Original Article

Pediatric Ward Nurses' Caring Self-Efficacy Scale: Development and Validation

Abstract

Background: No instrument specifically designed to investigate the caring self-efficacy of nurses in pediatric wards was found. The aim of the present study was therefore to develop a scale to evaluate pediatric wards nurse's caring self-efficacy. **Materials and Methods:** In this study, an exploratory, sequential, mixed method was used in 2015 in Iran. Data collected from 27 semi-structured interviews with nurses in pediatric wards were analyzed using conventional content analysis. The initial version of the scale was obtained with 65 items. Face validity was determined using impact score and content validity using the Content Validity Index (CVI) and Content Validity Ratio (CVR). The construct validity of the scale was investigated using exploratory factor analysis with 305 nurses in pediatric wards. The concurrent validity of the scale was acquired using the General Self-Efficacy Scale. Internal consistency and test–retest reliability were also examined. **Results:** The scale-CVI (S-CVI) (average) was 0.85. The 14 items with a CVR and CVI of less than 0.51 and 0.70, respectively, were deleted and the final 51-item scale was approved. All 51 items had good impact score (>1.50). In the final scale, four subscales were extracted using construct validity. The concurrent validity of the scale was also obtained (r = 0.77, p < 0.001). The total Cronbach's α correlation coefficient of the scale was 0.96 and test–retest reliability was 0.98. **Conclusions:** The Pediatric Ward Nurses' Caring Self-Efficacy (PWNCSE) scale developed in this study is a practical, reliable, and valid scale to evaluate pediatric ward nurses' caring self-efficacy.

Keywords: *Caring, nurses, pediatric, Behavior rating scale, self efficacy, psychometrics*

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Introduction

One of the factors influencing the performance of nurses is self-efficacy; high self-efficacy results in improved individual and organizational function.[1,2] The theory of self-efficacy has been derived from Bandura's social cognitive theory; it reflects a person's beliefs about his/her abilities to perform behaviors that will have certain consequences.[3,4] Self-efficacy is an important predictor of behavior and plays an important role in nurses' professional functioning.[5] Nursing studies have revealed that there is a significant positive relationship between clinical skill and self-efficacy. In addition, nursing studies have associated self-efficacy with professional competence and progress.[6,7] Eventually, the gap between practice and theory decrease with improvement of self-efficacy.[8]

Moreover, there is evidence that nursing professional self-efficacy affects the quality of care in a pediatric wards, and thus, self-efficacy concept evaluation in pediatric wards is important.[9] Considering that self-efficacy is an individual, context-based, and task-specific concept,[3] it cannot be universally used in all aspects of personal life. Items and domains of a self-efficacy instrument should be tailored to specific behavioral domains such as caring as the essence of ontology and epistemology in nursing profession.[10] Therefore, a general self-efficacy scale is not suitable for the evaluation of caring self-efficacy of pediatric ward nurses and the results obtained from this instrument may be limited.

In the field of nursing, there are valid specific scales for the assessment of professional nursing self-efficacy,[11] and the

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interest in designing scales specific to each nursing specialty is growing. However, there is no instrument specifically designed to investigate self-efficacy that indicates nurses' specific confidence of their daily care procedures in pediatric wards. The development of a reliable and valid instrument would increase the recognition of this caring self-efficacy concept among nurses in pediatric wards as a basis for designing effective interventions to improve this sense in the pediatric nursing profession. Thus, the aim of the present study was to design a scale to measure caring self-efficacy from the perspective of pediatric ward nurses and determine its psychometric properties.

Materials and Methods

This study was a part of a bigger research project entitled "development of the caring self-efficacy scale for nurses in pediatric wards: a mixed-methods study." Some aspects of the research project have been previously published.[12,13] This study was an exploratory, sequential, mixed method with a two-phase process (qualitative content analysis and cross-sectional methodological design), and was conducted from May 2014 to June 2015 in Iran.

Phase I (scale design)

In the first phase, caring self-efficacy concept perception was explored using a qualitative concept analysis among 27 nurses of pediatric wards selected through purposive sampling from among nurses of hospitals affiliated to Isfahan University of Medical Sciences and Shahrekord University of Medical Sciences, Iran. The study inclusion criteria consisted of having at least a bachelor's degree in nursing, and working experience of at least 1 year in pediatric wards. Nurses who did not wish to participate were excluded from the study. Sampling was continued until data saturation was reached. Data were obtained using semi-structured interviews and recorded using a voice recorder. A place that was more comfortable for the participants was selected by them as the interview location including their work place, home, or elsewhere. The aims of the study were explained for all participants and verbal informed consent was obtained from each of them. Open-ended questions such as "What does self-efficacy mean in caring for children?" were asked. Data were analyzed using conventional qualitative content analysis. Simultaneously to conducting the interviews, they were transcribed verbatim and analyzed. As a result of data analysis, 1,158 initial codes were extracted. Then, similar codes were categorized according to methods conducted in a similar study by Graneheim *et al*.[14] The main themes discovered in the qualitative phase included management of care process, communication ability, altruism, proficiency, antecedent of caring self-efficacy, and consequence of caring self-efficacy. Trustworthiness was ensured through researchers' deep engagement with the data, member check (reviewing the extracted codes and categories with some participants), and peer check (reviewing the extracted codes and categories with experts in the field of qualitative and pediatric research).

Phase II (psychometric testing)

The aim of the second phase was to measure the psychometric properties of the Pediatric Ward Nurses' Caring Self-Efficacy (PWNCSE) scale. The Initial item pool was developed using the codes extracted from the qualitative study. The initial items were reviewed several times by the research team until an agreement was reached. Then, the initial scale including 65 items scored on a 5-point Likert scale ranging from 1 (indicating no confidence) to 5 (indicating complete confidence) was developed.

The face and content validity of the PWNCSE scale were assessed using both qualitative and quantitative approaches. The initial version of the scale with 65 items was sent to 14 nursing experts (academic members of pediatric nursing faculties, researchers with an experience in tool development, and 1 psychologist). In order to calculate the content validity ratio (CVR), the experts were requested to determine the necessity of each item (1 = It is necessary, 2 = Useful, but not necessary, 3 = It is not necessary). Similarly, for calculating the content validity index (CVI), they were asked to determine the relevancy of each item on a 4-point scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, and 4 = very relevant). In addition, the experts were asked to write their suggestions or corrections for each item. The CVR of 14 items was below 0.51 and the CVI of 17 items were below 0.79, which were excluded from the scale. In another panel with the presence of 7 out of 14 experts, the expert's opinions regarding the relevance, ambiguity, and difficulty of the remaining 51 items were obtained and their suggestions were taken into consideration in the final version of the scale. Then, impact score was calculated for face validity, and 14 nurses in pediatric wards commented on the face validity of the scale. Eventually, the scale with 51 items was approved.

Construct validity was assessed in a cross-sectional study using Exploratory Factor Analysis (EFA) with a varimax rotation. An eigenvalue of 0.3 or higher was used as the extracting factors benchmark.[15] The PWNCSE scale with 51 items was administered for 305 nurses in pediatric wards of hospitals in Isfahan and Shahrekord cities, Iran, who were selected using convenience sampling method in 2015.

The concurrent validity of the scale was determined using the Persian version of the General Self-Efficacy Scale (GSES; Sherer *et al*.). The GSES is a valid and reliable scale with 17 items scored on a 5-point Likert scale.[16] The PWNCSE scale with 51 items and the GSES were simultaneously distributed among 177 nurses in pediatric wards and the Pearson correlation coefficient between the scores of these scales was calculated.

The reliability of the PWNCSE scale was calculated with internal consistency using Cronbach's alpha coefficient. In addition, the stability of the PWNCSE scale was measured using the test–retest reliability. Within a 2-week interval, 15 nurses working in pediatric wards completed this scale two times.

Ethical considerations

This project was approved by the Ethics Committee of Isfahan University of Medical Sciences, Iran, (IR.MUI.REC 1392.3.258). The aims of the research study, and voluntary and anonymous contribution were explained to the participants.

Results

The mean (SD) age of the participants was 31.34 (6.13) years with a range of 22–50 years. The majority of the participants were women (93.10%) and their mean (SD) work experience was 7.27 (5.61) years. The majority of nurses had a bachelor's degree (90.50%).

Face and content validity

CVI values of the items of the scale ranged between 0.57 and 1, and scale-CVI (average) was 0.85. The 14 items with a CVR of less than 0.51 and CVI of less than 0.79 were removed from the scale. The results of face validity indicated that all items had good impact score(>1.50).

Construct validity

Bartlett's test of sphericity was significant (χ^2 = 1131, df = 1275, $p < 0.001$), and the Kaiser-Meyer-Olkin (KMO) test was 0.94 indicating that the sample was adequate to perform factor analysis. Moreover, all 51 items had correlations of above 0.30 and no items were deleted. Using a varimax rotation, four factors were revealed which together accounted for 55.60% of the total variance [Table 1]. The scree plot demonstrated a break between the fourth and fifth factor [Figure 1]. The first factor named "altruism" contained 13 items, the second factor labeled "proficiency" contained 12 items, the third factor entitled "communication ability" comprised 12 items, and the fourth factor labeled "management of care process" contained 15 items.

Concurrent validity

The Pearson correlation coefficients revealed that there was a significant positive correlation between the scores of the GSES and PWNCSE scale (r = 0.72, $p < 0.001$).

Reliability

The internal consistency results demonstrated that the Cronbach's α of the PWNCSE scale was 0.96. Furthermore, the subscales of altruism (α = 0.92), proficiency (α = 0.84), communication ability (α = 0.92), and management of care process (α = 0.93) of the PWNCSE scale demonstrated high reliability.

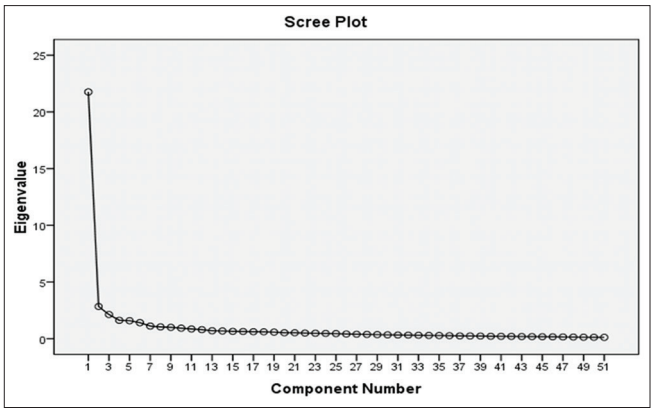

Figure 1: Scree plot representing the factors

Stability

The total four factors scores correlation was significant ($p < 0.001$) and Pearson's r was 0.98.

Discussion

To the best of our knowledge, no scale has been specifically developed to measure the self-efficacy of nurses in pediatric wards. The only tool available for the assessment of the self-efficacy of pediatric nurses working in children's emergency ward is the pediatric skill self-efficacy scale with 47 items.[17] The most important strength of the PWNCSE scale is that the design is based on precise psychometric steps. Moreover, because it is a self-report scale, it was developed based on the explanation of the concept from the perspective of pediatric nurses themselves. The theoretical framework of this scale was based on Bandura's theory. The four factors (subscales) were explored using factor analysis, which together accounted for 55.60% of the total variance. These factors included "altruism," "proficiency," "communication ability," and "management of care process."

One subscale was altruism which means supporting patients and nurses' concerns about the well-being of patients in their professional performance.[18] In fact, in the nursing profession, altruism is associated with love and compassion. Altruism shows the involvement of nurses in caring for others without any expectations. Altruistic behaviors are stimulated by internalizing values, goals, and self-reward.[19,20] Proficiency, such as technical skills and non-traumatic care, was another subscale identified in the PWNCSE scale. Nursing studies have revealed that there is a significant positive relationship between clinical skill and self-efficacy.[8] Previous nursing studies have shown that self-efficacy is one of the most important factors that have a direct relationship with nurses' practice.[7,21]

The communication ability subscale was intended to explore how confident nurses are in establishing effective communication. The establishment of an effective relationship with inter-disciplinary team members, patients,

Table 1: Factor loading for the extracted factors after varimax rotation

Scale items I am confident while taking care of a child. I can:	Factor 1: Altruism	Factor 2: Proficiency	Factor 3: Communication ability	Factor 4: Management of care process
1- State my affection and interest for hospitalized children	0.58			
2- Identify the emotional-psychological responses of the hospitalized child to age, anxiety, anger, etc.	0.62			
3- Respect the child's privacy	0.69			
4- Help the child express his/her feelings (anger, fear, etc.)	0.75			
5- Relax the child when I am taking care of him/her	0.67.			
6- Provide nursing care for all children of all ages, races, and religions without being racist	0.55			
7- Listen to the problems, fears, and wishes of the hospitalized child's parents	0.62			
8- Involve the child's family in decisions regarding the care and treatment of the child	0.67			
9- Help the child's parents to adapt to their child's hospitalization	0.63			
10- Respect the values, beliefs, and preferences of the child's family	0.64			
11- Use pharmaceutical and non-pharmaceutical methods (distraction and etc.) to manage and control the child's pain	0.67			
12- Provide emotional-psychological care for the child's family at the end of the child's life	0.58			
13- Find the best method for communicating with the child	0.48			
14- Apply my knowledge when taking care of the child		0.61		
15- Increase my care knowledge in order to be professional		0.64		
16- Perform the care procedures proficiently according to nursing standards		0.69		
17- Perform nursing care accurately and quickly		0.67		
18- The time of providing a child with nursing care depends on me		0.53		
19- Use creative and innovative ways according to the ward features when providing child care		0.51		
20- Work correctly with different equipment and devices when providing child care		0.57		
21- Perform resuscitation for children with confidence and calmness		0.70		
22- Keep my focus when the child cries and is restless		0.53		
23- Prevent nursing errors by predicting risk factors		0.65		
24- Register and report any care errors honestly		0.55		
25- Register the care procedures performed in accordance with the regulations of the hospital		0.58		
26- Obtain the child's cooperation during the care procedures			0.36	
27- Reassure the parents of hospitalized children			0.42	
28- Establish a suitable therapeutic relationship with the child's parents			0.55	
29- Cooperate with other colleagues in providing child care			0.68	
30- Interact with other nurses and health care staff			0.70	
31- Ask for help from more competent nurses when I have doubt about any care procedures			0.64	
32- Consult the doctor easily on the patient's condition			0.43	
33- Explain care and diagnostic procedures according to the age of the child			0.37	
34- Explain the cause and process of care to the child's parents			0.43	
35- Training the child's parents (at the time of admission, during hospitalization, and discharge) in accordance with their culture, age, literacy, and dialect			0.47	
36- Obtain the trust of the treatment team (doctor, head nurse.) in my ability to provide nursing care for the child			0.39	
37- Identify the child's care needs based on his/her growth and development level through medical history and physical examination				0.77
38- Determine nursing diagnosis by analyzing the collected data				0.69
39- Arrange nursing diagnosis based on its importance				0.63

Contd..

Table 1: Contd..

Scale items I am confident while taking care of a child. I can:	Factor 1: Altruism	Factor 2: Proficiency	Factor 3: Communication ability	Factor 4: Management of care process
40- Determine the achievable goals of the care plan				0.75
41- Design a care plan based on the child's care needs				0.69
42- Make decisions about care based on the child's caring needs				0.57
43- Evaluate the clinical condition and the care program effects continually				0.43
44- Identify the child's emergency care needs				0.30
45- Take the needed time to provide nursing care				0.43
46- Coordinate between the caring team members to provide appropriate care				0.50
47- Manage all available facilities in the ward				0.48
48- Carry out regular and accurate nursing care procedures for the child				0.42
49- Identify the dangers in the child's environment based on the child's developmental and consciousness level				0.36
50- Accept responsibility for care-related decisions				0.36
51- Defend my clinical decisions				0.42

and their family members is necessary in professional nursing performance.[9,22] In nursing studies, higher self-efficacy of pediatric nurses has been associated with a better relationship between nurses and children. Moreover, teaching communication skills enhanced nurses' perceived self-efficacy.[5,23] Another subscale of the PWNCSE scale was management of care process; professional nurses in pediatric wards should be able to manage and organize care through the nursing diagnosis and nursing process to achieve successful outcomes.[13,24] The results of a study showed that self-efficacy from nursing students' perspective was tantamount to examination, planning, having clinical skills, implementation of care, and caring evaluation.[25]

The Pearson correlation also revealed a significant positive correlation between the scores of the Iranian version of the GSES and PWNCSE scale. The correlation between the two scales was expected because both assess self-efficacy. The GSES has been reported to have a positive correlation with specialized self-efficacy scales, such as the Nursing Profession Self-Efficacy Scale.[11] The final scale and its four subscales had satisfactory internal consistency and test–retest reliability.

The main limitation of this study was that the process of tool development was conducted in Iranian pediatric wards. Therefore, the psychometric properties of this scale require assessment in pediatric wards across different contexts.

Conclusion

The PWNCSE scale developed in this study with 51 items in the four domains of "altruism," "proficiency," "communication ability," and "management of care process" is a reliable and valid scale to evaluate nurses' self-efficacy in caring for children. This scale may also help nursing administrators to assess the caring self-efficacy of nurses in pediatric wards.

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Conflicts of interest

Nothing to declare.

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