Original Article

Construct Validity and Reliability of Caring Nurse Patient Interaction Scale-Nurse among Filipino Nurses

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Abstract

Background: Caring has been considered as an essential human need and fundamental component of the nursing profession. Hence, identification and understanding of the importance of caring behaviors will lead to better nursing care.

Objective: The objective of the study was to examine the construct validity and internal consistency reliability of the Caring Nurse Patient Interaction Scale-Nurse among Filipino Nurses (CNPI-Nurse).

Methods: The study utilized a cross-sectional study and included 124 medical-surgical nurses employed in Level 3 hospitals in Manila as the participants of the study. The construct validity was assessed using confirmatory factor analysis with maximum likelihood estimation while internal consistency reliability was determined using Cronbach α coefficient.

Results: The study retained the 23 items loaded in four factor model of CNPI-Nurse when administered among Filipino nurses. The confirmatory factor analysis (CFA) showed factor loading ranging from 0.52- to 0.85. Also, the model was revealed to be a good fit with chi-square goodness=1.72, root mean square error of approximation=0.076, comparative fit index=0.090, Tucker-Lewis index=0.90, incremental fit index=0.91 and standard root mean square residual=0.041.

Conclusion: The CNPI-Nurse was revealed to be cross-culturally valid and a reliable instrument for measuring the self-perceived caring behaviors of Filipino nurses.

Keywords: Caring nurse patient interaction, construct validity, internal consistency reliability

Introduction

Caring has been considered as an essential human need and fundamental component of the nursing profession (Karaoz, 2005). However, the inherent complex nature of caring makes it difficult to quantify. As such, most researches on the nature of caring focused themselves on the outward expression of it, the "caring behaviors". Caring behaviors are actions concerned with the well-being of a patient, such as sensitivity, comforting, attentive listening, honesty, and nonjudgmental acceptance (Salimi & Azimpour, 2013). The relationship of caring behaviors to the satisfaction and well-being of patients have been documented in literatures (Wolf, Miller, & Devine, 2003; Green & Davis, 2005; Azizi-Fini, Mousavi, Mazroui-Sabdani & Adib-Hajbaghery, 2012). The importance of recognizing the behaviors of nurses which are perceived by the patient as caring and determining if nurses perceived these same behaviors as caring is imperative (Calong Calong & Soriano, 2018) since this will ultimately lead to better nursing care.In an attempt to measure the caring behaviors, a number of researches has been

conducted which resulted in the development of various instruments (Wolf, 1986; Watson & Lea, 1997). Conversely, although several instruments have been developed and translated to several languages, there were few publications that discussed the psychometric approaches in cross-cultural validation of these instruments (Papastavou et al., 2010) since it has been noted that cultural differences have an effect in caring behaviors (King & Crisp, 2005). A prime example of the cultural nuisance in caring behaviors was documented by Martinez (2013) when he points out that the essence of caring among Filipino nurses is embodied by "oneness" wherein one must first understand and connect first with their own culture to fully understand other people cultures as well and in the process make them proud of their own uniqueness and complexities as Filipino nurses.Thus, the study was conducted to examine the construct validity and internal consistency reliability of the Caring Nurse Patient Interaction Scale-Nurse among Filipino Nurses (CNPI-Nurse).

Materials and Methods

Design and Participants: The study utilized a cross-sectional research design among 124 nurses working in medical and surgical units. The data was collected between the period of January to March 2019 in selected Level 3 Hospitals in Manila. A purposive sampling technique was utilized following and included nurses with a minimum of 1-year hospital experience. The study followed a minimum of 5 observations per variable in a factor analysis (Comrey & Lee, 1992).

The Instrument used is **Caring Nurse-Patient Interaction Scale-23 Nurse.** The instrument was developed in order to describe the attitudes and behaviors of nurses that can be seen in clinical practice and that can be measured according to importance, frequency, satisfaction, competency and feasibility (Cossette et al., 2006). It is comprised of 23 items which is rated using a 5-point Likert scale from 1=Almost Never to 5=Almost Always, reflecting four caring domains namely: Humanistic Care (4 items), Relational Care (7 items), Clinical Care (9 items) and Comforting Care (3 items).

Ethical Considerations: The ethical clearance to conduct the study was secured from Arellano University Ethics Review Board. The participants

were asked to signed the informed consent and the objectives of the study was explained to them.

Data Analysis: The study determined the construct validity of the scale using confirmatory factor analysis (CFA) with maximum likelihood estimation following the original four-factor model (Cossette et al., 2006) to assess the reliability and quality of the model fit. The factor variances were fixed at 1, which provided the identification in the analysis. The following criteria were utilized in the estimation of the model fit: (a) relative chi-square (χ^2/df) ≤3, (b) root mean square error approximation (RMSEA) ≤0.08, (c) comparative fit index (CFI) ≥0.90, (d) Tucker-Lewis index ≥0.90, (e) incremental fit index (IFI) ≥0.90, (f) standardized root mean square means ≤0.08 (Kline, 2015). For the internal consistency reliability of the scale Cronbach's alpha was used. An alpha coefficient of more than 0.70 (Polit & Beck, 2014) was considered acceptable. The data gathered was analyzed using SPSS 21.0 and AMOS 20.0 (IBM Corp. Armonk, NY, USA)

Results

Demographic characteristics

Table 1 shows the demographic profile of the respondents. It can be seen that the mean age of the respondents was 29.37 (±6.94) years old and majority of the respondents were female (80.65%). On the other hand, the mean length of service of the respondents was 4.55 years (±5.91).

Construct Validity

Figure 1 shows the model output in standardized estimates for F-CNPI. The 23 items were loaded on the four latent variables with factor loadings ranging from 0.52- to 0.85. It was revealed in Table 2 that the model showed an acceptable goodness of fit with the following results: chi-square goodness=1.72, root mean square error of approximation=0.076, comparative fit index=0.090, Tucker-Lewis index=0.90, incremental fit index=0.91 and standard root mean square residual=0.041.

The overall score of Cronbach's α coefficient was 0.943, while the alpha coefficient for clinical care, relational care, humanistic care and comforting care were 0.852, 0.908, 0.817, 0.823 respectively.

Table 1: Demographic characteristics of the subject

Profile	n	%	Mean (SD)
Age (years)			29.37 (±6.94)
Sex			
Male	24	19.35	
Female	100	80.65	
Length of service (years)			4.55 (±5.91)

Table 2. Model Fit Summary of F-CNPI Nurse (N = 124)

Model	CMIN/df	RMSEA	CFI	TLI	IFI	SRMR
Acceptable Values	≤3.00	≤0.08	≥0.90	≥0.90	≥0.90	≤0.08
Index Values	1.72	0.076	0.90	0.90	0.91	0.041
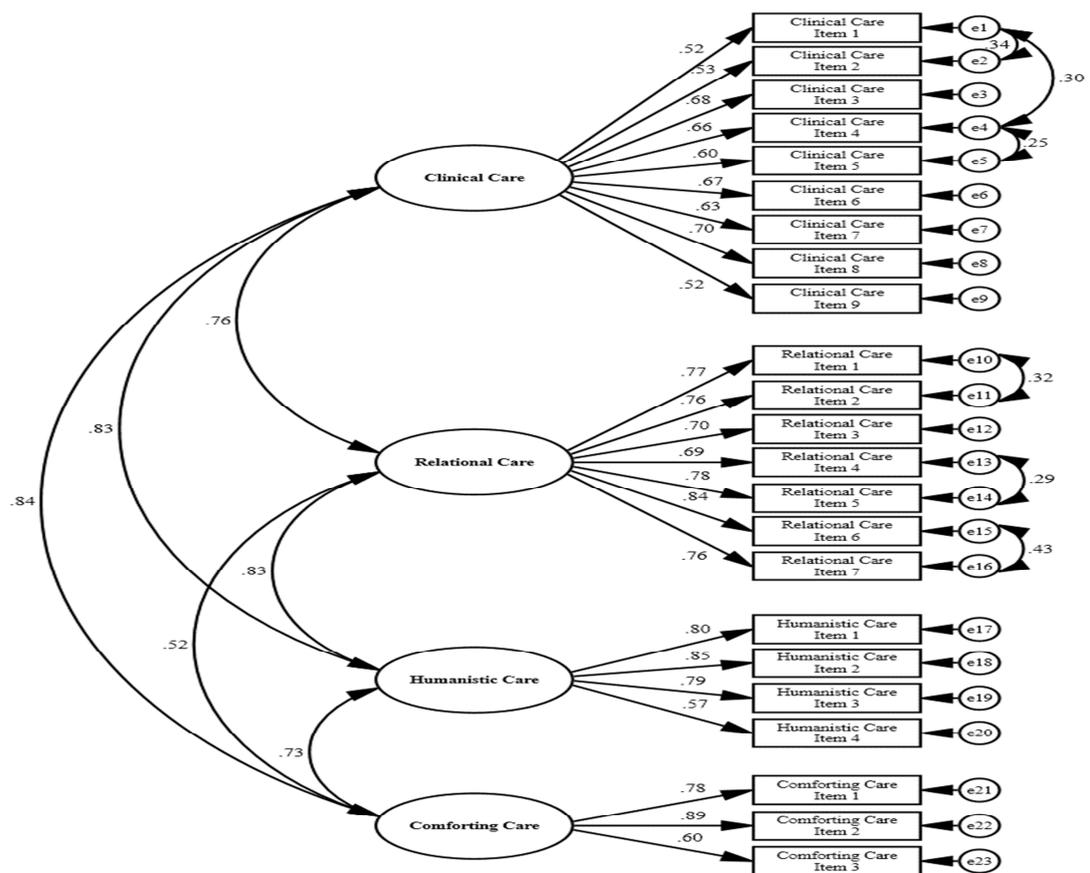
Figure 1. Confirmatory factor analysis of F-CNPI Nurse

Table 3. Cronbach's Alpha Reliability Properties

Item	Mean (SD)	Alpha	Cronbach's α if item deleted
Clinical Care			
Item 1	4.72 (0.61)		0.836
Item 2	4.44 (0.72)		0.838
Item 3	4.54 (0.62)		0.832
Item 4	4.30 (0.71)		0.828
Item 5	4.32 (0.72)	0.852	0.835
Item 6	4.22 (0.80)		0.836
Item 7	4.36 (0.77)		0.839
Item 8	4.37 (0.73)		0.829
Item 9	4.06 (0.97)		0.852
Total clinical care subscale	39.33 (4.53)		
Relational Care			
Item 10	3.94 (0.90)		0.895
Item 11	3.86 (0.92)		0.893
Item 12	4.11 (0.82)		0.905
Item 13	3.57 (1.03)	0.908	0.901
Item 14	3.94 (0.83)		0.891
Item 15	3.82 (0.91)		0.883
Item 16	4.01 (0.87)		0.892
Total relational care subscale	27.25 (5.06)		
Humanistic Care			
Item 17	4.20 (0.81)		0.759
Item 18	4.36 (0.70)	0.817	0.724
Item 19	4.27 (0.75)		0.742
Item 20	3.80 (0.92)		0.855
Total humanistic care subscale	16.65 (2.57)		
Comforting Care			
Item 21	4.64 (0.60)		0.767
Item 22	4.41 (0.74)	0.823	0.715
Item 23	4.37 (0.70)		0.782
Total comforting care subscale			

Table 3: Cronbach's alpha reliability of each subscale

Subscale	Item	Cronbach's α
Clinical Care	9	0.852
Relational Care	7	0.908
Humanistic Care	4	0.817
Comforting Care	3	0.823
Over-all	23	0.943

Discussion

The CNPI-Nurse has already been cross culturally validated to several Asian countries such as China and Korea. However, up to date, the scale has not been cross-culturally validated among Filipino nurses. Hence, this study was conducted in order to determine the cross-cultural validity and reliability of CNPI-Nurse among Filipino nurses by determining the construct validity and internal consistency reliability of the instrument.

The study revealed that the Cronbach's alpha coefficient of the scale when tested among Filipino nurses was 0.943 while the alpha coefficient for clinical care was 0.852, relational care was 0.908, humanistic care was 0.817 and comforting care was 0.823. The Chinese version of CNPI-23 was administered among 260 nurses and revealed a Cronbach's alpha of 0.97 (Jiang, Ruan, Xiang & Jia, 2015). In a Korean study which includes 589 medical doctors, nurses and hospital staff, a Cronbach's alpha coefficient of 0.95 was computed (Cha, Chang, & Kim, 2013). The alpha coefficients were considered acceptable if it is more than 0.70 (Polit & Beck, 2014). Thus, the results showed the reliability of CNPI-23 among Filipino nurses.

The study followed the original four-factor model of CNPI-23 (Cossette et al., 2006) in assessing its construct validity using confirmatory factor analysis. The CFA was conducted on the basis of $\chi2/df=1.72$, root mean square error of approximation=0.076, comparative fit index=0.090, Tucker-Lewis index=0.90, incremental fit index=0.91 and standard root mean square residual=0.041. Following the guidelines set by Kline (2015) the CNPI-23 administered among Filipino nurses was considered a good fit

model. Thus, the four subscales namely: clinical care, relational care, comforting care and humanistic care was retained based on the results of CFA.

Several limitations were present in the study, one of it is that the CNPI-23 were only given to medical-surgical nurses from Level 3 hospitals and did not include nurses working in other nursing units which limits its generalizability. Also, other measure of validity and reliability were not performed such as convergent and discriminant validity and test-retest reliability, thus, including this measures in future studies is imperative.

Conclusion

The CNPI-Nurse was revealed to be cross-cultural valid and a reliable instrument for measuring the self-perceived caring behaviors of Filipino nurses. However, additional studies should be done in order to determine its generalizability.

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