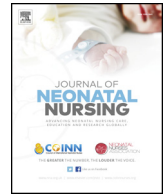




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Original Article

Parental stress in the neonate intensive care unit and its association with parental and infant characteristics

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ABSTRACT

Purpose: To examine the association between parental and infant characteristics and parental stress in the neonatal intensive care unit (NICU).

Methods: A Quantitative cross sectional design was used. A convenience sample of 376 parents with hospitalized infant in NICU was recruited. Self-administered questionnaires were used to collect the quantitative data, which include Infant Demographic Data Questionnaire, the Parent Demographic Data Questionnaire, and the Parental Stressor Scale: NICU.

Findings: Certain Infant characteristics are found to be significant factors that influence stress levels among parents. However infant gender did not significantly affect parental stress. Parent characteristics (parent age, parent gender, first baby experience, history of infertility, and medical history) have significant influence on stress levels among parents.

Conclusions: Certain parents and infants characteristics variables have an impact on the stress experienced by parents with their hospitalized infants in NICU. Clinical Implications: Knowing the relationship of certain parents and infants variables and stress level can help to focus on relevant parental and infant variables so that timely interventions to improve parents' well-being can be developed.

Introduction

Premature infants are born into different families of all religions, nationalities, culture backgrounds, race without regard for their social environment (Sydnor-Greenberg and Dokken, 2000). Due to increased improvement in the health technology these infants are being treated in the neonatal intensive care (NICU) (Miles et al., 1993). The NICU environment has been identified as a source of parental stress (Chiejina et al., 2012). Consequently, the experience of infant hospitalization is universally a stressful experience for each parent (Dudek-Shriber, 2004).

When parents have an infant in neonatal intensive care, they bring with them their own unique characteristics and set of circumstances. While in the NICU, parents are also influenced by the specific situational conditions of their infants. These conditions can include the severity of their infant's diagnosis, the infant's appearance, and the duration of their infant's stay in the unit (Miles and Carter, 1983). Environmental factors that can influence parents' unique reaction to having an infant in the NICU might include difficulty in fulfilling their parental role, the medical equipment used for intervention, and the communication patterns and behavior of the staff (Chiejina et al., 2012) (Miles and Carter, 1983).

The various factors that can influence the parents, each parent develops his or her own way of cognitively appraising, or making judgments about the NICU experience (Dudek-Shriber, 2004). For example, some parents, may view their situation as positive since their infant is getting the care he or she needs, others may see it as negative when the infant or staff is unable to correspond to their expectations or needs. Some parents may cope by using the environmental resources available to them such as the support of the NICU staff, while others may use personal resources such as family, friends or financial assets (Chiejina et al., 2012).

Hence, the response to the stress of having a child in the NICU can therefore be the result of a complicated interaction of various variables that can potentially be adaptive or maladaptive. Increased information about how parents of hospitalized high-risk infants perceive NICU, and also an understanding of the needs of such parents may enable NICU staff to identify parents at risk and plan interventions to meet those needs and promote family functioning (Chiejina, 2014). This is particularly important given evidence that factors such as parental well-being, family cohesion and parent-child relationships make significant contributions to infant longer-term developmental outcomes (Carlson et al., 2002) (Elgar et al., 2004).

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Aim of the study

This study was therefore intended to determine how parental characteristics such as (parent age, parent gender, history of infertility, parent education level, the residency, transportation, history of medical disorders, financial status, type of delivery and number of visits) variables and infants characteristics such as (infant gender, classification of medical condition, gestational age and birth weight) influence the stress experienced by parents of hospitalized high-risk infants in the NICU. Differences in the stress level among the mothers and fathers will also be compared.

Methods

Study design

A Quantitative cross sectional survey design in three government teaching hospitals in Jordan was used to determine how parental characteristics and infants characteristics influence the stress experienced by parents of hospitalized high-risk infants in the NICU.

Setting

This study was conducted in three government teaching hospitals in Jordan which, are the biggest teaching hospitals in Jordan. Hospital A is located in Amman, with a capacity of 1100 beds and NICU capacity of 65 beds. Hospital B is located in Al Mafraq, with a capacity of 120 beds and NICU capacity of 24 beds. Hospital C is located in Irbid, with a capacity of 140 beds and NICU capacity of 30 beds.

Instruments

Self-administered questionnaires were used to collect data, including Infant Demographic Data Questionnaire, the Parent Demographic Data Questionnaire and Parental Stressor Scale: Neonatal Intensive Care Unit (PSS: NICU).

Infant demographic data questionnaire

Demographic data about infants were collected from eligible infant's medical files and the electronic medical system: Infants' name, gender, birth weight, gestational age, and medical diagnosis. Contextual information on infant characteristics was classified into three class according to the severity of the infants' medical conditions because all hospitals in Jordan follow this classification (Kliegman and Geme, 2015). The "severe" class consists of infants who are fasting, depending on total parental nutrition (TPN) and intravenous fluid, or depending completely on mechanical ventilators; the "moderate" class consists of infants who need oxygen supplements by incubator or nasal cannula, phototherapy, nasogastric tube feeding, or blood transfusion; and the "mild" class consists of infants who are admitted to the NICU for feeding and weight gain (Kliegman and Geme, 2015).

Parent demographic data questionnaire

The parent demographic data questionnaire has 11 items which was developed by researchers based on literature review (Akbarbegloo et al., 2013; Grosik et al., 2013; Al-Hamad, 2007a; Cavaleiro et al., 2007). Gender, age, education level, financial status, history of infertility, history of medical disorder, first parenting experience, transportation, number of visits, type of delivery and previous experience from hospitalized their infant in NICU. The number of visits per day and which parent (mother only, father only or both parents) actually visited the infant each day were obtained from the nursing notes.

The demographic data on marital status and religion were collected because a single parents tend to experience elevated levels of stress compared to married parents (Chiejina et al., 2012). Since factors of culture and religion can influence parents' experience, they were

included in the demographic data. Also, data concerning history of parent infertility was collected because the literature has demonstrated that there is a relationship between history of infertility and parental stress (Chiejina et al., 2012; Chiejina, 2014). Possible explanation may be because these infants are particularly precious to these parents. Based on Jordan the financial status classified into three levels (low income, moderate income and high income). The average income for Jordanian parents is \$536 per month.

Parental Stressor Scale: Neonatal Intensive Care Unit (PSS: NICU)

The PSS: NICU scale was developed by Miles et al. (1993) to measure parental stress and the experience of stressors arising from the psychological and physical environment of the NICU (Miles et al., 1993). This instrument contains 26 items divided into three dimensions: Sights and Sounds, which is defined as the physical environment in the NICU, such as medical equipment, alarms, noise, and light; Infant Behavior and Appearance, which is defined as how the baby looks and behaves, as well as how the parents perceive their baby in the NICU, such as small baby size, wrinkled skin, restlessness, and lines connected with the baby's body and Parental Role Alteration, which is defined as abnormal parental roles regarding their infant's needs, such as delayed infant-parent relationship, as well as disrupted or impeded care-giving behaviours of feeding, bathing, changing diapers, kissing, and holding them. The measurement use a 5-point Likert type scale ranging from scale 1-"Not at all stressful" (the experience did not cause the parent to feel anxious or tense) to scale 5 - "Extremely stressful" (the experience caused a lot of tension or anxiety) (Miles et al., 1993).

In the study by Yacoub, Alkharabsheh, Zaitoun, & Al-Atiat, the construct validity of the PSS: NICU in each subscale ($r = .81$ to $.96$, $p < .001$) and total score ($r = .079$, $p = < .001$) was reported (Yacoub et al., 2013). In view the Jordanian population in this study is different in terms of cultural and religious context from the population, the reliability of instrument was tested using Cronbach alpha (Yacoub et al., 2013). The Cronbach alpha in this study was 0.72, with all its subscales with α ranging from .71 to .94, which is considered within the acceptable range.

Study population and sample

The population size was 5225 infants admitted to NICU per year, so the sample size was 376 parents (188 mothers and 188 fathers) of infants admitted to NICU. Sample size is calculated based on the estimation population proportion formula (Scheaffer et al., 2011). The sampling technique was convenience sampling. The inclusion criteria includes: parents who are Jordanian, agreed to participate in the study, understand the Arabic language, have an infant hospitalized in the NICU, have an infant who is the product of a singleton pregnancy, no previous admission experience and who visited their infant at least once throughout the hospitalization period. The exclusion criteria are parents with critically-ill infants in the NICU, parents who have never visited their infant, parents whose hospitalized infant is the product of a twin pregnancy, transfer cases from other hospitals and surgical cases.

Data collection

Before starting data collection, a pilot study was conducted with 15 parents of NICU infants to assess face validity. Participants were invited to evaluate verbally whether the items were difficult to understand, and to provide suggestions for item revisions if necessary. Since no problems were reported, no modifications were made.

The infant's files and electric medical system records were checked, to identify those who met the inclusion criteria. The home address and phone number of eligible patients were recorded. The purpose and significance of the study were explained to all potential participants by the researcher. They were informed that their participation is voluntary, and they could choose to withdraw at any time. Additionally, the

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