



## Psychometric Validation of the Family Nurse Caring Belief Scale in a Neonatal Nursing Population



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### ARTICLE INFO

#### Article history:

Received 25 May 2018  
 Revised 6 September 2018  
 Accepted 7 September 2018  
 Available online xxxx

#### Keywords:

Family-centered-care  
 Family nurse caring belief scale  
 Psychometric validation  
 Neonatal nurses

### ABSTRACT

**Purpose:** To psychometrically validate and strengthen the construct validity of the Family Nurse Caring Belief Scale (FNCBS) with a sample of neonatal nurses.

**Design and Methods:** Confirmatory factor analysis of the 25-item FNCBS, using the factor structure based on the original exploratory principal components analysis, was performed to evaluate the psychometric properties of the FNCBS with the neonatal nurse population.

**Results:** Confirmatory factor analysis (CFA) examined the factor structure of the FNCBS using the sample of neonatal nurses. The chi-square test determined overall model fit. Comparative fit index (CFI) and Tucker-Lewis index (TLI) were both <0.90 therefore, neither of these indices indicated good fit. The root mean square of error approximation (RMSEA) of the sample data was >0.06 and the standardized root mean square residual (SRMR) of the sample data is >0.08 and, therefore, the data did not demonstrate good fit. In addition, the factor correlations between the four latent variables were small. This suggests there is no parsimony and the sample data with neonatal nurses did not fit the model.

**Conclusion:** The findings suggest the FNCBS was not psychometrically validated with the population of neonatal nurses and this study was unable to strengthen the construct validity of the FNCBS beyond the pediatric nurse sample in the original study.

**Implications for Practice:** This study highlighted the opportunity for continued research in the area of measuring nurses' beliefs regarding the provision of family-sensitive care to families in crisis and will generate a revision of the FNCBS to incorporate concepts which are important to care for a family unit.

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### Introduction

Family-centered-care (FCC) is a care delivery model that incorporates a partnership between families and providers when caring for the patient (Johnson & Abraham, 2012) and is based on the philosophy that recognizes the child's family as pivotal in providing care, and views families and professionals as equal members of the care team. Exploring the beliefs of the Neonatal Intensive Care (NICU) nurse in relation to recognizing the family and the patient as a unit, can provide the evidence for nurses to identify and support those characteristics that are receptive to emerging family needs (Meiers, Tomlinson, & Peden-McAlpine, 2007).

#### Measuring Family Sensitive Care

The Family Nurse Caring Belief Scale (FNCBS) was developed to measure nurse attitudes regarding the provision of family-sensitive care to families in crisis in response to a need identified, which was developed

by Meiers et al. (2007) who tested the psychometric properties of the instrument. Classical test theory was used to construct a discriminative, summative instrument to measure nurse attitudes. The instrument development was conducted in two phases. Phase I focused on instrument construction including item development, with construct validity determined by a panel of six experts and pilot testing with a sample of Pediatric Intensive Care (PICU) nurses. The items were designed to operationally define nurse attitudes within the theoretical construct of family-sensitive care defined by the authors as, "nurses' influences on the family system and the meanings families derive from such influences in critical illness" (p. 488). A concept analysis of caring, presence and nurturance between nurse and family was used to generate initial items. Additionally, a literature review of previous studies of family stress in the PICU as well as items selected and adapted from the Caring Behaviors Inventory (CBI) developed by Wolf, Giardino, Osborne, and Ambrose (1994), provided the sources to the authors for item development. Watson's transpersonal caring theory is the theoretical framework of the CBI. Content validity for the FNCBS, was evaluated by a panel of six experts, two pediatric intensive care clinical specialists, two doctoral students in family nursing, and two nurse scholars with

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expertise in theoretical constructs, family nursing science and measurement. The experts' results of the Content Validity Index (CVI) for item development ranged from 0.50–0.67 for item retention. There were no NICU experts on the panel. The FNCBS was pilot tested on a convenience sample of 60 PICU nurses to evaluate initial content validity. Based on the pilot study, two additional items were added to address responsibility of nursing care based on the meaning of the child's illness to the family and varying care based on the family's perceived situation. This phase resulted in a 27-item instrument that measured nurses' attitudes regarding the provision of family-sensitive care. According to the authors, scoring is summative; higher scores indicate nurse attitudes that are most family sensitive; lower scores indicate nurse attitudes that are least oriented towards family-sensitive care. The authors reported the score range of the FNCBS to be 27–135. A 5 point Likert type scale (1-strongly disagree to 5-strongly agree) was chosen to allow for a neutral midpoint, which the authors have concluded demonstrated a lack of support for family-sensitive care. Nine questions were reverse-coded.

Phase II encompassed the initial psychometric evaluation of the FNCBS with a randomly selected sample of 720 from the 2329 NICU and PICU nurses drawn from the membership list of the American Association of Critical-Care Nurses (AACN) in 2002. There were 163 respondents which the authors reported as a 14% return rate (sic); and determined this to be an adequate sample. The sample was comprised of 22.8% NICU nurses and 62.7% PICU nurses as well as 4.9% who identified themselves as both NICU and PICU nurses and 4.9% who identified themselves as other based on reported work environment. Reliability was reported as  $\alpha = 0.81$  and Guttman split half reliability of  $r = 0.78$ . Concurrent validity was tested with two other instruments, the CBI and the Family Caring Scale (FCS), which was reported in a paper these authors presented at the meeting of the Workgroup of European Nurse Researchers, in Reykjavik, Iceland in May 2002 (Meiers et al., 2007). No further information is available on the development or psychometric properties of the FCS. Concurrent validity values obtained with the FNCBS and the CBI ( $r = 0.38$ ) and FCS ( $r = 0.57$ ) indicated the CBI did not measure related constructs. The authors did identify this as a limitation of their study.

#### *Family-Centered-Care in the NICU*

Corlett and Twycross (2006) reviewed the literature published in the last 15 years regarding nurses' negotiating with parents of neonates in the NICU and the level of participation parents were permitted in the care of their child. There is a growing body of literature which acknowledges the benefits of FCC in the NICU to support parent attachment, coping and confidence. Effective and consistent communication by all members of the medical team, parental involvement in care of the neonate and decision-making have been identified as important aspects, however, when FCC is not effectively implemented, parental perceptions regarding the care they receive in the NICU is not always positive (Cockcroft, 2012; McAllister & Dionne, 2006; McGrath, 2001; Petersen, Cohen, & Parsons, 2004).

In a qualitative study, Higman and Shaw (2008) explored the attitudes of neonatal nurses within the context of FCC. Although supportive of FCC in the NICU, the participants in the study found it difficult to include families in the care of their infant and cited lack of structural support (inadequate staffing), which resulted in the nurse being task-driven. Lack of confidence in their own knowledge of neonatal nursing (experience) and minimal formal training in the elements of FCC were identified as barriers. There was also a sense of self-preservation in the participants who avoided becoming "too attached" to the families. This study noted that PICU nurses were better equipped to practice FCC than NICU nurses which were attributed to the length of hospitalization of the infant in the NICU.

Griffin (2006) conducted a review of the literature to identify challenges to effective implementation of FCC in the NICU. Griffin (2006) reported that NICU facility design, restriction of parental presence and

staff communication competency can contribute to ineffective implementation of FCC principles. According to Griffin (2006), it is common practice for parents to be asked to leave the NICU for inter-shift hand-off, rounds, procedures and emergencies greatly reducing the time parents can spend at the bedside with their infant, even in the most progressive NICUs. In contrast to the NICU, the PICU environment, although equally technologically challenging, is less restrictive and more conducive to parental presence (Frazier, Frazier, & Warren, 2010). Disruption of parental attachment, although important, is less of a concern with a child, who is already a member of a family unit, than it is for a neonate hospitalized since birth. For those children who have been home, parental attachment has been further developed and parent's knowledge of the child's physical, social and behavioral characteristics has been established. Considering the differences between NICU and PICU, where family involvement is more readily accepted, the beliefs of the neonatal nurse towards the family as a unit in the NICU setting may differ from those of nurses working in the PICU setting (Frazier et al., 2010).

Although FCC has been promoted as an important service model in healthcare delivery to optimize outcomes for children and families, empirical evidence of the effectiveness of this model is lacking. A basic principle of FCC is that the family is considered a whole unit when planning care. Staff attitudes regarding working with children and working with the parents should bear no difference however, recent multisite research in both developed and developing countries reveal staff prefer working with children over their parents (Shields, Mamun, Pereira, O'Nions, & Chaney, 2011). Failure by nurses to recognize the family as a pivotal member of the care team may interfere with the ability to fully implement FCC in the NICU. The purpose of this study was to psychometrically validate and strengthen the construct validity of the FNCBS in a sample of neonatal nurses with a confirmatory factor analysis (CFA) of the 25-item instrument, using the factor structure based on the original exploratory principal components analysis.

## **Methods**

### *Participants*

The participants in this study consisted of a sample of registered nurses who work in neonatal intensive care units (NICU) and are members of the professional organization, Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN). The intent of inviting the entire neonatal nurse membership of AWHONN, rather than using a convenience sample, was to obtain a response from an extensive membership which would be representative of the population of NICU nurses nationally. Neonatal nurses with less than one year experience were excluded due to their limited clinical knowledge of neonatal nursing that may make it more difficult to assimilate the complex constructs of family-sensitive care into their practice. Using membership lists provided by AWHONN, all members were contacted via e-mail address through the AWHONN web host. The invitation included the purpose of the study, importance of their participation and assurance of anonymity. An e-mail/web address link was provided to enable participants to respond to the survey electronically.

### *Sample Size and Power Estimation*

According to Myers, Ahn, and Jin (2011), there is disagreement among researchers regarding rules of thumb methodology to determine minimum sample size and power estimates for CFA and structural equation modeling (SEM) which includes;  $N \geq 200$ , ratio of  $N$  to the number of variables in the model ( $p$ ),  $N/q \geq 5$ , and an inverse relationship between construct reliability and adequate  $N$ . There were 221 neonatal nurses who responded to this study electronically. There were eight respondents with less than one year of NICU experience and therefore did not meet inclusion criteria. A total of 213 responses were used for analysis.

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