must be treated in the neonatal intensive care unit (NICU). Treatment for a baby in the NICU is a devastating experience for parents. Parents of preterm babies have comparatively more depression, anxiety, and post-traumatic stress disorder (PTSD) symptoms during hospitalization and six months post delivery as compared to Parents with term babies.[2] Parents of preterm baby experience feelings of sadness, fear, hopelessness, anger, insecurity, stress, and guilt that make them depressed and have hindered interactions with their baby.[2] Parents' feelings include unexpected situations involving their baby as well as noisy equipment in the NICU.[2] These experiences can affect parent's mental and physical health, parent-child relationship, and parental roles.

Parental stress emanating from infants hospitalized

in the NICU is well noted. Stress due to the birth of a premature or sick neonate has received utmost attention and is linked with concurrent parental anxiety and depression.[1] The National Sleep Foundation cites 7–8 hours/night as the necessary sleep need in adults. Sleep is a major issue watching the prevalence of postpartum sleep problems (57.7%) and complex relationship between postpartum sleep and depression.[1] Parental stress resulting from the NICU experience is potentially impacting parenting behavior as well as producing long term emotional problems and health alteration.[1]

The pattern of stress noted may differ for mothers and fathers. In a study of PTSD cases following parental NICU experience, measured using the Stanford Acute Stress Reaction Questionnaire, fathers as compared to mothers had increased PTSD

scores at four months following their child's birth. In this same study 33% of fathers, compared with 9% of mothers, satisfied criteria for diagnosis of PTSD.[1]

Such clinical evaluation needs instrumentation that not only is both psycho metrically solid but also gives straightforward administration and scoring as well as providing population norms for comparison.[1] The purpose of this study was to test the relationship between parental stress associated with hospitalization of a neonate in the neonatal intensive care unit (NICU) and paternal responses to them. Parent responses noted were anxiety, depression, fatigue, and sleep disruption measured using well specified proforma. Research questions included:

1. What is the relationship between various factor affecting parents (NICU sights and sounds, infant behavior and appearance, and alteration of parental role)?
2. What are parental responses to NICU stress (sleep disturbance, fatigue, anxiety, and depression)?
3. What is the relation in between NICU parent

stress (infant behavior and appearance, NICU sights and sounds, and alteration of parental role) with anxiety, depression, fatigue, and sleep disruption?[1]

### Aims and Objectives

Aims and objectives of study is to determine the amount of stress experienced by parents of neonates admitted in NICU.

### Materials and Methods

This was a cross-sectional study conducted on parents of neonates admitted in NICU of Rajindra Hospital Patiala, India, during a period of 4 months from October 2022 to January 2023. Written informed consent was obtained from the participants. Parents of neonates who were admitted in NICU for more than 24 h were included in the study (106 mothers and 44 fathers).

A semi-structured validated interview-based questionnaire / proforma consisting of Parental Stressor Scale: NICU (PSS: NICU) comprising four subscales, and questions related to maternal and neonatal characteristics were used.

**Table 1:**

Infant Demographics	
1. Gestational Age	
• Extremely Premature (< 28 wks.)	26
• Premature (28–36 wks.)	76
• Full-Term (37–42 wks.)	48
2. Birth Weight	
• Average (above 2,500 grams)	33
• Low (1,500–2,500 grams)	64
• Very Low (1,000– < 1,500 grams)	38
• Extremely Low (< 1,000 grams)	15
3. Medical Complications	
• Prematurity With Respiratory Disorders	93
• Infectious	72
• Metabolic Disorder	55
• Cardiovascular Disorders	24
• Gastrointestinal	44
• Congenital	11

**Table 2:**

Parents Demographics	
1. Gender	
• Male	44
• Female	106
2. Age	
• 14-21 years	18
• 22-30 years	85
• 31-40 years	34
• 41-45 years	13
3. Education	
• Illiterate	38

• Primary	30
• Matrix	40
• Sr. Secondary	29
• Graduate	13
• Professional Degree	-
4. Occupation	
• Unemployed	88
• Unskilled Labour	32
• Skilled Labour	26
• Professional	4
5. Residence	
• Urban	39
• Rural	111
6. Types of Family	
• Joint	96
• Nuclear	54
7. Socio economic Status	
• Upper	-
• Upper Middle	-
• Lower Middle	13
• Upper Lower	39
• Lower	98

#### Parental stress scale: Neonatal intensive care unit

In the Parental NICU Stress model, NICU environment stressors directly influence parents' stress response. Four major NICU environment stressors were identified and described in detail. This scale has been widely used in the neonatal literature and has been shown to have high validity and reliability.[3]

The PSS: NICU contains 46 items, corresponding to four sub scales and a general stress item. The four sub-scales and their numbers of items are as follows: Sights and Sounds, 5 items; Infant Appearance, 19 items; Parentinfant Relationship, 10 items; and Staff, 11 items. Another was a question on general or overall stress level.[3]

Participants were asked to rate each item, according to how stressful the situation described in each item was for them:

1 = not at all stressful, 2 = a little stressful, 3 = moderately stressful, 4 = very stressful, and 5 = extremely stressful. Stress is defined as feeling

anxious, upset or tense. If participants have not experienced a particular situation, they were told to indicate this by answering "not applicable." If a participant had multiple infants in the unit, questions on the scale relating to a neonate were requested to be answered with regard to the most applicable infant.[3]

**Statistical Analysis:** Data from interviewing parents were collected using semi-structured questionnaire. Statistical measures such as mean, and proportion were used.

#### Results

In the four subscales considered, most stressful event for the parents is the NICU sight and sound (e.g., alarms, ventilators, monitors), this is followed by relationship with baby and parental role. This is consistent with other studies by Carter et al. and Musabirema P et al. These studies displays that sights, sounds, and the general environment of the NICU can cause stress and panic in the parents. The second area that caused stress in this study was parents relationshipwith their newborn.

**Table 3:**

Parental Stress Score NICU (46 Items)	
Mean±SD	
1. Sight and Sound (5 items)	3.46±0.30
2. Infant behaviour and appearance (19 items)	1.68±0.42
3. Relationship with baby and parental role (10 items)	2.90±0.66
4. Staff behavior and communication (11 items)	2.23±0.41

Minimal stress is caused by “infant appearance” which may be because of the type of interaction that occurred during visiting hours was not enough to create a bond or notice the behavior of the baby. Studies suggest that emotional stress may not get over time and these parents are at risk for delayed response.

### Discussion

Parents of newborns admitted in the NICU may be exposed to stressors linked with COVID-19, such as increased worries about neonate health, need for physical spacing, restrictions in NICU visits, overall reorganization of health services, and decreased social and family support.[4]

Some studies suggest that mothers present higher levels of stress than fathers. However, in this study, differences in stress levels of father and mother were not statistically significant. These days, fathers have equal responsibility toward their child and they are the earning head of the family in majority cases in India and thus help in maintaining family stability during the hospital admission. Thus, stress due to their child's hospitalization won't depend on the gender variation.

Notably the NICU experience is linked with long term parent emotional relation. Research suggests parent responses are not only limited to the period of hospitalization and that the NICU experience is associated with several diseases such as acute stress disorder (ASD) and post-traumatic stress disorder (PTSD).[1] In one study 15% of mothers and 8% of fathers demonstrated existence of PTSD when evaluated 30 days after their infants' NICU admission.[1] Mothers of preterm infants display significant stress reactions 6 months after the infants' expected due date. and in another study mothers continue to experience distress and evidenced alterations in parenting 2 years after the infant's due date.[1] When compared with low-income mothers of healthy infants, low-income NICU mothers showed an increased rate of ASD (3% vs. 23%).[1] In these circumstances, the parent–infant bonding that occurs during the newborn period builds the foundation for a lifelong relationship. This process does not occur, however, when the infant is born prematurely or at risk, and is admitted in the first several weeks or months in the NICU. The complexity in the environment of the neonatal intensive care unit, the medical care, individual circumstances, and the appearance of the infant can all be factors that affect and perhaps lessen the families' role with their baby.[9] The stress factor is further increased due to the financial issues faced by the parents. Majority of the parents don't have any income source during the period of admission at NICU. This further leads to increased rude behaviour of the parents with their doctor and paramedical staff at hospital. The stress faced by parents is

exponentially increased in the families belonging to lower class as their income source is already compromised in the need of hour. Parents start feeling helpless and hopeless. The Neonatal Intensive Care Unit (NICU) environment has the chances to exacerbate stress for parents of infants admitted to the NICU for reasons other than prematurity or low birth weight. NICU stressors, individually or in combination, may interfere with the parent–infant relationship and create extra difficulties for the couple and wider family.[5] Common stress and stressors that parents realise during the NICU admission of their high-risk neonate include anxiety related to the neonate health condition, neonatal well-being, parenting role alteration, physical barriers, and family financial issues. It also can lead to social phobia, negative perception of child health, inactive maternal involvement - a moderate amount of smile, touch, and inadequate response to their neonate while caring for them.

Everyone in the modern world have stress at least once in life. Stress has devastating effects on individual, interpersonal and societal levels; hence it is important to understand its nature to assist development of interventions to mitigate these effects.[6]

The birth of premature infants and their admission to the Neonatal Intensive Care Unit (NICU) causes emotional stress in parents and in the whole family. This event can affect the interaction between family members and affect the family's environment.[7]

Mother infant bonding is a dynamic process which occurs immediately after birth, in which mother forms an emotional attachment with the infant. This is disrupted when baby is immediately admitted to NICU. Process of having a baby is widely regarded as a life crisis & it is taken much more so if the infants are born premature or are low birth weight or is critically ill requiring NICU care. Infants who are born prematurely or suffer from an illness or are born with serious birth defects can be immediately admitted to the neonatal intensive care unit (NICU). Very few parents are ready for this possibility and this falls within the category of an undesirable situation, riddled with excess tension that can precipitate parental stress, anxiety and possibly depression.[8]

The personal characteristics of the parent, such as their previous experiences and antenatal history, may influence parental stress. In this study, the stress presented by parents does not seem to be related to other pregnancy variables such as parity, pregnancy planning, or having an older child hospitalized in a NICU. No significant differences were found between stress and birth weight of the newborn. This is in agreement with some studies that show that the level of stress is not necessarily associated with the severity of the newborn, but with other factors.

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