

Psychometric Properties Evaluation of Persian Version of Person-Centered Care Assessment Tool in Iranian Nurses

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Abstract

Background: Person-centered care (PCC) improves patient satisfaction, treatment adherence, clinical outcomes, and caregiver well-being; however, its' global implementation, including in Iran, remains limited. Since evaluating PCC is essential, this study sought to translate the Person-Centered Care Assessment Tool (P-CAT) into Persian and assess its' psychometric properties, providing a reliable instrument for measuring person-centered nursing practices in Iran.

Aim: This study aimed to translate the P-CAT tool into Persian and evaluate its psychometric properties for assessing person-centered care within the Iranian healthcare context.

Method: This methodological study was conducted in 2024 among 247 nurses working in four public hospitals in northern Iran. The P-CAT was translated and culturally adapted using world health organization (WHO) forward-backward translation guidelines and expert review. Construct validity was assessed using Maximum Likelihood Exploratory Factor Analysis (MLEFA), and reliability was evaluated using Cronbach's alpha and McDonald's omega coefficients.

Results: Most participants were female (n= 203, 82.2%), married (n=151, 61.1%), and had over five years of work experience (46.6%). The MLEFA on 247 participants showed a two-factor structure after removing six items with factor loadings below 0.3, which explains 40.8% of the total variance. Cronbach's alpha and McDonald's omega exceeded 0.70 for the organizational factor but were below 0.70 for the resident engagement factor.

Implications for Practice: This study demonstrates that the Persian version of the P-CAT, when administered to Iranian nurses, exhibits a multidimensional structure with two main factors, organizational factors and residents' engagement. Therefore, the Persian adaptation of the P-CAT can be regarded as a reliable and valid instrument for evaluating PCC provided by nurses.

Keywords: Nurse, Person-Centered Care, Psychometry, Tool

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Introduction

PCC is a nursing model that improves patient health by fostering collaboration among healthcare providers, customized care to individual needs, and ensuring patient involvement with empathy and compassion (1, 2). Consequently, it is crucial for nurses to understand the individuals to whom they deliver care (3). According to recent statistics in the United States, approximately 40% of patients do not have access to this care (4). Additionally, PCC has emerged as a global concern and core principle in healthcare delivery (5, 6).

Although the terms "patient-centered" and "person-centered" care are often used interchangeably, distinctions exist. Person-centered care places the individual at the center of decision-making, and considers contextual factors, whereas patient-centered care also involves family participation. Despite these differences, differentiating between the two remains challenging because of their overlapping principles (7). Person-centered care is a more comprehensive approach that treats individuals with respect, dignity, and recognition of their unique needs (8). According to Peterson and Zdrad's humanistic theory, the core elements for evaluating this approach are self-efficacy, ethical sensitivity, communication, empathy, cultural competence, and respect (9-11). The benefits of PCC include higher patient satisfaction, improved medication adherence, better clinical outcomes, and greater satisfaction among healthcare providers (12, 13). Patient involvement in their care and treatment has become a cornerstone of high-quality healthcare delivery (14). Enhancing care quality and boosting organizational productivity necessitates the incorporating PCC into healthcare systems (9). However, its implementation remains limited. In Iran, PCC became a part of the healthcare accreditation system in 2012; however, significant challenges persist, underscoring the need for further research in the Iranian context (15).

Failure to adopt this approach not only increases time and costs but also undermines patients' independence. Moreover, because its meaning varies among patients and nurses, developing reliable measures and strategies for implementation is critical (14). As a multidimensional concept, its complexity makes it difficult to define and implement effectively. Measuring PCC is vital for evaluating service quality, determining whether patients' needs and preferences are met, and assessing the benefits of improvement plans, particularly within nursing practice (16). Globally, various tools are used to assess PCC (17-19), instruments specifically targeting PCC remain limited (16, 18). The three main tools include the Personal Care Questionnaire, Care Process Measurement, and Person-Centered Care Assessment Tool (P-CAT) (16). Among these, the P-CAT stands out as the only self-reported instrument designed specifically for nurses. It was developed by Edvardsson et al. in Australia in 2008 and registered in 2010 (20). The tool has been translated into multiple languages, including English, Korean, Spanish, Chinese, Swedish, and Norwegian (21).

Cultural contexts significantly influence nursing practices across countries, including patient interactions, care processes, and attitudes toward healthcare systems (22). In Iran, undervaluation of nurses' contributions, alongside workforce shortages, aging staff, and restricted recruitment, has negatively affected the quality of care and professional morale (23). These cultural and economic differences necessitate a tailored approach to assessing PCC in Iran's healthcare system. Given the absence of a Persian version of the P-CAT tool, this study aimed to translate it and evaluate its psychometric properties within the Iranian context.

Methods

The Person-Centered Care Assessment Tool (P-CAT), which comprises 13 items scored on a 5-point Likert scale, ranging from "strongly disagree" (score = 1) to "strongly agree" (score = 5), with total scores ranging from 13 to 65. The tool was developed by Edvardsson et al. in 2010 in Australia to measure the extent to which care in residential facilities is experienced by nurses as person-centered. It evaluates nurses' work processes, understanding of patient histories and needs, and collaborative discussions on optimal care (20, 21). Initially, the tool contained 39 items derived from expert consultations and interviews with older adult care workers, patients with early-onset dementia, and their families. Following refinement, it was condensed to 13 items. Its validity and reliability were first evaluated in a group of 247 nurses from long-term care facilities (20).

P-CAT evaluates three dimensions: personalized care (items 1–7), organizational support (items 8–11), and environmental accessibility (items 12–13). However, subsequent revisions reduced these to two dimensions and 13 items, including personalizing care, organizational support, and environmental

accessibility. Scores range from 13 to 65, with higher scores indicating more PCC (20, 21). The psychometric properties of this tool have been assessed in studies by Kai Li et al. and Anne-Marie Moerk et al. In a Chinese study conducted by Kai Li et al., Cronbach's alpha ranged from 0.91 to 0.94, indicating strong internal consistency of the instrument (21).

For translation and cultural adaptation, first, an email was sent to Professor David Edvardsson, the primary designer of the P-CAT, requesting permission to validate the instrument. Permission was granted to commence the study. The translation and cultural adaptation of the instrument were conducted according to the WHO forward-backward translation guidelines (24). In the forward translation phase, two independent bilingual translators translated the original English version into Persian. In the backward translation phase, the combined Persian version was translated back into English by an independent bilingual translator to ensure conceptual equivalence with the original version. Discrepancies were resolved through consensus. An expert panel consisting of 12 members, including PhD-prepared nursing faculty members, experts in instrument development and psychometrics, and professional bilingual (English-Persian) translators, reviewed the pre-final version of the questionnaire. The panel evaluated the translated instrument in terms of linguistic clarity, cultural relevance, and conceptual equivalence, and necessary modifications were applied to produce the final Persian version used for psychometric testing.

This cross-sectional study was conducted in the years 2023-2024. A total of 247 nurses working in the four public hospitals of north of Iran were selected using convenience sampling. Inclusion required being a full-time registered nurse in a general hospital, holding a minimum of a bachelor's degree in nursing, possessing at least 12 months of clinical experience, and being actively employed in a bedside nursing role. Conversely, nurses working part-time or in non-clinical capacities, those with less than 12 months of clinical experience, individuals not directly engaged in bedside patient care, and those who declined to provide informed consent were excluded from the study.

The scale's construct validity was evaluated through exploratory factor analyses (EFA). The EFA employed Maximum Likelihood method. To ensure that the sample was appropriate for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were applied. The analysis yielded excellent KMO values above 0.9, indicating high validity (25). The factor structure was identified by extracting factors based on their eigenvalues. The proportion of total variance explained by a factor was then calculated by dividing its eigenvalue by the sum of all eigenvalues (representing the total variance) (26). The factorability of the data was assessed based on three criteria: eigenvalues greater than 1, communalities above 0.2, and factor loadings exceeding 0.3 (27).

Internal consistency was assessed using Cronbach's alpha. The established reliability thresholds required values for α to be greater than 0.7 (28).

The internal consistency of the Persian version of the P-CAT was evaluated using Cronbach's alpha (α) and McDonald's omega (Ω). Values of α and Ω greater than 0.7 were considered acceptable.

Ethical Considerations

This methodological study was approved by the Iran National Committee for Ethics in Biomedical Research Mazandaran University of Medical Sciences, Sari, Iran (Ethical approval code: IR.MAZUMS.REC.1402.497). All participants received comprehensive information regarding its objectives, procedures, and possible risks and benefits. Each participant provided informed consent, indicating their voluntary decision to participate in the study. They were assured that their answers would remain confidential and be used exclusively for research purposes. Participants were also informed that they could withdraw at any stage without any repercussions. All data were anonymized to safeguard privacy.

Results

The translation and cultural adaptation process of the P-CAT resulted in a conceptually equivalent Persian version of the scale. Following forward-backward translation and expert panel review, minor linguistic discrepancies were resolved to ensure semantic, idiomatic, and conceptual equivalence of the items. No items were excluded from the translation phase. The majority of participants were female (82.2%), married (61.1%), and had over 5 years of work experience (46.6%). Most participants had a monthly income between 6 and 12 million Tomans (51.1%) (Table 1).

Table 1. Participants' demographic characteristics

Demographic characteristics	N (%)
Age (Mean \pm SD)	33.60 \pm 7.70
Sex	
Female	203(82.2)
Male	44(17.8)
Marital status	
Married	151(61.10%)
Single and other cases	96(38.39)
Monthly income	
6-12 million tomans	146(59.10)
More than 12 million tomans	101(40.90)
Work experience outside current ward (years)	
<2	85(34.40)
2-5	47(19)
>5	115(46.60)

Cronbach's alpha and McDonald's Omega for the organization factor were greater than 0.7, and for the resident engagement factor were less than 0.7.

The MLEFA analysis conducted on a sample of 247 participants successfully identified two factors, which explained 40.8% of the total variance. Within this analysis, a total of seven items were categorized into the two identified factors, organizational factors and residents' engagement. six items (item of Three entitled: The life history of the residents is formally used in the care plans we use, item of four entitled: The quality of the interaction between staff and residents is more important than getting the tasks done, item of seven entitled: simply do not have the time to provide person-centered care, item of eight entitled: The environment feels chaotic, item of nine entitled: We have to get the work done before we can worry about a homelike environment, and item of twelve entitled: It is hard for residents in this facility to find their way around) had factor loading below 0.3 that was removed. The adequacy of the sampling for the factor analysis was confirmed through the KMO test, which yielded a value of 0.750, and Bartlett's test, which produced a statistically significant result ($p=0.001$, chi-square = 625.523, $df = 45$). (Table 2 presents the detailed MLEFA results).

Table 2. The result of MLEFA on the seven items the Persian Version of P-CAT (n = 247)

Factor	Items	Factor loading	h^2	λ	% Variance
Organizational	Q2. We have formal team meetings to discuss residents' care.	0.561	0.546	1.62	23.2
	Q1. We often discuss how to give person-centered care.	0.544	0.470		
resident's engagement	Q10. This organization prevents me from providing person-centered care.	0.496	0.260		
	Q11. Assessment of residents' needs undertaken on a daily basis.	0.699	0.434		
	Q13. Residents are able to access outside space as they wish.	0.769	0.592		
	Q6. Residents are offered the opportunity to be involved in individualized everyday activities.	0.669	0.691		
	Q5. We are free to alter work routines based on residents' preferences.	0.437	0.240		
Total= 40.8					

Abbreviations: h^2 : Communalities, λ : Eigenvalues

Discussion

This study aimed to evaluate the psychometric properties of the Persian version of the P-CAT among Iranian nurses. The exploratory factor analysis (EFA) results revealed a two-factor structure that accounted for 40.8% of the total variance. The P-CAT is a widely applied instrument designed to measure the extent to which care is person-centered. It consists of two subscales that capture different dimensions of PCC, with respondents rating their level of agreement with specific statements. When delivered to nurses, the P-CAT offers valuable insights into their perceptions and practices of PCC and its potential influence on quality of nursing services. However, it is important to note that the P-CAT is not specifically designed to assess a single care context but rather to create a comprehensive

evaluation of PCC. This study is the first to validate the Persian version of the tool in Iran. Studies examining the factor structure of the P-CAT have been conducted from 2010 to 2020. Based on a systematic review examining the factor structure of the P-CAT, the results reported two to three latent factors, with a total variance of 56% (29). Consistent with these findings, the present study identified two factors.

Although the total explained variance of 40.8% falls slightly below the commonly recommended threshold of 50%, this finding is consistent with prior validation studies of the P-CAT. Significantly, a validation study of the P-CAT in an acute care setting similarly reported a two-factor solution with an explained variance of 42.28%, closely mirroring the findings of the present study (30). Moreover, a lower explained variance is not uncommon in instruments measuring complex psychosocial constructs such as person-centered care, where human attitudes and behaviors are inherently multidimensional and difficult to capture fully within a limited number of factors (31, 32). The removal of six items during factor analysis, while necessary to improve construct validity in the Iranian context, may have additionally contributed to the reduced proportion of variance.

In the current study, the first factor extracted was organizational factor. Organizational factors in context include various structural and behavioral elements within organizations that influence performance and safety, which can change treatment outcomes and affect processes and patient's satisfaction within organizations, affecting probabilities through non-linear interactions with error mechanisms and unsafe actions. These factors include organizational structure, management practices, corporate culture, training, and recruitment systems (33, 34). Organizational factors are a multidimensional concept including size, ownership, culture, and staffs' psychological work reactions, such as job satisfaction, innovation rate, or patient well-being; in some circumstances, organizational presence or absence may address issues about care quality, safety risks, or management. In organizational science, one of the key factors is to investigate the impact of organizational characteristics on organizational outcomes and the psychological outcomes of humans. This refers to healthcare systems in cases defined by multiple confrontations between patients and staff, requiring interpersonal participation because of the nature of the program being implemented. Such work in healthcare facilities is limited to a few organizational factors, such as the level of employment, for-profit level, ownership, size and to-bed ratio of nurses (34). For example, a study in 2025 revealed that due to the high patient-to-nurse ratio in various hospital departments, individuals with a higher number of patients may not have enough time to provide proper care, which could be a contributing factor to these findings (35). For these reasons, providing PCC in nursing home care is closely linked to how the staff experiences their job situation, in addition to both organizational and structural factors and the physical environment (36). Studies have demonstrated that the organizational context strongly shapes whether nurses can deliver PCC. Factors such as leadership style, staffing, culture, training, communication systems, resources and teamwork have all been linked to how well PCC is practiced in hospitals. Also, they indicated that supportive, well-resourced environments characterized by transformational leadership, adequate staffing, positive culture, effective training, structured communication, and strong interprofessional collaboration significantly enhance PCC delivery. Hospitals that systematically focus on these organizational factors allow nurses to provide care that respects patients' individuality, preferences, and dignity (36-39).

The other factor extracted was resident's engagement. In the context of nursing care and hospital settings, residents' engagement refers to the active involvement of patients or residents, often in long-term care facilities, in decisions regarding their care, daily routines, and overall healthcare experience (1, 40). It is a cornerstone of PCC because it ensures that care is tailored to each individual's needs, preferences, and values rather than being purely task-focused or standardized (40). By fostering open dialogue, nurses can understand individual preferences, cultural needs, and personal goals, ensuring that care is personalized rather than generic. On the other hand, by participating in their care plan, residents feel respected and valued, which improves their satisfaction and trust in the healthcare team and their adherence to caring plans (1, 41, 42). In this light, resident engagement is not a buzzword but a practical strategy. When fully implemented, this model transforms nursing from a one-way delivery of service into a collaborative journey toward better health and satisfaction.

While the two extracted factors, organizational factors and resident engagement, reflect the core dimensions of PCC in the Iranian nursing context, six items (3, 4, 7, 8, 9, and 12) were removed during factor analysis because of loadings below the acceptable threshold of 0.3. This finding may be

partially explained by the cultural and contextual differences between the Iranian and Australian care settings in which the P-CAT was originally developed. Iran is a collectivist, family-centered society in which the care of older adults is traditionally viewed as a familial and moral duty, and institutionalized care remains culturally less normalized compared to Western countries such as Australia (43-45). Consequently, items reflecting formally structured, resident-centered practices, such as the systematic documentation of residents' life histories in care plans (Item 3) and the prioritization of staff-resident interaction quality over task completion (Item 4), may hold different meanings or relevance for Iranian nurses operating within a task-oriented, resource-constrained care environment. Furthermore, Iran faces a significant nursing shortage, with high patient-to-nurse ratios and heavy workloads that may render items addressing time constraints for person-centered care (Item 7) and environmental organization (Items 8 and 9) less discriminating, as these challenges are pervasive rather than variable across settings (46, 47). Finally, items related to the physical environment and wayfinding (Item 12) reflect design standards embedded in Australian aged care policy that are not yet widely implemented in Iranian long-term care and hospitals infrastructure (48).

The relatively lower internal consistency observed for the resident engagement factor, which was lower than 0.7, may be attributed to the small number of items remaining in this subscale following factor analysis, as fewer items generally tend to yield lower reliability estimates. Additionally, the conceptual diversity of items within this factor may have led to the reduced internal consistency, reflecting the multidimensional nature of resident engagement in the Iranian long-term care context.

Overall, the psychometric properties of the Persian P-CAT are comparable to those of the original and other validated versions of the instrument. The original P-CAT, developed by Edvardsson et al. in Australia, consists of 13 items grouped into three subscales, personalized attention, organizational support, and environmental accessibility, and demonstrated satisfactory internal consistency for the total scale (Cronbach's $\alpha = 0.84$) along with good test-retest reliability ($r = 0.66$) (20). In the present study, the Persian version yielded a two-factor structure, organizational factors and resident engagement, with Cronbach's alpha exceeding 0.7 for the organizational factor, which is consistent with the reliability reported in the original version.

Subsequent validations in Swedish and Norwegian samples also supported a two-factor solution rather than the original three-factor structure, suggesting that the factor structure of the P-CAT may vary across cultural and healthcare contexts (49, 50). Similarly, the validation of the P-CAT in an acute care setting identified a two-factor solution with an explained variance of 42.28%, closely comparable to the 40.8% found in the present study (30). The Portuguese validation reported a three-factor solution explaining 55.6% of the total variance (51), while the Chinese version demonstrated strong reliability with Cronbach's alpha ranging from 0.91 to 0.94 and a test-retest reliability coefficient of 0.88 (21). Ultimately, these comparisons suggest that the Persian P-CAT shows acceptable psychometric properties in line with previously validated versions, while also reflecting context-specific adaptations inherent to the Iranian long-term care setting.

This study has important strengths, including being the first psychometric evaluation of the person-centered care assessment tool in Iranian nurses, using robust statistical methods. However, the sample was limited to hospitals in one region, which restricted generalizability. Additionally, test-retest reliability was not assessed, and the lower internal consistency of the resident engagement factor may reflect its limited item count and conceptual diversity. Future studies should evaluate the tool in broader nursing populations, assess its test-retest reliability, and examine its responsiveness to person-centered care interventions.

This study had several limitations that should be considered when interpreting the findings. Demographic information was collected through self-reported questionnaires, which may have introduced reporting bias. Second, the sample size was relatively limited and drawn from a restricted number of hospitals, which may have reduced the generalizability of the results. Additionally, the cross-sectional design limits the ability to draw causal inferences regarding the psychometric properties of the P-CAT over time. Longitudinal and experimental designs are also recommended to examine the stability of the instrument and its measurement properties over time. Furthermore, given that perceptions of person-centered care may be influenced by cultural and contextual factors, future studies should explore these dimensions to better understand how the construct is experienced and measured across different settings

Implications for practice

The results of this study indicate that the Persian version of the P-CAT, when administered to Iranian nurses, exhibits a multidimensional structure with two main factors: organizational factors and residents' engagement. Together, these factors explained 40.8% of the total variance in P-CAT scores among Iranian nurses. Hence, the Persian adaptation of the P-CAT can be regarded as a reliable and valid instrument for evaluating PCC provided by nurses. The validated Persian P-CAT has several specific clinical applications in Iranian healthcare settings. At the individual level, it can be used as a self-assessment instrument by nursing staff to evaluate the extent to which their current practice reflects person-centered care principles, enabling nurses to identify gaps between their actual and ideal care delivery. At the managerial level, nurse managers and ward supervisors can use the tool as a monitoring and bench-marking instrument to compare levels of person-centeredness across different units or facilities, thereby informing decisions about staffing, training, and resource allocation. Furthermore, the Persian P-CAT can serve as an outcome measure for evaluating the effectiveness of person-centered care training programs, allowing organizations to assess whether educational or organizational interventions have led to measurable improvements in care quality. At a broader policy level, the tool provides Iranian healthcare administrators with a standardized, culturally validated instrument to systematically assess and promote person-centered nursing care in care facilities nationwide. Future research involving broader populations and longitudinal approaches is recommended to further refine, adapt, and validate the P-CAT as a comprehensive tool for assessing PCC.

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Conflicts of interest

The authors declare no conflicts of interest.

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Authors' Contributions

All authors contributed to the conception and design of this study. N.M. and S.M conducted the data collection. HS-N analyzed and interpreted the data. N.M. and S.M wrote the initial draft of the manuscript. All authors provided feedback on the previous manuscript versions and approved the final version.

Artificial Intelligence statement

We did not use any AI tools or technologies to prepare this manuscript.

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