

Original Research Article

Parent stress in neonatal intensive care unit: an unattended aspect in medical care

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ABSTRACT

Background: The birth of an infant that needs care in a neonatal intensive care unit (NICU) can be stressful for the parents. The parent-infant bonding process that occurs during the newborn period establishes the foundation for a lifelong relationship. This typical process does not occur when the infant spends the first several weeks or months in the NICU. Quantifying stress levels of parents and identifying the greatest environmental stressor by understanding the aspects of infants, parents and the environment that can cause stress may be useful in assisting the health personnel in understanding their importance and in improving the quality of care. The objective of the study was to quantify stress levels of parents of babies admitted in NICU and compare the sources of stress for mothers and fathers.

Methods: This was a cross-sectional, observational, hospital based study where stress levels were assessed using Parental Stressor Scale: neonatal intensive care unit (PSS: NICU) questionnaire among parents of 400 newborn admitted in NICU. Stress was quantified using 5 point Likert scale from 1 (not at all stressful) to 5 (extremely stressful). The overall stress levels were calculated for each subscale and total scale and compared.

Results: NICU environment is moderately stressful for both mother and father. The highest score was in the field of Relationship with the baby and parental role for mothers as well as for fathers. Mothers had significantly higher stress scores for each subscale and the total scale compared to fathers.

Conclusions: NICU parents are under significant stress and this is need of time to give family centered care.

Keywords: NICU, Newborn, NICU, PSS, Parents, Stress

INTRODUCTION

Parents are the most crucial and immediate environment in which the infant survives and develops. The birth of an infant that requires neonatal care is the one that has the potential to cause considerable amount of stress and anxiety for parents. The parent-infant bonding process that occurs during the newborn period establishes the foundation for a lifelong relationship. This typical process does not occur when the infant spends the first several weeks or months in the NICU.¹

Neonatal environmental stress can be a major factor contributing to the parents' distress. NICU mothers' experience multiple stressors related to preterm birth, medical condition of the baby, complexity of the NICU environment and perceived vulnerability of the infant, in addition to stressors associated with the normal transition to parenthood.^{2,3} A further reason it is imperative to examine and understand parental stress from the NICU is that it can affect infant development. A disturbed parent-infant relationship has been implicated in infant behavioral problems, emotional problems, and abuse.⁴

Promoting development is particularly pertinent for infants admitted to the NICU, who have a higher risk of being born with physical and psychological difficulties compared to other infants.⁵⁻⁷

Parent stress in NICU is often a neglected area. Much of the care giving is centred to infants. Quantifying stress levels of parents and identifying the greatest environmental stressor by understanding the aspects of infants, parents and the environment that can cause stress may be useful in assisting the health personnel in targeting a complete family centered care and thus improving quality of life.

Stressful nature of NICU environment for parents is well documented in western literature.^{2,8-12} However, there are very few Indian studies till date, quantifying stress level in NICU parents.^{13,15} Moreover, both in western as well as Indian literature, these studies are more representative of mothers' experience as opposed to fathers' experience.^{3,13,14} Small amount of PSS: NICU research that has considered fathers separately has shown that fathers also experience stress from the unit.^{10,11,15} Furthermore, there has been lack of literatures comparing stress scores of mothers and fathers. This study was conducted to quantify the stress experienced by parents using the parental stressor scale: neonatal intensive care unit (PSS: NICU) and compare the sources of stress for mother and father.

METHODS

The present study was conducted in Neonatal Intensive Care unit, Department of Paediatrics, Kamla Raja hospital, Gwalior, Madhya Pradesh, India. A tertiary care centre from July 2012 to July 2013 for a period of one year. Ethical approval for this study was obtained from Institutional Ethical Committee at Gajra Raja Medical College, Jiwaji University, Gwalior, Madhya Pradesh, India. The samples for the study were 400 newborn and these were randomly selected. The sample size was selected on basis of number of admissions in NICU according to annual statistics of department. The participants of the study were mother and father of these admitted newborn and only those parents, who were in a cohabitating relationship, gave written informed consent and their newborn is admitted for at least 7 days in NICU were included in the study. Orphan and medico legal babies were excluded from the study. After recruitment, demographic details of NICU parents like age, education, occupation, income and hospitalization details of babies like gestation, birth weight, birth order, sex etc. were collected. Parental stress levels were assessed using the parental stressor scale: neonatal intensive care unit, a validated questionnaire in both English and Hindi language to measure parental stress. The scale consists of four subscales that measure stress related to (a) the sights and sounds of the unit (5 items), (b) the appearance and behaviours of the infant (19 items), (c) the impact on the parents' role and their relationship with their baby (10

items), and (d) the staff behaviours and communications (11 items). There is also a general stress-level question that summarizes the parents' overall feeling of stress related to having an infant in the NICU. The responses to the PSS: NICU were scored on a 5- point Likert scale from 0 to 5 where 0 means no experience at all with the situation or phenomenon, 1 (not at all stressful) to 5 (extremely stressful). Mean scores and standard deviation were obtained for each subscale and total scale separately for mothers and fathers and the overall stress scores was then calculated. Parental stress levels were classified according to the points on Likert scale as low (1-1.9), moderate (2-3.9) and high (4-5).

Statistics analysis

Using SPSS v16, paired t test was applied to compare stress scores of mothers and fathers as they share a common infant and linked by their couple status.

RESULTS

Of 400 parents enrolled, the mean age of the mother was 27.3 year with a range between 17 to 44, 49.2% were homemakers and 27% were not formally educated while the mean age of the father was 29.6 year with the range of 19 to 45, 48% were non-professionals by occupation and 18% were not formally educated. Among distribution of infant characteristics, 55.5% were born by normal vaginal delivery, 76.2% were admitted as extramural while 23.8% were admitted as intramural, 56.5% were males, 32.8 % were of birth order 1, 53% were preterm and 46% were in low birth weight group. Mean postnatal age while admission was 14.8 days with the range of 8-28 days and mean length of stay was 11.5 days with the range of 7-28 days. The most common reason for admission was neonatal septicaemia (27.25%), 2nd most common was perinatal asphyxia (22.5%), followed by prematurity (13.5%), respiratory distress (13.5%), congenital malformations (9.25%), neonatal hyperbilirubinemia (7.75%) and 6.5% others.

Table 1: Comparison of overall stress score of mothers across subscale and total scale.

Subscale	Overall stress score (MS)±SD
Sights and sounds	2.04±0.438
Baby looks and behaves	3.23±0.555
Relationship with baby and parental role	3.74±0.637
Staff behaviours and communication	1.92±0.381
Total scale	2.73±0.334

The various components of PSS: NICU and their corresponding parent stress score are depicted in Table no 1, 2. NICU environment is moderately stressful for both mothers (mean = 2.73±0.334) and fathers (mean =

2.37±0.292). The highest score for mothers is in the field of Relationship with the baby and parental role (mean = 3.74) and next to it is in the baby looks and behaves (mean = 3.23) while for fathers both the subscales produced almost equal stress scores (baby looks and behaves (mean = 2.84±.582) and relationship with the baby and parental role (mean = 2.95±.586).

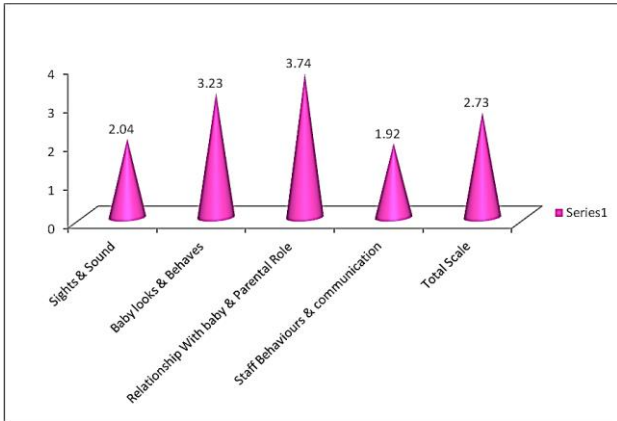


Figure 1: Distribution of mothers' mean across subscale and total scale.

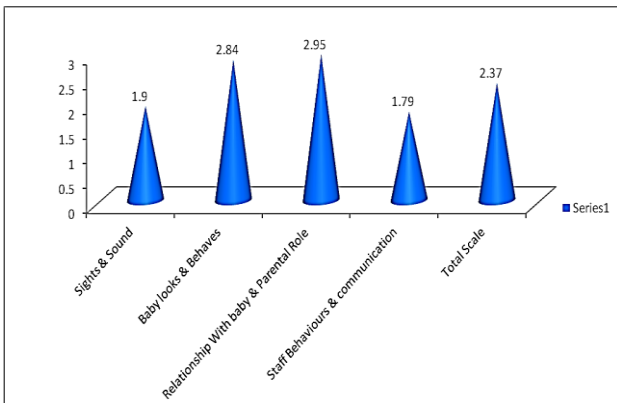


Figure 2: Distribution of fathers' mean score across subscale and total scale.

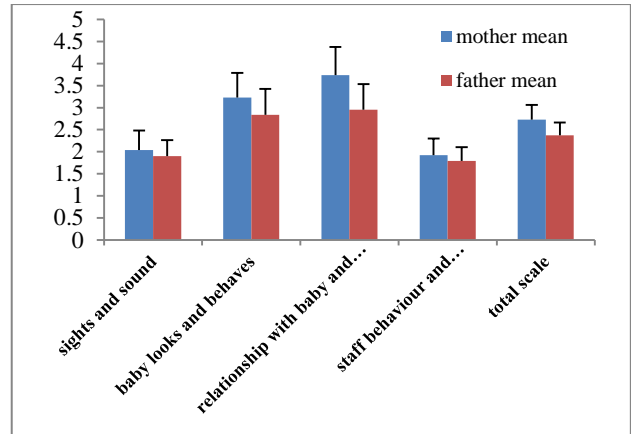


Figure 3: Distribution of mothers' and fathers' mean across subscale and total scale.

Table 2: Comparison of overall stress score of fathers across subscale and total scale.

Subscale	Overall stress score (MS)±SD
Sights and sounds	1.90±0.362
Baby looks and behaves	2.84±0.542
Relationship with baby and parental role	2.95±0.586
Staff behaviours and communication	1.79±0.312
Total scale	2.37±0.292

For comparing mothers' and fathers' stress scores in each subscale and total scale paired t test was applied as they share a common infant and linked by their couple status. Mothers had significantly higher stress scores for each subscale and the total scale compared to fathers [$p < .001$ with 95% confidence interval (-0.39583 to -0.33634)]. These findings are illustrated in Figure 3. Overall feeling of general stress of having an infant in NICU lied between moderately to highly stressful for mothers (mean = 3.8±0.736) and low to moderately stressful for fathers (mean = 2.9±0.700).

Table 3: Comparison of PSS: NICU mean across mother and father across subscale and total scale using paired t-test.

Subscale	Overall stress score (MS)±SD		Mean difference (95% CI for differences)	p value
	Mother	Father		
Sights and sounds	2.04±0.438	1.90±0.362	-0.14925 (0.20021, 0.09829)	<0.001
Baby looks and behaves	3.23±0.555	2.84±0.542	-0.39100 (-0.44096, -0.34104)	<0.001
Relationship with baby and parental role	3.74±0.637	2.95±0.586	-0.79175 (-0.85080, -0.73270)	<0.001
Staff behaviours and communication	1.92±0.381	1.79±0.312	-0.12200 (-0.16442, -0.07958)	<0.001
Total scale	2.73±0.334	2.37±0.292	-0.36609 (-0.39583, -0.33634)	<0.001

DISCUSSION

Parental stress in NICU is often a neglected area. Much of the care-giving in the NICU environment experienced by the infants is related to medical intervention. The NICU environment is often infant-centred instead of family-centred. The results of this research indicate that scores measuring a feeling of general stress were highest on the PSS: NICU, suggesting that the stress experienced by parents is high. Case-Smith has said that the process of intervention begins with the identification of family concerns.¹⁶ The finding of high general stress suggests that it is important for health care practitioners to determine more precisely what those specific stressors are so that their intervention protocols can better address the parents' needs, reduce their stress, and enhance their ability to understand and cope with their infant.

Specifically, in regard to the different areas of stress measured by PSS: NICU, the result of this study are consistent with that of Miles which indicate the most stressful aspect of having an infant in NICU is an altered parental role and relationship with their baby both for mother as well as father.⁸ Although advances in technology have allowed greater numbers of infants to survive, morbidity remains high.¹⁷ Follow-up studies of survivors have documented higher rates of neurodevelopment impairment, including motor, visual, and hearing disabilities; mental retardation; attention disorders; and learning disabilities at school age in this infants.¹⁸⁻²¹ This study substantiates that intervention and counselling should focus on the parents role with their baby on priority basis. Early involvement of mothers in caring, holding and feeding baby and regular visit by family members may reduce their stress levels, thereby promoting optimal parent-infant relationships and subsequent infant development.

The second specific area that caused stress for parents in this study was how the baby looked and behaved. These findings were consistent with studies by Miles and Miles et al, but inconsistent with Shields-Poe and Pinelli who found this area to cause the greatest stress. These findings seem sensible since extremely premature babies are physiologically unstable, demonstrate many aspects in their physical appearance that are different, and are less responsive to social interaction than infants who are born later in a pregnancy.^{8,10,22} In addition, their extreme prematurity often results in the need for medical equipment and a longer length of stay to facilitate and allow time for their development.

An area that caused only "a little stress" for the parents in this and other studies by Shields-Poe D and Pinelli J, Miles MS, Funk SG and Kasper MA, and various others was the NICU sights and sounds.^{10,22,23} Explanations offered for these lower stress levels are that the environment is perceived to be helping to keep the baby alive by Affonso et al.²³ Also, parents in this era of technology relatively adapt themselves to the NICU

environment as a part of their infants' comprehensive care.

The least stressful area for parents in this study and other studies was regarding the staffs' behaviour and communication.^{10,23,24} Various authors have offered explanations for this finding. They range from it being difficult for parents to honestly appraise staff behaviors and communication at a time when their infant is seriously ill and under the care of the staff as found out by Affonso et al to adequate communication actually occurring thereby attesting to the high quality of intervention being provided in the NICU by Tommiska et al.^{23,24} Whereas each of these explanations seem possible, it is likely that most parents would at least be cognizant of the fact that the staffs is working to help their infants' condition to improve. In this NICU setting, an appropriate interaction of doctors and staff with the parents about infants' diagnosis and treatment explains for the minimal stress in this aspect both for mothers and fathers.

Overall, mothers found the NICU to be much more stressful than did fathers, a finding consistent with previous studies.^{9,10,11,25} Moreover, mothers had significantly higher stress scores for each subscale and the total scale compared to fathers ($p < .001$). In contrast, Franck et al found no significant differences between mothers and fathers in their USA sample.²⁶ A number of possible explanations for the gender difference have been provided by Affleck et al.²⁷ First, it may be due, in part, that fathers employ more effective coping strategies to decrease stress. Second, mothers' experience of greater stress may be due to more negative appraisals of their infant's difficulties. Mothers have been shown to perceive their premature infant as more difficult compared to fathers, at admission and discharge.²⁷ Similar result was found by Affleck et al.²⁸ Whereby more mothers than fathers were worried about their infant's future difficulties regarding health and development at discharge. Last, a mother's greater stress, early in her infant's NICU admission, may be due to mood disturbances from the birth of her baby through "baby blues," postpartum mood disorder, or obstetric procedures. This suggests that mothers and fathers may have different expectations of their role with their infant and they react differently to a child with a disability. Therefore, health care practitioners need to work with parents in identifying roles that each of them can fulfil in the NICU, and provide support for care-giving procedures that are appropriate for the parent.

Though the mother had more stress than father in each subscale and total scale, the stress levels of fathers are also significant. This result is supported by a recent Indian study whereby stress levels of fathers were found to be significant.¹⁵ The conventional maternal role of being a primary caregiver in traditional cultures may be primarily responsible for this phenomenon, while the traditional paternal role is one of being financially

responsible for the household. The modern transitions in family structure and gender roles demand involvement from both parents for the optimal outcomes of their offspring. This probably explains the alteration with parental role and relationship with infant as most stressful aspect for fathers also. Healthcare personnel in NICU must recognize that fathers too go through significant stress and address their needs along with that of mothers.

CONCLUSION

Parents of newborns admitted in NICU are under significant stress. Mothers experience more stress than fathers in all the subscale and total scale. Relationship with the baby and parental role are the most stressful aspect for both the mothers and fathers.

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