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Relationship between stress, coping and nursing support of parents of preterm infants admitted to tertiary level neonatal intensive care units of Karnataka, India: A cross-sectional survey

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Abstract When a preterm infant is hospitalized, parents experience stress. Support by neonatal nurses is essential to relieve stress. This study investigated the interrelationships among stress, coping and nursing support of parents of preterm infants and the level of stress among mothers and fathers was compared. Descriptive cross-sectional survey was conducted using interview technique in tertiary level neonatal intensive care units of six hospitals of India among 62 mothers and 38 fathers of preterm infants. Beyond descriptive statistics, Pearson's product-moment correlation to find interrelationships between stress, coping and nursing support of parents and Independent sample t test to find mean difference of level of stress among parents were used. Mild negative correlation found between nursing support and stress ($r = -0.199$, $p = 0.047$) implying that nursing support reduced stress and significant difference in mean stress scores among parents indicating mothers experienced more stress when compared to fathers.

What is already known about the topic

- Birth and hospitalization of a preterm infant to a neonatal intensive care unit (NICU) is a very stressful event for parents.
- Coping is the effort to manage stressful demands.

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- An awareness of stress and coping of parents of preterm infants would help neonatal nurses to assess and anticipate the needs of parents and provide support to them.

What this paper adds

- Results of empirical work exploring interrelationships between level of stress, coping used and nursing support.
- This study demonstrates that nursing support reduces the level of stress experienced by parents of preterm infants but demonstrates no relationship between stress and coping.
- Level of stress experienced by mothers of preterm infants is significantly more when compared to level of stress experienced by fathers of preterm infants.

Introduction

Giving birth to a preterm infant who subsequently requires hospitalization to the NICU is a highly stressful situation, which requires parents to adapt to this situation by effective coping and good support especially by the neonatal nurses. An awareness of stress and coping of parents of these infants admitted to the NICU would help nurses to assess and anticipate the needs of parents and provide support to them. Several studies point out that the birth of a preterm infant is a very stressful situation for the parents of the preterm infant since preterm birth itself is often unexpected, and parents must contend with the numerous stressors including potential medical complications and separation due to hospitalization (Miles, 1989; Miles and Carter, 1983). Parents, who enter a NICU, see their little one surrounded by sophisticated monitors, lots of tubes and varying sounds and find themselves to be helpless in such a situation to care for their newborn, which seems to be very fragile. They also feel reluctant to ask anybody nearby, for the fear of getting a disappointing reply. They experience severe stress and a feeling of being lost in an alien world, facing a great task of supporting a preterm that seems to be so fragile and ill. When confronted with a stressful situation, support is very essential, which is provided by health care providers, like neonatal nurses who are in constant interaction with the parents. Neonatal nurses need to support parents to cope in such a stressful situation. The nurse—parent supportive relationship can help reduce the stress experienced by parents and help them adopt effective coping, thereby nurses can function effectively in their supportive and therapeutic roles.

The concept of parental stress

The environment of the NICU and the hospitalization of a preterm infant can aggravate stress for parents. Four specific aspects of the NICU environment were identified by (Miles, 1989) which causes stress to the parents. These aspects include the physical environment, physical appearance and behavior of the infant, alterations in parental role and staff/parent interactions. Parental Stressor Scale (PSS): NICU was developed by Miles et al. (1993) to measure stress of parents. Several authors have explored the concept of parental stress by assessing stress of parents of infants and children hospitalized to the intensive care units (Shields-Poe and Pinelli, 1997; Ostberg, 1998; Carter et al., 2005). Parents whose children were hospitalized in intensive care units experienced the most stress from alteration in their parenting role (Carter et al., 2007) and in their infants' behavior and appearance (Seideman et al., 1997). Parental response to the admission of newborns to NICU suggested that a high proportion of parents whose infants were in NICU suffered from stress, among them parents with infants of lower gestational age had a higher degree of stress. Parental response may not be the same for mothers and fathers, nor can they be assumed to be the same for parents whose baby is born preterm or with a medical condition necessitating admission to NICU (Joseph, 2001). Mother's experience more total stress than fathers (Miles, 1989; Perhudoff, 1990). Higher levels of distress have been reported in parents with a preterm infant admitted to the NICU compared to parents of a healthy full-term infant (Miles et al., 1993; Redshaw and Harris, 1995; Carter et al., 2005).

Parental stress and its relationship with coping

The ways of coping model (WOC) introduced by and revised later by Lazarus and Folkman (1996) who define coping responses as cognitions and behaviors that a person uses to reduce stress and to moderate its emotional impact. The two domains of coping include problem focused coping and emotion focused coping. Problem focused coping involves taking steps to focus on resources and exert behavior to combat the cause of the stress, e.g., seeking social support, planful problem solving and

confrontive (hostility and anger, direct attempts to change the situation, etc.). Emotion focused coping involves taking steps to ease and regulate stressful emotions resulting from a negative event, e.g., positive reappraisal (positive aspects of the situation or personal growth), self control, escape avoidance (wishful thinking) and by accepting responsibility. Hughes and McCollum (1994) studied parents who completed the WOC found that there were similarities and differences in the types of coping strategies used by mothers and fathers. In addition, factors such as neonatal morbidity and appraisal of control were differently associated with the use of coping strategies. Miles and Carter (1983) identified five coping strategies perceived most helpful to parents of critically ill children like seeking help or comfort from others, having hope, believing that the child is getting the best possible care, seeking information from staff responsible, and being near the child as much as possible. A framework for stress and coping to support parental coping was designed by LaMontagne et al. (1995), described that coping is not a static but a dynamic process and serves two major functions termed as emotion focused coping which means palliation of emotions or distress produced by the situation and problem focused coping that is the management of the problem that is causing distress. Several studies (Hughes and McCollum, 1994; Heaman, 1995; Seideman et al., 1997) report that parents report the use of a high level of emotion and problem focused coping to overcome stress due to critical illness of their hospitalized child.

Nursing support for parents

Nursing mutual participation model of care (NMPMC), a set program of support and information to parents of hospitalized children helps in alleviating parental stress (Curley, 1988). It is conceptualized that nursing support with parents of hospitalized children will help parents maintain their role as a parent and helped to reduce stress (Miles and Carter, 1983) and supportive nursing informational intervention reduces maternal anxiety (Melnyk, 1994). Nurse parent partnerships in the care of the hospitalized child help the child and the family to cope more effectively with experience of intensive care hospitalization (Hill, 1996). A nurse parent support tool (NPST) developed by Miles et al. (1999) is designed to measure parents' perception of the nursing support during their child's hospitalization. Nurses held the vital role of a supporter in helping and coaching mothers to provide care for their infants (Chang Lee et al., 2009). Mothers demonstrated that the support they received from health care professionals was essential as it allowed them to make the transition to mothering and performing the parenting role in the NICU.

In summary, parental stress, parental coping and nursing support may be considered to be interrelated to each other. However, empirical research needs to be carried out in different settings to give more information regarding the interrelationships between the variables.

The main objective of this study is to examine the relationship between stress, coping and nursing support perceived by parents of preterm infants and also identify the difference in levels of stress among parents of preterm infants. Our main hypotheses are presented below.

Hypothesis 1

We hypothesize a relationship between stress and coping, coping and nursing support as well as stress and nursing support.

We anticipate higher levels of stress increases coping and increased coping is adopted when nursing support is high and also if nursing support were high then levels of stress would decrease.

Hypothesis 2

There would be a significant difference in mean levels of stress among parents of preterm infants admitted to NICUs.

Method

Participants and procedure

A descriptive cross-sectional survey was conducted using interview schedule to collect data from a convenient sample of 100 parents (62 mothers and 38 fathers) of preterm infants who were hospitalized to the six tertiary level NICU of hospitals of Karnataka. The criteria for NICU admission were gestation of <37 weeks and hospitalized for at least 24 h. The exclusion criteria were lack of informed consent and unable to understand/speak Kannada (regional language). Though it was intended to take an equal number of mothers and fathers (65 mothers and 65 fathers), many fathers (59%) who were employed outside the country were not available during the data collection period.

The researchers contacted the medical superintendents of the six hospitals and incharges of NICUs personally to ask for permission to interview the parents of preterm infants who were hospitalized in the NICU. Institutional ethical clearance was also obtained to conduct the study. One female data collector took informed consent from parents (both mother and father) individually to participate in the study before the interview. It took an hour to interview each parent separately.

Variables and instruments

Parental stress

Parents were interviewed using the Kannada version of the PSS: NICU. The scale was developed by Miles et al. (1993). The scale measures parental stress, the subtests being infant appearance, sights and sounds, parental role alterations and staff relationships. Participants indicated the level of stress with each situation. The scale is a five point Likert scale consisting of 45 questions with responses ranging (1 = not at all stressful; 5 = extremely stressful). The original scale was translated to Kannada and reliability was assessed. The scale was reliable for this sample ($\alpha = 0.94$).

Nursing support

Parents were also interviewed using the Kannada version of the NPST. The original scale was developed by Miles et al. (1999). The tool measures the perceived nursing support of parents whose child is admitted to the NICU. The subtests of NPST are nursing support in relation to supportive communication and informational support, emotional support, parental esteem support and instrumental support. The NPST is a five point Likert scale with 21 questions with responses (1 = almost never; 5 = almost always). The higher scores reflected greater amounts of nursing support provided by nursing staff. The original scale was translated to Kannada and reliability was assessed. The scale was found to be reliable for this sample ($\alpha = 0.80$).

Parental coping

The interview also gathered information on coping of parents of preterm infants using the Parental coping scale, which was a rating scale which had 34 questions. The coping behavior was divided into two domains of coping, namely problem focused coping and emotion focused coping, adapted from (Lazarus and Folkman (1984)) ways of coping model (WOC). The subscales in problem focused coping included social support, spousal support, professional support, problem solving, confrontive and emotion focused coping had subscales like positive reappraisal, self control, escape avoidance, distancing and accepting responsibility. The scale was translated to Kannada. The reliability of scale was assessed and was found to be reliable for this sample ($\alpha = 0.80$).

Demographic proforma

Finally, information was collected about demographic variables of the parents (e.g., age, religion, education, occupation, type of family) and information regarding the preterm infant (e.g., sex of the child, birth order and days of hospitalization).

Results

In Table 1, we show descriptive statistics collected using demographic proforma for parents. The mean age for mothers was 27.52 (standard deviation (SD) = 3.47) and for fathers was 36.39 (SD = 5.96). Majority of preterm infants were females (64.52%) and were hospitalized for 8–14 days (54.84%). For 56% of the parents, the preterm infant admitted to the NICU was the first child, for 32% of the parents the preterm infant was the second child and for the remaining 12%, the preterm infant was either the third, fourth or fifth child.

Table 1 Frequency and percentage distribution of demographic variables of parents ($n = 100$).

Characteristics of parents	*n*	%
Religion		
Hindu	60	60.0
Muslim	22	22.0
Christian	18	18.0
Education		
Illiterate	8	8.0
Primary education	16	16.0
High school	19	19.0
Above graduation	57	57.0
Occupation		
Professional	22	22.0
Non-professional	34	34.0
Not working	44	44.0
Type of family		
Nuclear	14	14.0
Extended	40	40.0
Joint	46	46.0

Table 2 Distribution of the level of stress of parents ($n = 100$).

Level of stress of parents	*n*	%
High stress (151–225)	40	40
Moderate stress (76–150)	58	58
Low stress (5–75)	2	2

In Table 2, we show the distribution of the level of stress among parents. Each individual score was first calculated for each subscale by computing the number of items rated ''1'' or above. Range of each subscale mean is one through five. Group means for four dimensions/areas were then calculated from the sum of the individual mean scores to identify the dimensions of high stress in each dimensions/areas. The stress scores were classified into three levels, i.e., high stress (151–225), moderate stress (76–150) and low stress (5–75). Majority of parents (58%) experienced moderate level of stress.

Stress scores of parents related to selected stressors are shown in Table 3. A score of three or more was used to classify the parents as having high level of stress and scores below three as low level of stress. Majority of parents had high level of stress in three areas (i.e., parental role alteration (79%), sights and sounds (78%) and baby's behavior/appearance (75%) but low stress among the parents in relation to staff relationships (54%)).

In Table 4, frequency and percentage distribution of parents who used coping related to the two domains of coping. All the parents (100%) used social support in problem focused coping and positive reappraisal in emotion focused coping.

It was revealed that parents used more of emotion focused coping, mean (SD) being 62.26 (6.79) compared to problem focused coping, mean (SD) being 47.69 (5.32).

Table 3 Stress scores of parents related to selected stressors ($n = 100$).

Areas of stress	*n*	%
Sights and sounds		
• High (score 3–5)	78	78
• Low (score 1–2.9)	22	22
Baby's behavior and appearance		
• High (score 3–5)	75	75
• Low (score 1–2.9)	25	25
Staff relationships		
• High (score 3–5)	46	46
• Low (score 1–2.9)	54	54
Parental role alteration		
• High (score 3–5)	79	79
• Low (score 1–2.9)	21	21

Table 4 Coping used by parents ($n = 100$).

Domains of coping	*n*	%
Problem focused coping		
Social support	100	100
Spousal support	60	60
Professional support	60	60
Problem solving	80	80
Confrontive	40	40
Emotion focused coping		
Positive reappraisal	100	100
Self control	75	75
Escape avoidance	70	70
Distancing	93	93
Accepting responsibility	80	80

Pearson's product-moment correlation was used to address how stress, coping and nursing support were related to each other. There was mild negative correlation between stress and nursing support ($r = -0.199$, $p = 0.047$) but there was no significant relationship between stress and coping ($r = 0.153$, $p = 0.130$) and coping and nursing support ($r = 0.056$, $p = 0.580$).

Independent sample *t*-test was used to find the mean difference between the stress scores among parents. The mothers of preterm infants experienced significantly higher levels of stress compared to the levels of stress experienced by fathers of preterm infants (Table 5).

Discussion

The stress levels of parents were high in areas of parental role alteration and child's appearance and finding consistent with previous studies (Miles et al., 1989; Seideman et al., 1997; Joseph, 2001) report that mothers of neonates experienced a high level of stress in the areas of parental role alteration and child's appearance and also sights and sounds (Rei and Fong, 1996), which is consistent with the findings of the study. La Montagne et al. (1992) identified loss of parenting role and uncertainty over recovery outcome as a predominant stressor in parents. Tichy et al. (1988) found that specific environmental stimuli such as noise, lights, and the fast pace of the setting are stress producing for parents of neonates.

Having a preterm infant produces additional strain for both parents, and more damage is caused to the maternal role. The findings of the study reveal that mothers experience significantly high stress levels compared to fathers of preterm

Table 5 Comparison of stress scores of parents of preterm infants.

Parents	*n*	Mean (SD)	95% CI	'*t*' value	df
Mothers	62	154.08 (28.01)	12.64—32.89	4.465*	90.91
Fathers	38	131.32 (22.51)			

* Significant at $p < 0.05$.

infants, which are consistent with previous studies (Jeffcoate et al., 1979; Heaman, 1995; Franck et al., 2004).

Parents report the use of a high level of emotion and problem focused coping to overcome stress due to critical illness of their hospitalized child. Seideman et al. (1997) found that positive reappraisal in emotion focused coping and seeking social support in problem focused coping is mostly employed by mothers whose child was admitted to intensive care settings which is consistent with the findings of the study.

Mothers of sick preterm infants reported high satisfaction from the support given by the baby's primary nurse (Stevens, 1981). A supportive nursing informational intervention focused on coping with parental role changes with the hospitalized child was effective in reducing maternal anxiety (Hill, 1996; Melnyk et al., 2001). Nurses hold a vital role of a supporter in helping and coaching mothers to provide care for their infants (Chang Lee et al., 2009). The results in this study seem to be in line with prior findings and can add some value to current research on parental stress and its reduction by nursing support. To provide essential support to the parents, nurses working as primary caregivers in the NICU, need to have an understanding and if need be, have continuing nursing education on stress and coping of parents and also be able to understand the difference between stress experienced by mothers to that of the fathers and the differences in the coping behavior employed by mothers to that of fathers of preterm infants admitted to the NICU.

The strength of the study is that the sample for this study was selected from a large geographical catchment area, which included six tertiary level hospitals. The experiences of both the mothers and fathers were assessed and their level of stress was compared, but limitation of the study is that many fathers (59%) who were employed outside the country were not available during the data collection period. Thus the enrolment rate was only 77%.

In conclusion, there is a need for nurses to be aware of personal and situational differences when considering potential sources of stress for parents and thus help them adjust to the environmental stressors by giving realistic information and explanation in simple understandable terms throughout the preterm infant's hospitalization. Teaching nurses working in NICUs the essential skills for providing support to the parents of infants hospitalized is very helpful.

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