

Sources of Parental Stress in Neonatal Intensive Care Units

¹Masumeh Akbarbegloo, ²Leila Valizadeh and ²Maliheh Asadollahi

¹Department of Pediatric and Family Health, School of Nursing and Midwifery,
Urmia University of Medical Sciences, Uromieh, Iran

²Department of Pediatric and Family Health, School of Nursing and Midwifery,
Tabriz University of Medical Sciences, Tabriz, Iran

Abstract: Premature newborn birth is related to hospitalization of newborn and separation from family. Not paying attention to emotional and psychological stresses of parents of such child, causes inadequate attachment with their newborn at the time of discharge and will increase vulnerability of child and parents. This study is done due to lack of enough research in this field in the country. A descriptive study with the population consisted of all mothers (n = 300) with hospitalized premature newborn in NICU, in 3 teaching hospitals in Tabriz (Taleghani, Alzahra, Koodakan) during the first 6 months in year 2007. Data collected by PSS questionnaire (Parent Stressor Scale) developed by Margaret Miles and Funk 1998. From NICU environmental stressors: The presence of monitors and equipment 64.3%, presenting another infant having a machine breath (respirator) in the room 38.3% and also from baby looks, behaves and special treatments: Unusual or abnormal breathing patterns in child 70.3%, tubes and equipment on or near the child 67%, suddenly change of newborn skin color 49.3%, seeing needles on the child's body, 44.7% and also from parental relationship and parent's role: Being separated from child 60.3%, feeling inability of helping child during hospitalization 51.7% and feeling inability of protecting child from pain and painful procedures 44.3% were respectively major stresses of the mothers. Also, from these three aspects of stressors, parental relationship and parent's role was the most stressful dimension. Due to inevitability of hospitalization of premature newborn in NICU. It is suggested that after premature birth, parents especially mothers should be prepared for first NICU face with their child and making appropriate communication with newborn and NICU environment and paying more attention in playing a good parents role consider, as the bases of family centered services.

Key words: Premature newborn, neonatal intensive care unit, stressor, child, family

INTRODUCTION

Preterm infants are those infants who born <37 completed weeks of gestation (Ryan-Wenger, 2007). As technology increases, smaller and more medically fragile infants are being treated and kept alive in highly technical Neonatal Intensive Care (NICU) environments (Miles *et al.*, 1993). Hospitalization of premature newborn is inevitable most of the time. The initial period of the infant's hospitalization is very stressful to parents. They must cope with an infant who has more difficulties to care due to prematurely and associated illnesses (Mok and Leung, 2006).

Mothers of infants who require special care begin their experience of parenthood in the unfamiliar and intimidating environment of the Newborn Intensive Care Unit (NICU) which may result in delayed maternal attachment found that the physical condition of the

infants and the mothers' personality traits contributed independently to maternal attachment (Heermann *et al.*, 2005; Shin and White-Traut, 2007; Feldman *et al.*, 1999). These findings suggest that newborns who are born ill and are separated from their mothers, as well as mothers who are highly anxious or depressed, are at the highest risk for disturbances in the development of maternal newborn attachment.

Upon the admission of an infant to the NICU, parents are confronted with the critical-care environment and all its associated demands. Early separation of the infant from parents increases strain on the infant-parent relationship, especially during lengthy stays in the NICU because parents need to be able to see, hold and touch their newborn in order to facilitate early attachment and bonding (Feldman *et al.*, 1999; Hall, 2005a, b; Soderstrom *et al.*, 2003).

Studies revealed certain themes describing parents' experience in the NICU. The overarching themes

were; feelings of stress, strain, separation, depression, despair, disappointment, ambivalence and lack of control over the situation and vacillation between hope and hopelessness (Arockiasamy *et al.*, 2008; Hall, 2005a, b; Heermann *et al.*, 2005; Jackson *et al.*, 2003; Bondas-Salonen, 1998).

Occupational therapy is one of the ways that can be reducing stress of parents. In occupational therapy, family-centered care requires the therapist to recognize the infant, as part of a family system. The philosophy of occupational therapy in early intervention is based on family-centered care principals that emphasize parent-professional collaboration in an effort to help family members develop positive relationships with their newborn, gain confidence in their ability to care for their infant and gain skills in relating to and working with the professionals involved in their infants' care (Case-Smith, 2001). Different factors, however can impact on determining the most appropriate intervention for infants and their families. The unique characteristics of the infants, the parents and the stress they experience can all influence the therapist's decisions regarding the treatment approach to be used. The planning of such interventions may be enhanced if the contributions of various factors that increase parental stress are identified (Shields-Poe and Pinelli, 1997).

Several investigation from the late 1970s, until the late 1990s recognized that sources of parental stress include the size and appearance of the infants surrounded by equipment and experiencing various invasive treatments, changes in the expected parenting roles with newborns, including long period of separation and adjusting to the hospital and NICU environment (Miles *et al.*, 1999), also researches have showed that emotional responses of mothers with preterm infants are more than fathers (Miles *et al.*, 1992). In a study of 23 couples using the PSS: NICU Miles *et al.* (1992), found that although both parents experienced the greatest stress in regards to their parental role, mothers experienced a greater degree of stress than fathers. Shields-Poe and Pinelli (1997) also found in using the PSS: NICU that mothers were significantly more stressed than fathers in regard to their parental role and determined that mothers were more stressed by the sights and sounds of the unit than fathers. A difference in the mothers' and fathers' response was also demonstrated in a study by Doering, Moser and Dracup who determined that mothers demonstrated higher anxiety and poorer adjustment than fathers to the overall experience of having a child in the NICU. Therefore, the purpose of this study was to determine the stressors of mothers who have a premature infant in neonatal intensive care.

MATERIALS AND METHODS

This study is descriptive and the population consisted of all mothers with hospitalized premature newborn in NICU (n = 300) during the 6 months, in three teaching hospitals (Taleghani, Alzahra, Kodakan) in Tabriz City (Iran). Census sampling method was used. The criteria for selecting participants were mothers who had premature newborn (gestational age <37 weeks) without abnormality that hospitalized in NICU at least 1 week in one of the three mentioned teaching hospitals. Parental Stressor Scale in NICU (PSS) that developed by Miles and Funk used for data collection. After informing about the purpose of the study for mothers, the questionnaires were completed through individual interviewing with mothers.

Subscales of the Parental Stressor Scale (PSS) was used to assess perceived stress related to the sights and sounds of the environment (6 items), baby looks and behaves and treatments (17 items), relationship with the baby and parental role (11 items). This questionnaire lists various stressful experiences of parents that has rated on a 5 point stress rating scale from 1 = Not at all stressful, the experience did not cause you to feel upset, tense or anxious, 2 = A little stressful, 3 = Moderately stressful, 4 = Very stressful, 5 = Extremely stressful. The experience upset you and caused a lot of anxiety or tension.

Validity of scale was determined by content validity with cooperation of ten faculty members of Nursing-Midwifery School of Tabriz City (Iran) and validity of translation assessed by one English language expert. Reliability of scale determined with participation of 30 mothers and 6 nurses that have including criteria (Cronbach's alpha were 0.87 for mothers and 0.94 for nurses). Data analysis was done with SPSS (ver 13.5).

Finding: From 300 participated mothers (55.3%) of them had first delivery and (62%) caesarean section deliveries in educational level approximately (7%) of mothers having completed college credits or obtained a bachelors degree (34%), diploma (26%), secondary school (33%), primary school and illiterate. The mothers ranged in age from 15-41 years (mean = 25.57, SD = 5.6) and 98.3% of them have never NICU experienced. About the infant characteristics, majority of them (64%) were first child in family (61%) of newborns were male, birth weight rang was 500-3500 g (mean weight = 1685, SD = 614), gestational age were between 20-36 weeks and range of hospitalization period was 8-90 days (mean = 18 days).

Finding show that major stressors of the mothers in NICU environment, respectively were the presence of

Table 1: Frequency of NICU environment stressors affecting mothers with hospitalized premature newborn

NICU environment	Frequency (%)			
	Not experienced	Not all stressful	A little stress	Very and extremely stressful
The presence of monitors and equipment	1 (0.3)	39 (13.0)	67 (22.4)	193 (64.3)
The constant noises of monitor alarms	91 (30.3)	83 (27.7)	57 (19.0)	69 (23.0)
The sudden noises of monitor alarms	221 (73.3)	26 (8.7)	9 (3.0)	44 (14.7)
The other sick babies in the room	24 (8.0)	128 (42.7)	100 (33.3)	48 (16.0)
The large number of people working in the unit	63 (21.0)	218 (72.7)	19 (6.3)	0 (0.0)

Table 2: Frequency of baby looks and behaves and treatment stressors affecting mothers with hospitalized premature newborn

Baby looks, behaves and treatment	Frequency (%)			
	Not experienced	Not all stressful	A little stress	Very and extremely stressful
Tubes and equipment on or near my baby	5 (1.6)	17 (5.7)	77 (25.7)	201 (67.0)
Bruises, cuts or incisions my baby	138 (46.0)	47 (15.7)	67 (22.3)	48 (16.0)
The unusual color of my baby (for example, looking pale or yellow jaundiced)	78 (26.0)	44 (14.7)	106 (35.3)	72 (24.0)
My babies unusual breathing patterns	28 (9.3)	24 (8.0)	37 (12.3)	211 (70.3)
The small size of my baby	8 (2.6)	65 (21.7)	102 (34.0)	125 (41.7)
The wrinkled appearance of my baby	125 (41.7)	102 (34.0)	42 (14.0)	31 (10.3)
Seeing needles and tubes put in my baby	1 (0.3)	32 (10.7)	133 (44.3)	134 (44.7)
My baby being fed by an intravenous line or tube	10 (3.3)	49 (16.3)	166 (55.3)	75 (25.0)
When my baby seemed to be in pain	229 (76.3)	3 (1.0)	30 (10.0)	38 (12.7)
The limp and weak appearance of my baby	135 (45.0)	25 (8.3)	45 (15.0)	95 (31.7)
Jerky or restless movements of my baby	228 (96.0)	4 (1.3)	1 (0.3)	7 (2.3)
My baby not being able to cry like other babies	141 (47.0)	37 (13.0)	52 (17.3)	68 (22.7)
My baby crying for long periods	276 (92.0)	5 (1.7)	5 (1.7)	14 (4.7)
Seeing my baby suddenly change color (for example, becoming pale or blue)	120 (40.0)	8 (2.7)	24 (8.0)	148 (49.3)
Seeing my baby stop breathing	277 (92.3)	2 (0.7)	4 (1.3)	17 (5.7)

Table 3: Frequency of relationship with the baby and parental role stressors affecting mothers with hospitalized premature newborn

Relationship with the baby and parental role	Frequency (%)			
	Not experienced	Not all stressful	A little stress	Very and extremely stressful
Being separated from my baby	0 (0.0)	32 (10.7)	87 (29.0)	181 (60.3)
Not feeding my baby myself	12 (4.0)	95 (31.7)	77 (25.7)	116 (38.7)
Not being able to care for my baby myself (for example diapering, bathing)	16 (5.3)	135 (45.0)	88 (29.3)	61 (20.3)
Not being able to hold my baby when i want	4 (1.3)	75 (25.0)	140 (46.7)	81 (27.0)
Being unable to protect my baby from pain and painful procedures	1 (0.3)	44 (14.7)	122 (40.7)	133 (44.3)
Feeling helpless about how to help my during this time	0 (0.0)	31 (10.3)	114 (38.0)	155 (51.7)
Not being alone with my baby	43 (14.3)	112 (37.3)	75 (25.0)	70 (33.3)
Not being able to share my baby with other family members	277 (92.3)	14 (4.7)	5 (1.7)	4 (1.3)
Being afraid of touching or holding my baby	68 (22.7)	89 (29.7)	77 (25.7)	66 (22.0)
Feeling the staff were closer to my baby than i am	138 (46.0)	157 (52.3)	3 (1.0)	2 (0.7)

monitors and equipments 64.3%, presenting another infant having a machine breath (respirator) in the room 38.3%, the constant noises of monitors and equipment 23% (Table 1). The major stressors about baby looks, behaves and special treatments were unusual or abnormal breathing patterns in child 70.3%, tubes and equipment on or near the child (for example, ventilator) 67% and suddenly change of newborn skin color (for example, pale or blue) 49.3%, seeing needles on the child's body, 44.7%, small size of child 41.7% and weak appearance of child 31.7% were, respectively major stresses of the mothers (Table 2) and about parental relationship and parent's role: Being separated from child 60.3%, feeling inability of helping child during hospitalization 51.7% and feeling inability of protecting child from pain and painful procedures 44.3% were respectively major stresses of the mothers (Table 3).

Table 4: Discrepancy between three dimensions of stressors

Stressors	Mean rank	Friedman test
NICU environment	1.98	DF = 2
Baby looks and behaves and treatment	1.91	Sig = 0.047
Relationship with the baby and parental role	2.11	

Also from these three aspects of stressors, parental relationship and parent's role was the most stressful dimension (Table 4).

RESULTS AND DISCUSSION

Findings of this study show variety stressful sources that affecting mothers with hospitalized premature newborn. The stress that the parents experienced according to their NICU environmental stressors scores is illustrated in Table 1. Environment may be the single most important

factor in neonatal development. Frequent procedures, handling and exposure to light and noise may cause physiological stress on infants that increase their length of stay in the NICU and ultimately decrease cognitive development (Raman, 1997). Hunter (2001) noticed the complexity of the neonatal intensive care environment, the medical care, individual circumstances and the appearance of the infant can all be factors that influence and perhaps lessen the families' role with their baby (Hunter, 2001). In addition, neonatal environmental stress can be a major factor contributing to the parents' distress and may influence their parenting behaviors (Miles *et al.*, 1993).

From baby looks, behaves and special treatments (Table 2) results were similar to with finding of Shields-Poe and Pinelli (1997) that in a study of 212 parents using the PSS:NICU, determined that the parents' greatest stress was due to their infants' appearance and behavior. These results were related to how sick they perceived. Several study show that because of that physical appearance of premature infant may be stressful for parents (Affonso *et al.*, 1992; Shields-Poe and Pinelli, 1997), emphasize to describe the premature newborn characteristics include the size, the lack of fat the breathing, the weak cry for parents (James and Ashwill, 2007). Ballantyne (2007) noticed, after interventional educational programs, consist of informational activities about appearance and behavioral characteristics of premature newborn via video caste and written materials lead to low parental stress in NICU, more positive relationship with child and improving their ideas about their parental role.

Finding about parental relationship and parent's role show the role change for a parent (Table 3). Studies of Shaw *et al.* (2006) indicated that being in the NICU disrupts normal forms of contact with baby. For instance, at first parent may not know if they can touch, talk to or feed your baby. Parents of babies in the NICU report that their biggest stressors are not being able to hold or to help care for their baby to protect him or her from pain or to share their baby's birth with other family members (Shaw *et al.*, 2006).

The most stressful dimension for mothers with hospitalized premature newborn in NICU were relationship with the baby and parental role (Table 4). Using the PSS: NICU Miles *et al.* (1991), identified the most stressful aspect of the NICU for 122 parents to be an alteration in the parent-infant relationship and the infants' appearance. The sights and sounds of the NICU caused lesser stress and few parents reported stress in the area of staff communication and relationships (Miles *et al.*, 1991).

Seideman *et al.* (1997) found that parents experience the most stress from alteration in their parenting role and family's normal activities and parental responsibilities. According to Nystrom and Axelsson (2002) and Davis *et al.* (2003), the greatest sources of stress for mothers were alteration of their parental role and separation from their newborn because of prolonged hospitalization. These mothers had experienced feeling such as despair, powerlessness, homelessness and disappointment, lack of control included emotional instability, threat, guilt and insecurity.

CONCLUSION

The finding of high general stress suggests that it is important for occupational therapists and other 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.

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