



PATTERNS OF DISTRESS IN MOTHERS OF NICU ADMISSIONS

Paediatrics

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ABSTRACT

Background: Birth of a newborn that requires admission to NICU is stressful and traumatic to the parents.

Objective: The present study aimed to determine the patterns of distress in mothers of neonates admitted in NICU and to find its effects on infant-parent relationship.

Materials and methods: An interview based cross-sectional study was done in mothers of neonates admitted in Tier 3 NICU for a period of more than 48 hours for a total period of one year. Questions were formulated and levels of distress measured on correlates of depression and anxiety. Scales used were: PSS-NICU, EPDS and GAD-7. ANOVA and regression analysis was used for statistical calculations.

Results: Findings of the study revealed physical appearance of the neonate as well as the NICU environment as major stress inducers followed by neonatal characteristics, socio-demography of mothers and family support. Most mothers had anxiety traits whereas 19.9% had depressive traits.

Conclusion: Mothers exhibit high levels of stress during their neonate's hospitalisation that is exhibited as both anxiety and depression further hampering adequate care and establishment of infant-mother bond. Early identification of anxiety level has implications for support of mothers during hospitalisation of their newborns.

KEYWORDS

Family support, anxiety, mothers, neonates, NICU

I. INTRODUCTION

The birth of a newborn requiring admission to a Neonatal Intensive Care Unit (NICU) causes much stress and trauma to the parents.[1] The family experiences separation from their neonates and have doubts about the survival and the later clinical outcomes. Inability to watch the ongoing treatment also creates mistrust on the medical staff taking care of their babies. The neonatal intensive care unit environment also has the potential to exacerbate the anxiety of mothers of neonates admitted to the NICU.

The levels of stress is exponentially high in mothers and also hinders the development of infant-mother bond that is crucial in the post-discharge care of these NICU graduates.[2] Sources of maternal stress may vary according to sociocultural demographics and NICU environment. This study was conceptualised and conducted in order to assess the levels and sources of stress in mothers as well as their variance in different backgrounds.

II. MATERIALS AND METHODS

The study was conducted among the mothers whose neonates were admitted in the Neonatal Intensive Care Unit (NICU) of a tertiary level hospital. The data was collected using interview method. All mothers with an infant admitted in the level 3 NICU for more than 48 hours was interviewed using a questionnaire. Mothers admitted elsewhere and not present in the neonatal ward or those whose baby succumbed to the medical condition were excluded from the study. Questions were categorised into maternal, infant and NICU characteristics. Maternal segment collected data regarding demography, gravidity, antenatal events, antenatal checkups, family support during pregnancy and her views regarding her baby. Neonatal segment included gestational age, birth weight, maternal risk factors and clinical status of the neonate. NICU characteristics included patient:doctor ratio, patient:nurse ratio, behaviour towards the parents, counselling session duration, type of language used, cleanliness etc.

2.1 TOOLS

The instruments used to collect the data were:

1. Parental Stressor Scale-NICU: it is a 45-item instrument that measures mother's perception of stress in the NICU. It consisted of four subsets that measure stress related to

- A) sight and sound of unit
- B) appearance and behaviour of the infant
- C) mother's relationship with the baby
- D) mother's communication with the staff

Scored from 1 to 5 where 1 represents no stress and 5 represents extremely stressful.[3] Score 0 is given to the [4] question which the mother is unable to answer

2. Edinburgh Postnatal Depression Scale : it is a 10-item scale to identify peri-natal depression.[4] A score above 12 indicates postpartum depression

3. Generalised Anxiety Disorder-7 : it is a [5] 7-item scale to measure anxiety in cut off points of 5, 10 and 15 representing mild, moderate and severe anxiety respectively.

2.2 Statistical analysis

Data was analysed using SPSS v22.0. ANOVA and Pearson correlation coefficient was calculated to compare PSS:NICU with different maternal and infant characteristics. Regression analysis was used to determine various factors influencing stress at a multivariate level. The threshold for statistical significance was set at $p=0.05$

RESULTS

One hundred and one mothers were recruited over a period of one year. The mean age of mothers was 23.5 years. All mothers were married. Majority of them came from a rural background and were homemakers (93.1%). Most of the mothers had received primary education (70.3%) whereas only 9.9% were illiterate. About thirty-four percent of the mothers were primigravida, 69.3% reported more than four prenatal check-up visits, 40.59% reported pregnancy complications, and 64.3% delivered by normal labor. Most of the mothers (93.1%) perceived good family support during pregnancy; 60.39% perceived that their baby was suffering from severe discomfort.

Neonatal data showed majority to be premature (60.4%). Fifty-two percent were low birth weight whereas 17.82% were very low birth weight babies. Most babies recruited in the study were males (61.38%). Amongst those included 47.52% were on ventilator. Mean length of NICU stay for the infants was 18.3 days (range 7–59). Ninety-seven percent mothers had no experience of a previous child being in NICU. However, three of the mothers who had a previous experience had a higher PSS:NICU score.

The mean maternal stress level on PSS: NICU was 1.66. The mean scores for sub-scales were: sights and sounds (2.01), baby look and behaviour (1.38), parental role alteration (1.67), and staff behaviours (1.21). The major stressors turned out to be the equipments near the baby along with the monitors and tubes. Twenty percent of mothers had clinically significant depressive symptoms ($EPDS \geq 12$) whereas most mothers had anxiety symptoms ($GAD-7 \geq 5$)

Variance in maternal stress with the infant and maternal characteristics at the univariate level is shown in Table 1. Higher maternal stress was

found to be associated with better education status, poor family support during pregnancy, C-section delivery, severity of mothers' perception of the baby's discomfort, very low and extremely low birth weight of the baby, baby being on ventilator, previous experience of having a baby in NICU, likely post-partum depression and moderate

to severe anxiety symptoms. Regression analysis revealed that education level, perceived family support, birthweight of baby, baby's discomfort, baby being on ventilator, previous baby in NICU, EPDS scores and GAD-7 scores were significantly associated with PSS: NICU scores.

Table 1: Variance in maternal stress with different maternal and neonatal characteristics

VARIABLE	GROUP	N(%)	PSS:NICU score mean	P
Age (n=101)	18-25	52(51.4)	1.45	0.446
	>26	49 (48.6)	1.50	
Education	Illiterate	10 (9.9)	1.28	<0.001
	Primary school	71 (70.3)	1.66	
	High school	14 (13.86)	1.95	
	Graduate	6 (5.94)	1.70	
Gravida	Primi	34 (33.66)	1.67	0.689
	Multi	67 (66.33)	1.62	
Prenatal visits	<4	31 (30.6)	1.53	0.223
	>4	70 (69.3)	1.38	
Antenatal complications	Known	41 (40.59)	1.53	0.665
	Not known/absent	60 (59.4)	1.55	
Family support	Present	94 (93.1)	1.44	0.002
	Absent	7 (6.9)	2.3	
Delivery type	Normal vaginal	65 (64.3)	1.34	0.154
	C-section	36 (35.7)	1.76	
Neonate gender	Male	62 (61.38)	1.69	0.175
	Female	39 (38.61)	1.48	
Gestational age	Preterm	61 (60.4)	1.62	0.642
	Full term	40 (39.6)	1.55	
Birthweight	>2500gm	21 (20.8)	1.79	0.003
	1500-2500gm	53 (52.47)	1.57	
	1000-1500gm	18 (17.82)	1.61	
	<1000gm	9 (8.9)	2.20	
Baby on ventilator	Yes	48 (47.52)	1.62	0.034
	No	53 (52.48)	1.43	
Perception of baby's discomfort	None/mild	41 (40.59)	1.48	<0.001
	Severe	60 (60.39)	1.86	
Previous experience of child in NICU	Yes	3 (2.97)	2.13	0.004
	No	98 (97.03)	1.66	
EPDS	<12(unlikely PPD)	91 (90.1)	1.55	<0.001
	>12(likely PPD)	20 (19.9)	1.89	
GAD7	<5(none)	3 (2.97)	1.01	<0.001
	5-9 (mild)	83 (82.17)	1.48	
	>10(moderate/severe)	15 (14.85)	2.00	

*PPD = Post-partum depression

IV. DISCUSSION

This study was done to apprehend the level of stress being suffered by the mothers of the neonates being admitted in the NICU soon after birth. The comparison amongst the various maternal, neonatal and situational characteristics were done using the Parental stressor scale in NICU.

Thesights and sound, appearance and behaviour, parental role alteration, and staff behaviours were 2.01, 1.38, 1.67, and 1.21 respectively. As compared to other studies, these scores were relatively less.[1,6,7] However not all these studies considered all the four sub-scales of the PSS:NICU. The study done by Varghese in Ludhiana did not evaluate sight/sound of baby and staff behaviour whereas the one done by Chaurasia et al in Pondicherry did not report staff behaviour.[1,6] A more recent study done by Agarwal R and Gaur A from Indore reported values closer to our study with evaluation of all the four parameters.[7] Mothers in this study had a mean age of 27.3 years, but only half were homemakers, and 27% were illiterate.

Lower education of the study population seems to be protective against maternal stress [Table 1]. More is the level of education, more is the curiosity to learn about the various reading being shown on the monitor, the sounds being produced by the various equipments, procedures being performed on the baby and the treatment being prescribed by the treating physician. Majority of the mothers in our study reported good family support during pregnancy [Table 1]. However, those who reported poor support during pregnancy had higher maternal stress score. A study conducted by Doering LV also showed that lower levels of social support was associated with higher levels of anxiety amongst the mothers.[8] The presence of family members during hospitalisation helps relieve stress and anxiety to a significant level.

Favourable staff behaviour also helps in mitigating anxiety being suffered by the parents. Parental role alteration (meaning the change of role of parents from being actual caretakers to being spectators when the nurse becomes the caretaker of the child) also creates much stress amongst the parents. However, if the staff behaviour is warm and reliable and the response to the parental queries is given with patience, the faith of the parents increase thus decreasing the overall stress score. Sights and sound of the NICU environment, followed by parental role alteration, were major sources of stress in our study. Consistent with these findings, Varghese M had found baby appearance, followed by parental role alteration, as the major sources of stress, and Chaurasia N et al had reported parental role alteration, followed by baby appearances, as the major sources of stress.[1,6] So, remediation programs for parents must consider the local demographic profile and should always have a component that addresses parental role alteration.

As expected, the mothers' perception of the severity of baby's illness was strongly associated with their stress response. Other situational factors such as the baby having extremely low birth weight (<1000 g) and the need for ventilator support were significantly associated with maternal stress response. Singer et al. conducted study on mothers at 1 month post delivery. It revealed that mothers of VLBW infants had more psychological distress than mothers of term infants and hence these mothers required screening and support services in immediate post-natal period and follow up programmes.[9] Padovani FH et al showed increased levels of situational anxiety in mothers of premature babies that relieved mostly post-discharge.[10]

Busse et al. found that amongst parents, PSS: NICU total score was significantly correlated with anxiety ($r = 0.61$), depression ($r = 0.36$), and sleep disturbance ($r = 0.60$).[11] We found that most of the mothers

had anxiety which was mainly mild in nature similar to another study done in Gujarat.[12] Only 14.86% had moderate to severe form of anxiety. The EPDS score for depression was mainly <12 implying that 90.1% mothers were unlikely to be suffering from postpartum depression(PPD). However, for those 19.9% mothers who are likely to suffer from PPD, counselling and intervention programmes can help in establishing a better infant-mother bond post-discharge.

CONCLUSIONS:

Maternal anxiety in the NICU can be a significant and independent factor in hampering the parental-child bond in the immediate post-discharge period as well as cognitive development of the child later in life. Family centered care and family support groups in the NICU are the need of the hour. Remediation programmes and intervention strategies must be planned while the baby is hospitalised and during the follow up schedules to help parents cope with this stress and be able to take care of the baby in a more dynamic way.

REFERENCES

1. Varghese M. A study on parental stress in the neonatal ICU using parental stressor. *Pediatrics* 2015;135(Suppl 1):S9.
2. Pinelli J, Saigal S, Wu YW, Cunningham C, DiCenso A, Steele S, et al. Patterns of change in family functioning, resources, coping and parental depression in mothers and fathers of sick new-borns over the first year of life. *J Neonatal Nurs* 2008;14:156–65.
3. Miles MS, Funk SG, Carlson J. Parental stressor scale: Neonatal intensive care unit. *Nurs Res* 1993;42:148–52.
4. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: Development of the 10-item Edinburgh postnatal depression scale. *Br J Psychiatry* 1987;150:782–6.
5. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A brief measure for assessing generalized anxiety disorder: The GAD-7. *Arch Intern Med* 2006;166:1092–7.
6. Chourasia N, Surianarayanan P, Adhisivam B, Vishnu Bhat B. NICU admissions and maternal stress levels. *Indian J Pediatr* 2013;80:380–4.
7. Agrawal R, Gaur A. Parent stress in neonatal intensive care unit: An unattended aspect in medical care. *Int J Contemp Pediatr* 2016;4:148–53.
8. LV Doering, DK Moser, K Dracup. Correlates of anxiety, hostility, depression, and psychosocial adjustment in parents of NICU infants. *Neonatal Netw*, 19(5), 2000, 15-23.
9. P Zelkowitz, S Na, T Wang, C Bardin, A Papageorgiou. Early maternal anxiety predicts cognitive and behavioural outcomes of VLBW children at 24 months corrected age. *Acta Paediatrica*, May 2011, 700–704.
10. F. H. P. Padovani, M. B. M. Linhares, A. E. V. Carvalho, G. Duarted and F. E. Martineze, Anxiety and depression symptoms assessment in pre-term neonates' mothers during and after hospitalization in neonatal intensive care unit. *Rev Bras Psiquiatr*, 26(4), 2004, 251-4.
11. BM Melnyk, L Alpert-Gillis, NF Feinstein, E Fairbanks, J Schultz-Czarniak, D Hust, et al, Improving cognitive development of low-birth-weight premature infants with the COPE program: A pilot study of the benefit of early NICU intervention with mothers. *Res Nurs Health*. 2001;24:373–89.
12. Varma JR, Nimbalkar SM, Patel D, Phatak AG. The level and sources of stress in mothers of infants admitted in neonatal intensive care unit. *Indian J Psychol Med* 2019;41:338-42