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Psychometric Evaluation of the Persian Version of the Person-Centered Critical Care Nursing Questionnaire

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Research Article

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Abstract

Background:

Person-centered care is recognized as one of the core values in the delivery of high-quality healthcare. Given the importance of this approach in intensive care settings, the translation and psychometric evaluation of a valid instrument for measuring person-centered critical care nursing is essential for the Iranian healthcare system.

Objective:

This study aimed to translate and psychometrically evaluate the Person-Centered Critical Care Nursing Questionnaire in Persian.

Methods:

This methodological study was conducted during 2022–2023 among 300 nurses working in intensive care units. The original questionnaire was translated into Persian using the World Health Organization forward-backward translation protocol. Face validity, content validity, construct validity, and reliability were assessed. Construct validity was examined using confirmatory factor analysis. Reliability was evaluated using Cronbach's alpha coefficient and test-retest stability through the interclass correlation coefficient.

Results:

Face validity was confirmed after minor revisions to several items. Content validity was assessed qualitatively and confirmed by experts. Confirmatory factor analysis showed an acceptable model fit after deleting Item 4. Fit indices were as follows: $\chi 2/df = 3.56$, CFI = 0.92, SRMR = 0.074, and NNFI = 0.89. The RMSEA was 0.09 (90% CI: 0.082–0.11). The overall internal consistency of the questionnaire was acceptable, with a Cronbach's alpha of 0.81. Test-retest reliability was also satisfactory, with an interclass correlation coefficient of 0.93.

Conclusion:

The Persian version of the Person-Centered Critical Care Nursing Questionnaire demonstrated acceptable validity and reliability and can be used as an appropriate instrument for assessing person-centered nursing care in intensive care units in Iran.

Introduction

Intensive care units are designed to provide continuous monitoring, rapid therapeutic response, and advanced technological support for critically ill patients. These units require highly skilled healthcare professionals and specialized care processes to manage life-threatening conditions effectively (1, 2). Critically ill patients often experience multi-organ involvement and severe physiological instability, making comprehensive and individualized care essential (3).

Care is a fundamental component of healthcare delivery, and its quality is a major concern in clinical practice (4). Critical care nursing is one of the most specialized fields of nursing and focuses on delivering advanced care to patients with life-threatening conditions. Improving the quality of nursing care in intensive care settings requires identifying and strengthening the competencies necessary for effective and compassionate care (5). Nevertheless, nursing care in intensive care units remains challenging, and important dimensions of care may sometimes be overlooked.

Patients admitted to intensive care units often face a stressful and unfamiliar environment characterized by separation from family members, limited communication, loss of independence, and exposure to invasive procedures and sophisticated technologies. Under such circumstances, person-centered care becomes especially important (6, 7). At the same time, ICU nurses work under conditions of heavy workload, staff shortages, environmental stress, and high clinical demands, all of which may influence the quality of the care they provide (3).

In recent decades, patient-centered care has become a key principle in healthcare (8). This approach emphasizes patients' needs, values, and preferences and encourages their involvement in healthcare decisions (9, 10). Family-centered care has similarly been introduced to support both patients and their families through collaborative participation in planning, delivering, and evaluating care (9). However, both patient-centered and family-centered care have limitations, particularly in intensive care settings where patients may be unable to communicate effectively because of sedation, mechanical ventilation, or severity of illness (11).

For this reason, a broader concept, namely person-centered care, has gained increasing attention. Person-centered care extends beyond physical and medical needs and encompasses the individual's psychological, emotional, social, and spiritual dimensions (12). In this approach, the person is viewed as a unique human being with specific values, goals, preferences, capabilities, and challenges. Person-centered care also involves active listening, clear communication, respect for dignity, and involving individuals in decisions whenever possible (13).

The importance of person-centered care is particularly pronounced in intensive care units. Patients in these settings may experience isolation from family, limited autonomy, impaired communication, and depersonalized treatment (14). Such experiences can affect not only their satisfaction with care but also their psychological well-being and post-discharge recovery. Therefore, evaluating the extent to which ICU nursing care is person-centered is highly relevant for both clinical practice and quality improvement (15).

Despite the importance of this concept, instruments specifically designed to assess person-centered care in critical care settings are limited. Existing tools may not adequately capture the unique context of intensive care or may not be culturally appropriate for use in different healthcare systems. To address this gap, Kang and colleagues developed the Person-Centered Critical Care Nursing Questionnaire, a 15-item instrument comprising four dimensions: compassion, individuality, respect, and comfort (16). Since no validated Persian version of this questionnaire was available, the present study was conducted to translate and psychometrically evaluate the Persian version for use in Iran.

Methods

Study Design

This was a methodological study conducted to translate and evaluate the psychometric properties of the Persian version of the Person-Centered Critical Care Nursing Questionnaire during 2022–2023.

Participants and Sampling

The study population consisted of nurses working in intensive care units in the selected hospitals. A total of 300 ICU nurses were recruited through convenience sampling.

The sample size was determined based on psychometric recommendations. According to Gorsuch, at least five participants per questionnaire item are required, with a minimum total sample size of 100 (17). In addition, previous methodological studies have suggested that between three and ten participants per item are adequate for confirmatory factor analysis. Therefore, a sample of 300 participants was considered sufficient for this study.

The inclusion criteria were:

- at least one year of work experience in an intensive care unit
- willingness to participate in the study
- holding at least a bachelor’s degree in nursing

The exclusion criteria were:

- unwillingness to continue participation
- incomplete questionnaire responses

Instruments

Demographic Questionnaire

A demographic data form was used to collect information on age, sex, marital status, number of children, income-expenditure balance, overtime working hours, job position, educational level, work experience in ICU, and type of intensive care unit.

Person-Centered Critical Care Nursing Questionnaire

The original questionnaire was developed by Kang and colleagues and includes 15 items across four subscales (16):

- Compassion: Items 1–4
- Individuality: Items 5–8
- Respect: Items 9–12
- Comfort: Items 13–15

Each item is rated on a 5-point Likert scale ranging from 1 (“not at all”) to 5 (“very much”). The total score ranges from 15 to 75, with higher scores indicating a higher level of person-centered critical care nursing.

Translation Method

The questionnaire was translated in accordance with the World Health Organization translation protocol using forward-backward translation (18). After obtaining permission from the original developer, the English version was independently translated into Persian by two bilingual translators. The two translations were compared and reconciled by an expert panel to produce a single preliminary Persian version.

This version was then back-translated into English by two other independent bilingual translators who had not seen the original instrument. The back-translated version was reviewed and compared with the original questionnaire to ensure conceptual equivalence. The final Persian version was then prepared for cultural adaptation and psychometric evaluation.

Validity Assessment

Face Validity

Face validity was assessed through cognitive interviews with 15 ICU nurses. They were asked to evaluate the clarity, simplicity, comprehensibility, and relevance of each item. Based on their feedback, minor wording revisions were made.

Content Validity

Content validity was assessed by 15 experts in critical care nursing and instrument development. They examined the items in terms of relevance, clarity, and cultural appropriateness. In addition to qualitative review, cultural adaptation involved changing the phrase “religious article” to “prayers” to improve contextual appropriateness in Persian.

Item Analysis

Prior to construct validity testing, item analysis was conducted with 30 ICU nurses. The correlation of each item with the total score was examined. Since all item-total correlations exceeded 0.30, no item was removed at this stage (19).

Construct Validity

Construct validity was evaluated using confirmatory factor analysis with data from 300 ICU nurses. The four-factor structure of the questionnaire was tested. The analysis indicated that the model showed acceptable fit after deletion of Item 4 due to a low factor loading. The reported fit indices were:

- **GFI = 0.84**
- **AGFI = 0.84**
- **RFI = 0.86**
  - CFI = 0.92
- **RMSEA = 0.094**
  - chi-square = 259.31
  - df = 71

Reliability

Reliability was assessed in two ways:

- Internal consistency using Cronbach’s alpha
- Stability over time using the test-retest method and intraclass correlation coefficient

For the test-retest assessment, 30 nurses completed the questionnaire twice with a two-week interval. The overall Cronbach’s alpha coefficient for the questionnaire was 0.81, and the intraclass correlation coefficient was 0.93, indicating acceptable internal consistency and temporal stability.

Data Analysis

Data were analyzed using SPSS version 26 and LISREL version 8.8. Descriptive statistics were used to summarize participant characteristics. Skewness and kurtosis were examined to assess distributional assumptions. Confirmatory factor analysis was used to evaluate construct validity. Cronbach's alpha coefficient and the interclass correlation coefficient were used to assess reliability. Other statistical tests, including chi-square, independent-samples t test, ANOVA, regression analysis, and Tukey's post hoc test, were applied where appropriate.

Results

Participant Characteristics

A total of 300 ICU nurses participated in the study. Of these, 34.3% were female and 65.7% were male. The highest proportion of participants was in the 30-40-year age group. In addition, 72% of the participants were married (Table 1).

Table 1
Participant Characteristics

Characteristics		Frequency (Percent)
Gender	Male	197 (65.7)
	Female	103 (34.3)
Marriage	Single	83 (27.7)
	Married	217 (72.3)
Age	20–29	103 (34.5)
	30–39	115 (38.5)
	40–49	46 (15)
	> 50	36 (12)

Item Analysis

All items showed item-total correlation coefficients greater than 0.30. Therefore, all items were retained at the item analysis stage (Table 2).

Table 2
Results of item-total correlation

No	Item	Item-total correlation
1	I empathize with the patient and their family through my words and actions.	0.45
2	I try to empathize with the patient and their family according to the circumstances.	0.51
3	I attempt to establish therapeutic contact with the patient and their family (e.g., holding hands).	0.51
4	I engage in casual conversation with the patient and their family (e.g., news, hobbies, interests).	0.52
5	I facilitate the patient's engagement in their preferred recreational activities (e.g., listening to music, watching movies, reading).	0.53
6	I allow the family to visit the patient beyond scheduled hours when necessary.	0.44
7	I encourage the family to participate in the patient's care.	0.44
8	I speak to the unconscious patient as if they can hear me.	0.35
9	I try to establish non-verbal communication with patients who are unable to speak.	0.41
10	I allow the patient as much dignity and autonomy as possible regarding their toileting needs.	0.53
11	During CPR or end-of-life care, I remain mindful of other patients nearby.	0.44
12	I minimize unnecessary noise (e.g., staff chatter, equipment alarms).	0.45
13	I try to reduce unpleasant odors in the intensive care unit.	0.41
14	I adjust the lighting in the unit at night according to the patient's preference.	0.37

Face and Content Validity

The findings of the face validity assessment indicated that the items were clear, simple, and understandable for ICU nurses. Content validity was also supported by expert review. A minor cultural adaptation was made in one item by replacing the phrase "religious article" with "prayers."

Construct Validity

The construct validity of the P-PCCNQ was evaluated using Confirmatory Factor Analysis (CFA). Initially, Item 4 exhibited a low factor loading (< 0.30) and was consequently removed to improve model parsimony. The modified four-factor model demonstrated a satisfactory fit to the data: $\chi 2/df = 3.56$, CFI

= 0.92, SRMR = 0.074, and NNFI = 0.89. The RMSEA was 0.09 (90% CI: 0.082–0.11). Although GFI and AGFI (both 0.84) were slightly below the 0.90 threshold, the combination of a low SRMR and a CFI above 0.90 confirms that the Persian version maintains the original factor structure of the questionnaire (Fig. 1).

Reliability

“The Cronbach’s alpha coefficient for the overall questionnaire was 0.81, indicating good internal consistency. Test–retest reliability was also confirmed with an intraclass correlation coefficient (ICC) of 0.93, reflecting excellent temporal stability.” (Table 3).

(Table 3). Reliability assessment through internal consistency, relative reliability, and absolute reliability

Factor	Items	Cronbach’s alpha	Intraclass correlation coefficient (ICC)	95% confidence interval (CI)	Mean (SD)	Standard error of measurement (SEM)
1	1,2,3	0.73	0.69	0.58–0.76	10.54 (2.3)	0.84
2	5,6,7,8	0.75	0.75	0.71–0.79	12.93 (3.06)	1.87
3	9,10,11,12	0.73	0.73	0.51–0.86	13.98 (2. 6)	1.25
4	13,14,15	0.72	0.71	0.66–0.75	11.41 (2.22)	1.20
Total	1–14	0.81	0.93	0.76–0.82	48.87 (7.3)	2.57

Discussion

The present study aimed to translate and psychometrically evaluate the Persian version of the Person-Centered Critical Care Nursing Questionnaire. The findings showed that the Persian version has acceptable validity and reliability and may be used to assess person-centered nursing care in intensive care settings in Iran.

Face validity was supported by ICU nurses, who found the items understandable and relevant. Content validity was also confirmed by experts, and minor modifications were made to improve cultural appropriateness. These findings suggest that the translated questionnaire is conceptually suitable for the Iranian context.

The results of confirmatory factor analysis generally supported the original four-factor structure of the questionnaire. However, Item 4 was removed due to a low factor loading. This may reflect cultural,

linguistic, or contextual differences affecting the interpretation of that item in the Iranian critical care setting (20, 21). Item deletion during psychometric evaluation is not uncommon, particularly when instruments are adapted for use in a new language or cultural environment (21).

The fit indices indicated that the revised model had acceptable or relatively acceptable fit. In interpreting these findings, it is important to avoid overstating model adequacy, particularly if additional indices such as RMSEA suggest only marginal fit. Overall, the findings support the structural validity of the Persian version, although future studies may further refine the scale and re-evaluate the factor structure in more diverse samples (21).

The reliability findings were also satisfactory. The overall Cronbach's alpha of 0.72 indicated acceptable internal consistency, while the interclass correlation coefficient of 0.82 demonstrated good test-retest reliability (22). These results suggest that the questionnaire yields stable and reasonably consistent scores over time.

The findings are broadly consistent with previous psychometric studies in the field of person-centered care. Earlier research has shown that some items may be removed during factor analysis because of low factor loadings or weak performance in a new context (23, 24). Likewise, previous studies evaluating person-centered care instruments have reported acceptable to high internal consistency and good stability over time (25–27). The current study adds to this body of evidence by providing support for the use of a Persian-language instrument specifically tailored to critical care nursing.

This questionnaire may be useful for clinical evaluation, quality improvement initiatives, nursing management, and future research on person-centered care in intensive care units. By helping to identify strengths and weaknesses in current nursing practice, it may support interventions aimed at improving the quality and humanization of care (27, 28).

Conclusion

The Persian version of the Person-Centered Critical Care Nursing Questionnaire demonstrated acceptable validity and reliability. It can be used as a practical instrument for assessing person-centered nursing care in intensive care units in Iran. The availability of this instrument may facilitate the evaluation of current care practices, support quality improvement efforts, and contribute to policy-making and research in critical care nursing.

Declarations

Ethical Considerations

This study was approved by the relevant ethics committee of Baqiyatallah University of Medical Sciences, Tehran, Iran under code IR.BMSU.REC.1401.092. The necessary institutional permissions were obtained before data collection. All participants were informed about the study objectives and provided

informed consent before completing the questionnaire. All procedures were conducted in accordance with the Declaration of Helsinki (2013 revision).

Consent for publication

Not applicable.

Competing interests:

The authors declare no competing interests.

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Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author Contribution

All authors contributed to making this manuscript: YS and AE contributed to analysis, writing, data collection and literature research; MSM and MME contributed to data collection, literature research and some writing. All authors contributed to the discussion and have seen and approved the final version of the study.

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Availability of data and materials

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Figures

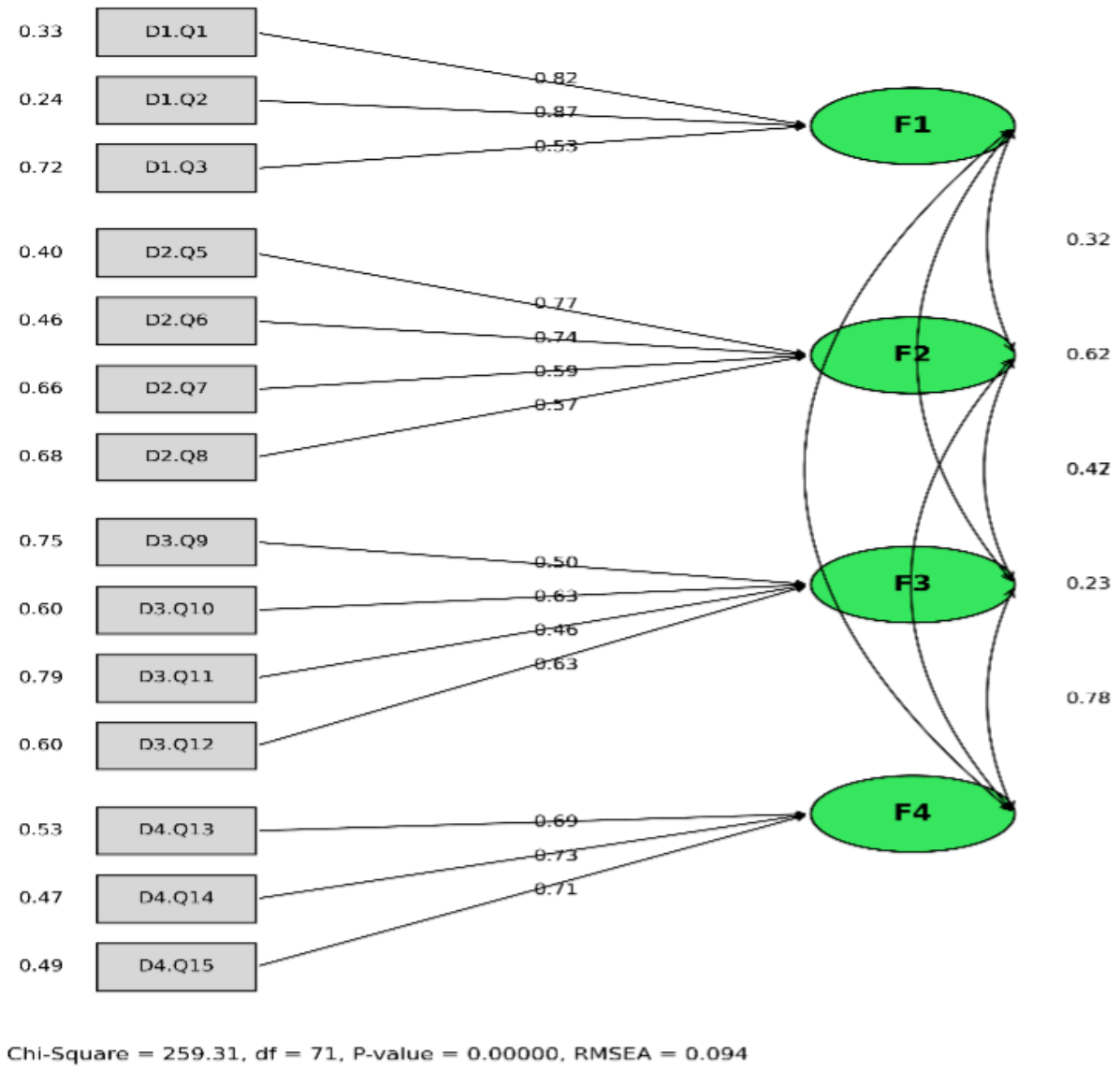


Figure 1

The 14-item, four-factor structural model of person-centered intensive care nursing