BMC Nursing

RESEARCH

Open Access

Psychometric evaluation of the person-centred climate questionnaire – staff version

Furkan Cihat Arici[1,2], Arzu Kader Harmanci Seren[3*] and David Edvardsson[4,5]

Abstract

Background Valid and reliable instruments are needed to assess person-centredness that serve as quality care indicators. Person-Centred Climate Questionnaire – staff version is an interculturally used tool to evaluate person-centredness in clinical settings. This study aimed to examine the psychometrics of the tool in the Turkish language.

Methods This was a methodological study involving a sample of 140 nurses. One of the researchers collected data using the Turkish version of the questionnaire-staff version in a private hospital in Istanbul. After performing the language validity steps, the researchers analysed the content validity ratios of the items and the questionnaire's content validity index, and they performed exploratory and confirmatory factor analysis to validate the construct. The internal consistency of the subdimensions and the questionnaire was determined utilising a Cronbach's Alpha test.

Results The content validity ratios of the items ranged from 0.84 to 1, and the correlation coefficients ranged from 0.50 to 0.69. The three-factor structure accounted for 70.40% of the total variance. The items' standardised factor loads were between 0.501 and 1.140. The Cronbach's alpha consistency value was 0.90.

Conclusion The staff version of the questionnaire is an adequately valid and reliable instrument in the Turkish language.

Keywords Person-centred climate, Person-centred environment, Person-centred care, Management, Nursing

Introduction

A manager's primary responsibility is to ensure the efficiency of complex and dynamic healthcare organisations, while providing the public with safe and high-quality health services in healthcare institutions [1]. The World Health Organisation (WHO) outlined that providing quality healthcare requires effective, safe, timely, fair, integrated, efficient, and person-centred patient care [2].

Person-centred care is a comprehensive approach that prioritises the individual's unique needs, preferences, and values, addressing not just the illness but also the physical, emotional, social, and spiritual dimensions of the person [3]. This approach is firmly grounded in established nursing theories [4]. For instance, Henderson's emphasis on fundamental human needs [5], Orem's focus on supporting the individual's self-care capacity [6], and Watson's highlight on compassionate interaction [7] within the nurse-patient relationship all form the cornerstones of person-centred care. Nurse-led care models are predicated on a theoretical foundation that is characterised by their holistic nature, their foundation in empirical evidence, and their focus on the uniqueness of the patient

*Correspondence:
Arzu Kader Harmanci Seren
arzukader@gmail.com
[1]Istanbul Okan University Graduate School, Istanbul, Turkey
[2]Nursing Management Department, American Hospital, Istanbul, Turkey
[3]Fenerbahçe University, Istanbul, Turkey
[4]Swinburne University of Technology, Hawthorn, Victoria, Australia
[5]Institute of Health and Care Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

as an individual [8]. Nurses are critical professionals to provide person-centred patient care [9].

This inclusive and participatory model is conceptually aligned with the principles of patient-centred care [3, 10, 11]. However, despite their conceptual similarities, notable distinctions exist between the overarching objectives of these approaches. While the primary aim of person-centred care is to establish a sensitive and human-driven healthcare experience, patient-centred care predominantly emphasises functional well-being and clinical outcomes [3]. Person-centred care adopts a more comprehensive perspective, considering the individual in their entirety rather than solely within the confines of the patient identity [12].

Delivering person-centred care requires a comprehensive understanding of individuals as whole beings, necessitating that healthcare institutions and professionals identify and prioritise what patients value [13]. A truly person-centred healthcare system must integrate patients' social networks, enhance their quality of life, and undergo structural reforms that facilitate meaningful patient experiences and active collaboration with healthcare institutions. To achieve this, healthcare staff must be supported in developing the flexibility to adapt their skills, communication strategies and attitudes [11].

Türkiye supplies preventive, curative, and rehabilitative health services in various environments, including family medicine, private, public, foundation, and university hospitals [14]. Research conducted in Turkey has shown that patient-centred communication has a favourable impact on the utilisation of primary care services and the level of trust patients have in healthcare professionals [15]. The study by Çelik and Mertoğlu (2024) also found that nurses demonstrated a high level of patient-centred care competencies [16]. Furthermore, the research conducted by Tarıverdi et al. (2019) demonstrates that nurses caring for foreign patients exhibit high cultural sensitivity and intercultural awareness [17]. Recent studies have demonstrated that healthcare professionals exhibit a moderate level of cultural competence [18]. Nurses place significant value on individualised care, yet face challenges in its provision due to the allocation of time to indirect patient care tasks [19]. Furthermore, patients and nurses have been found to have high levels of perception of individualised care [20], and it has been observed that nurses' job satisfaction and burnout levels affect their perceptions of individualised care [21].

A study conducted among nurses found that job satisfaction was negatively impacted by dissatisfaction with the institution and profession in which they work [22]. A further study demonstrated that nurses' mental well-being and empathy levels in palliative care services are critical to the quality of care provided and individualised care [23]. In a qualitative study conducted with emergency room nurses, participants asserted that a positive and supportive work environment culture provided them with psychosocial support [24].

Person-centred care is characterised by the prioritisation of patients' wishes, needs, and demands; the incorporation of their perspectives; the recognition of healthcare staff contributions; and the establishment of a high-quality, supportive social environment that fosters well-being [13, 25]. To conceptualise and assess the care environment, Edvardsson et al. introduced the notion of "climate" as a framework for evaluating healthcare settings. This concept captures the overall perception of both the physical and psychosocial dimensions of healthcare environments, emphasising their potential to be person-centred [26, 27]. Over time, this measurement tool has been adapted and validated across diverse cultural contexts to ensure its applicability in different linguistic and societal settings [27–30].

Measuring and assessing the people-centred climate in healthcare settings can help improve patient and staff outcomes in Türkiye. A better understanding of person-centred care environments positively affects the experiences between staff and patients and can contribute to nursing practice, management, and education.

Therefore, the purpose of the adaptation study was to test the psychometrics of the PCQ-S in Turkish. In alignment with the research objectives, two key research questions were identified: first, whether the PCQ-S is a valid Turkish questionnaire, and second, whether it is a reliable one.

Methods

Procedure

The research adhered to the standardised procedures for questionnaire adaptation outlined by the "International Test Commission and the Consensus-based Standards for the Selection of Health Measurement Instruments (COSMIN)" guidelines, ensuring methodological rigour and validity [31, 32]. The initial phase of the study involved translating the items and assessing their content validity. Subsequently, item-total score correlations were calculated for each item, and construct validity was assessed through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The scale's internal consistency was evaluated by applying Cronbach's alpha analysis. Then, the Convergent and Divergent Validity of the model were appraised. The questionnaire's temporal stability was assessed through a test-retest reliability analysis (Fig. 1).

Design, setting, and sample

The study was a methodological one that aimed to test the intercultural psychometrics of the PCQ-S. The setting was a private hospital on the European side of Istanbul.

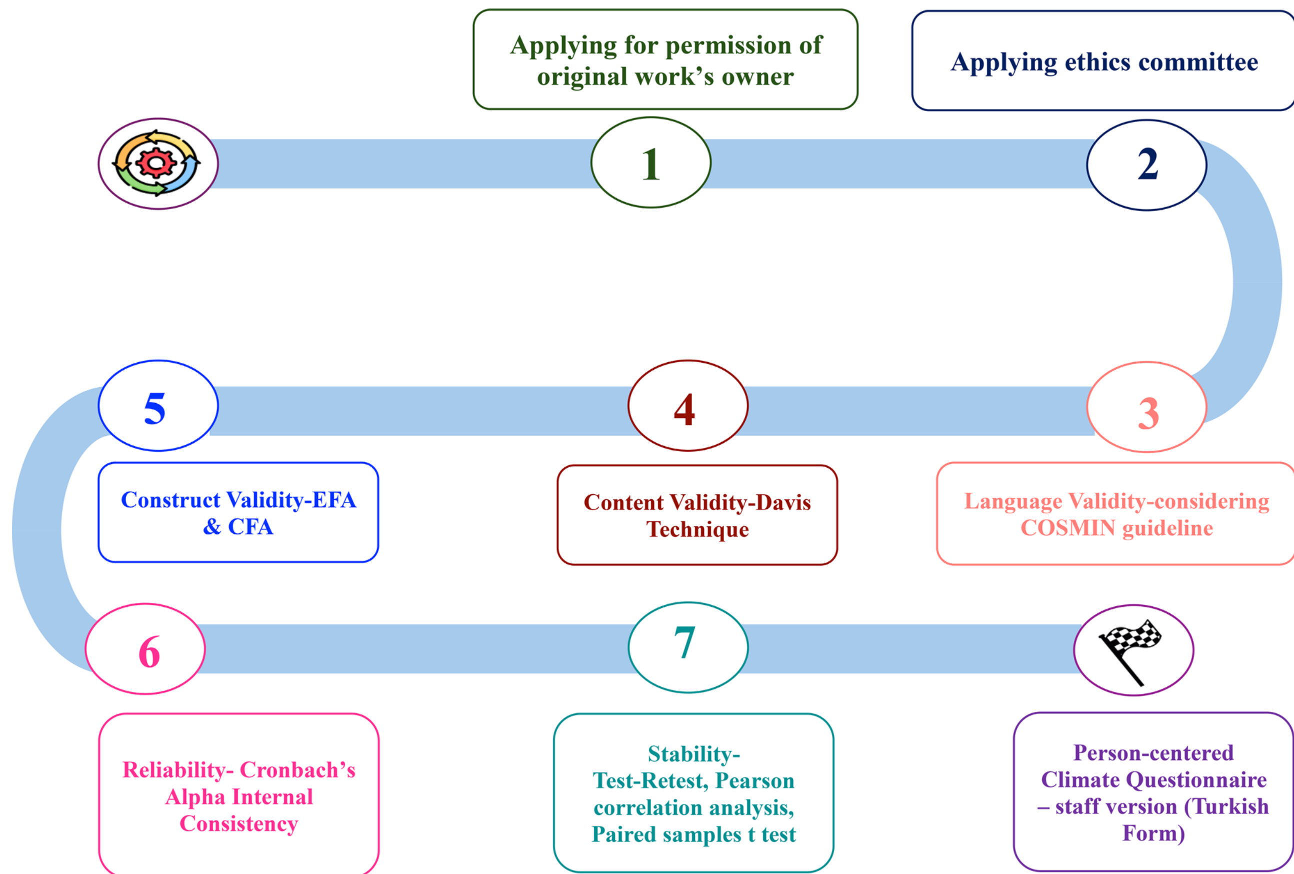

Fig. 1 Procedure of validity and reliability

It was the one that had Planetree certification (the certifying authority for person-centredness), in addition to JCI Accreditation. The study was conducted in the hospital's medical and surgical inpatient and outpatient units, except for the intensive care units and operating rooms. The hospital has admitted over 140,000 patients annually. It has 19 inpatient medical, surgical and intensive care clinics, and has 249 beds. Considering the relevant literature, 17 nurses were recruited to assess the face validity [33] and 13 experts were recruited to evaluate its content validity [34]. A sample of 140 nurses was sufficient to test the psychometrics of the survey, which consisted of 14 items [35]. Finally, 35 nurses were recruited to assess test-retest reliability. The inclusion criteria for the sample were having at least a bachelor's degree in nursing [1] and working in the medical or surgical patient wards for at least one year [2]. The exclusion criteria were working in the intensive care units or operating rooms. The data for the study were gathered via a scale that included items constructed to ascertain the participants' personal and professional identities, as well as the Turkish version of the PCQ-S.

Methods of data collection and instruments

After obtaining institutional approval, the primary researcher (FCA) informed the nurses in the inpatient units in line with the clinical administrators. Then, he sent the online surveys to the nurses who agreed to participate in the study by contacting them through their institutional email addresses using Google Forms (March-April 2024). They sent the online questionnaires to the nursing staff currently occupying beds at the facility and requested that they complete them. Only those who had provided online consent could access the survey.

Information form

The research instrument was a six-item questionnaire that collected data on the age, gender, professional and organisational experience, department in which they were employed, and educational level of the participant nurses.

The PCQ-S Turkish form

The PCQ-S is a six-point Likert scale questionnaire developed by Edvardsson et al. The Likert categories ranged from 1 (strongly disagree) to 6 (strongly agree). The original English version of the tool consisted of four

dimensions and 14 items. The scale consists of four subdimensions: A Climate of Safety (three items), Everydayness (four items), Community (three items), and Comprehensibility (four items) (Table 4). The alpha coefficient was 0.88. It utilises a sum-based scoring system, with a possible score range from 14 to 84. A score of 14 reflects a climate that is not strongly person-centred, whereas a score of 84 signifies a highly person-centred climate [27].

Data analysis

The data were analysed using SPSS (version 29) and Jamovi. To evaluate the content validity of both the items and the overall instrument, the Davis technique was initially employed. Descriptive analyses, including frequencies, percentages, means, standard deviations, and normality tests, were conducted in conjunction with psychometric assessments. These included the content validity ratio, item-total correlations, Kaiser-Meyer-Olkin and Bartlett's tests, as well as EFA and CFA. Internal consistency was also examined. Convergent validity was assessed using composite reliability (CR) and average variance extracted (AVE). In contrast, discriminant validity was assessed using maximum shared variance (MSV) and average shared variance (AVS). Furthermore, test-retest reliability was assessed through Pearson correlation analysis and paired-sample t-tests to determine the stability of the PCQ-S over time.

Findings

Participants' demographics

The ages of the nurses ranged from 22 to 54 (Mean = 29.91, SD = 6.02). They were mostly females (83.6%) and graduated from undergraduate nursing programs (83.6%). Nurses' professional and institute mean experiences were 7.66 (5.88) and 6.23 (5.68) years, respectively. They primarily worked in inpatient wards, 40.0%.

Language validity

Before starting this study, official permission was obtained from the original author of the questionnaire via email. Questionnaire items were translated by a professional translator for adaptation. Then, nurse experts assessed the translated statements after two academicians (a physician and a PhD-degreed nurse) translated them back. Also, the original scale's author checked the translated and back-translated items.

Face validity

Face validity was examined to assess whether a scale met criteria, such as whether the intended construct could be measured and whether the items were readable. To evaluate the face validity of a scale, 20 nurses were selected using convenience sampling. However, three of the nurses did not complete the scale for various reasons. Consequently, the face validity evaluation was conducted using the feedback from the 17 nurses who remained.

Content validity

Ten academics from diverse nursing disciplines and three specialist nurses provided expert opinions for validating the content of the items. They requested their opinions regarding the Turkish items and the entire form. Items' content validity ratios (CVR) varied between 0.84 and 1, and the PCQ-S' index was 0.98 (Table 1).

Correlation analysis

Before the correlation analysis, the authors performed normality tests for the measurements (Table 2). They then performed a correlation analysis for each item and displayed the results in Table 3. It displays the correlation coefficients for the 14 items. The investigation yielded evidence indicating that the correlation coefficients of the items varied between $r = 0.50$ and 0.69.

Construct validity

First, they performed the Kaiser-Meyer-Olkin (KMO) and Barlett's tests to assess sample adequacy. The KMO value was 0.865, and Barlett's test results were significant ($p < 0.001$).

Then, the researchers performed EFA and CFA for construct validity. When the items were distributed into four dimensions, a valid structure could not emerge due to the number of items loaded on more than one dimension. In the second round of factor analysis, the three-factor structure accounted for 70.40% of the total variance. The questionnaire consisted of 14 items and a three-factor structure (Fig. 2; Table 3). The fit indices are also presented in Table 3. The standardised factor loads of the scale items ranged from 0.501 to 1.140 (Table 3).

Internal consistency

The questionnaire's internal consistency coefficient α was 0.901. For the dimensions, α values were 0.890, 0.828, and 0.889, respectively (Table 4).

Convergent and discriminant validity

The questionnaire's average variances were 0.76, 0.40, and 0.92, and the maximum shared variances were 0.56, 0.16, and 0.56, respectively (Table 5).

Test-Retest reliability analysis

A test-retest test was applied to a group of 35 nurses to test the stability of the scale (two-week interval). There was no statistically significant difference between the participants' mean scores ($t = 0.060$, $p = 0.953$). Moreover,

Table 1 Experts' views related to scale items according to the Davis technique

Experts	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14
Expert 1	4	4	3	4	4	3	4	4	4	4	4	4	4	4
Expert 2	4	4	4	4	3	4	4	4	4	4	4	4	4	4
Expert 3	4	4	3	3	4	4	4	4	4	4	4	4	4	3
Expert 4	3	4	3	4	4	4	3	4	4	4	4	4	4	4
Expert 5	4	4	3	4	4	4	4	4	4	4	4	4	4	4
Expert 6	3	3	2	4	4	3	3	4	3	4	4	4	4	3
Expert 7	4	4	3	4	4	4	3	4	4	4	4	3	4	4
Expert 8	4	3	3	4	3	4	3	4	4	4	4	4	4	4
Expert 9	4	4	2	4	2	4	2	4	4	4	4	4	3	3
Expert 10	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Expert 11	4	4	3	4	4	4	3	4	4	4	4	4	4	4
Expert 12	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Expert 13	4	4	4	4	4	4	4	4	4	4	4	4	4	4
A+B	13	13	11	13	12	13	12	13	13	13	13	13	13	13
CVR*	1	1	0.85	1	0.92	1	0.92	1	1	1	1	1	1	1
CVI**	0.98													

Note: "4=Very clear-relevant"; "3=Clear but needs minor revision"; "2=Clear but needs revision"; "1=Not clear-relevant." CVR* = Content Validity Ratio of each item; CVI** = Content Validity Index of the scale with fourteen items

there were statistically significant correlations between the measurements ($r = 864$, $p < 0.001$).

Discussion

The assessment and evaluation of person-centredness in healthcare may facilitate the enhancement of outcomes for patients and staff. It is crucial to assess person-centeredness in healthcare settings. Thus, the study performed psychometrics on the PCQ-S, which assessed person-centredness among staff in healthcare environments.

Language validity

The experts evaluated the items by comparing their meanings in the original work and Turkish form [35, 36]. Considering the experts' recommendations, minor revisions were made to clarify the meanings of the items in Turkish. For example, the word "climate" was used in Turkish in a natural and global sense, so we received feedback that it was understood to be abstract and broad. In contrast, the scale used in the study referred to a concrete, physical and man-made environment. Therefore, the place expression at the end of scale items was changed to environment.

Face validity

The nurses were tasked with evaluating the clarity of questionnaire items related to the concept of person-centred climate, which differed from the survey sample using a convenience sampling method. After a comprehensive analysis of participant feedback, the nurses suggested including sample phrases such as "landscape," "image," and "painting" to improve the clarity of the survey. This change was intended to facilitate a more comprehensive understanding of item seven. To ensure face validity, opinions were obtained from 17 nurses who met the inclusion criteria for all items and did not participate in the study [37]. A pilot study was conducted with 17 nurses. The number of samples required for face validity ranges from 10 to 30 [33]. In this study, a sufficient number of samples were used to ensure face validity.

Content validity

Davis' technique, which a nurse researcher had developed, was utilised for content validity analysis. The Davis technique is a methodological approach employed in scale adaptation studies to evaluate the comprehensibility and cultural appropriateness of translated or adapted scale items. This approach typically requires the involvement of subject matter experts and the target audience, who are responsible for evaluating the items under consideration. The evaluation encompasses parameters such as clarity, fluency of expression, and conceptual equivalence. The implementation of this technique necessitates

Table 2 Items' scores normal distribution test results

Subthemes		PCQ-Staff in Turkish Questionnaire Items	Mean	SD*	Skewness	Kurtosis	DI**
Safety	1.	A place where I feel welcome	4.36	0.990	−0.273	0.437	0.688
	2.	A place where I feel acknowledged as a person	4.38	0.901	0.011	0.021	0.674
	3.	A place where I feel I can be myself	4.15	1.806	−0.303	0.355	0.619
	6.	A place which feels homely even though it is in an institution	5.01	0.921	−0.589	−0.298	0.567
Comprehensibility	4.	A place where the patients are in safe hands	4.92	0.849	−0.135	-1.015	0.515
	5.	A place where the staff use a language that the patients can understand	3.89	1.224	−0.424	−0.048	0.617
	10.	A place which is neat and clean	4.06	1.149	−0.257	0.194	0.579
	11.	A place where it is easy for the patients to keep in contact with their loved ones	3.59	1.235	−0.258	−0.084	0.693
	12.	A place where it is easy for the patients to receive visitors	3.46	1.153	−0.440	0.032	0.638
	13.	A place where it is easy for the patients to talk to the staff	4.89	0.903	−0.261	0.629	0.621
	14.	A place where the patients have someone to talk to if they so wish	4.88	0.818	0.148	-1.316	0.580
Safety	7.	A place where there is something nice to look at (For example: "land space", "image", "painting", etc.)	5.12	0.885	−0.494	−0.961	0.501
	8.	A place where it is quiet and peaceful	5.14	0.827	−0.428	−0.994	0.532
	9.	A place where it is possible to get unpleasant thoughts out of your head	5.05	0.834	−0.321	−0.943	0.550

*SD = Standard devotion, **DI = Discrimination index

Table 3 Construct validity analysis results

Items	CVRs*	Item total point correlation coefficients	Exploratory Factor Analysis			Confirmatory Factor Analysis		
			Factor loadings for Factor I	Factor loadings for Factor II	Factor loadings for Factor III	Estimate values for Factor I	Estimate values for Factor II	Estimate values for Factor III
Item 1	1	0.688	0.810			0.854		
Item 2	1	0.674	0.872			0.745		
Item 3	0.84	0.619	0.779			0.931		
Item 4	1	0.567		0.482			0.544	
Item 5	0.92	0.515		0.522			0.501	
Item 6	1	0.617	0.537			0.934		
Item 7	0.92	0.579			0.450			0.709
Item 8	1	0.693			0.996			1.140
Item 9	1	0.638			0.667			0.977
Item 10	1	0.621		0.656			0.659	
Item 11	1	0.580		0.795			0.650	
Item 12	1	0.501		0.828			0.686	
Item 13	1	0.532		0.808			0.655	
Item 14	1	0.550		0.875			0.697	

Exploratory Factor Analysis Test - Total Variance Explained

Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings**
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.230	44.501	44.501	3.949	28.208	28.208	3.863
2	2.666	19.046	63.547	3.449	24.636	52.845	4.550
3	0.958	6.845	70.392	1.524	10.882	63.727	4.275

Confirmatory Factor Analysis Results and Fit Indices

Chi square	Degree of freedom	Chi square / Degree of freedom	CFI	TLI	SRMR	RMSEA
209	74	2.82	0.891	0.866	0.0797	0.114

*CVRs = Content Validity Ratios. ** When factors are correlated. sums of squared loadings cannot be added to obtain a total variance

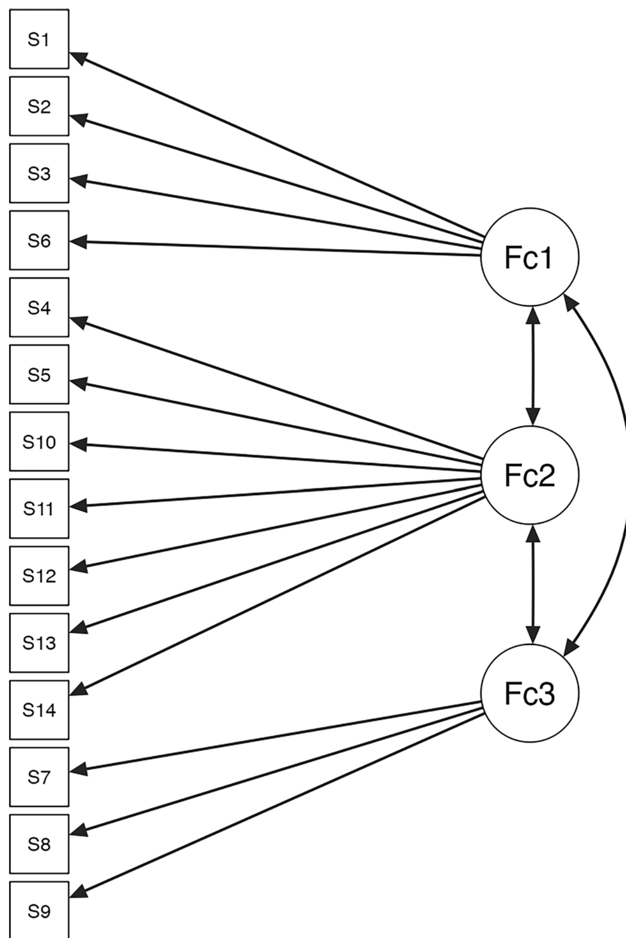

Fig. 2 Path diagram

the involvement of at least two specialists, and the content validity ratio must be 0.80 or higher [34]. The same experts assessed the original and Turkish items and compared them, considering their meanings and grammatical structure. They mainly rated the translated items as "quite appropriate." The content validity ratios of the questionnaire items ranged from 0.84 to 1, which is an acceptable value in the literature [34, 38]. Considering the experts' recommendations, minor revisions were made to clarify the meanings of the items in Turkish. For example, the word "climate" was used in Turkish in a natural and global sense, so we received feedback that it was understood to be abstract and broad. In contrast, the scale used in the study referred to a concrete, physical, and man-made environment. Therefore, the place expression at the end of scale items was changed to environment. Experts stated that the scale's items were generally appropriate.

Correlation analysis

Item analysis provides insight into the reliability of each item by providing a quantitative assessment of its consistency and accuracy in an inventory. Schreiber claims that correlation coefficients among items and total scale scores increase as the items are weighted equally [39]. For the present study, item-total score correlations for the items were enough since the minimum correlation value was $r > 0.45$.

Construct validity

Although scale adaptation studies typically require performing CFA for construct validity [40], this study first employed EFA in consideration of expert recommendations that the scale's construct would not have the same structure in the local context [35, 41].

In psychometric studies conducted with a sample size of less than 300, dividing the sample for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) can result in a reduction of statistical power and the potential for erroneous results [42]. Consequently, in the present study, conducted with a group of 140 participants, both EFA and CFA were performed on the same sample. The adoption of this approach was driven by the necessity to mitigate the risk of power loss and to optimise the utility of the available data, to achieve a robust discovery and confirmation of the factor structure.

Table 4 Participants' scale and subdomains scores and internal consistency analysis results

Domains and Scale	Minimum	Maximum	Mean	Standard Deviation	Cronbach's alpha internal consistency coefficient	
Safety	1.5	6.00	4.19	0.92	0.890	
Comprehensibility	1.33	6.00	3.70	1.02	0.828	
Everydayness	3.86	6.00	5	0.67	0.889	
Total score	2.69	6.00	4.30	0.72	0.901	
Domains and Scale			Correlation Analysis		Paired sample t-test	
	Mean (SD*) Test	Mean (SD) Re-test	r	p	t	p
Safety	18.28 (3.71)	18.22 (3.82)	0.866	< 0.001	0.173	0.864
Comprehensibility	35.17 (5.51)	35.54 (5.04)	0.819	< 0.001	0.687	0.497
Everydayness	12.34 (3.14)	12.08 (2.96)	0.871	< 0.001	0.976	0.336
Total Score	65.80 (11.04)	65.85 (10.63)	0.864	< 0.001	0.060	0.953

*SD: Standard deviation

Table 5 PCQ-S' subthemes convergent and discriminant validity

Subthemes		PCQ-Staff in Turkish Questionniare Items	AVE*	CR**	MSV***	ASV****	AVE > MSV	AVE > ASV
Safety	1.	A place where I feel welcome	0.76	0.92	0.56	0.349	AVE > MSV	AVE > MSV
	2.	A place where I feel acknowledged as a person						
	3.	A place where I feel I can be myself						
	6.	A place which feels homely even though it is in an institution						
Comprehensibility	4.	A place where the patients are in safe hands	0.40	0.82	0.16	0.148	AVE > MSV	AVE > MSV
	5.	A place where the staff use a language that the patients can understand						
	10.	A place which is neat and clean						
	11.	A place where it is easy for the patients to keep in contact with their loved ones						
	12.	A place where it is easy for the patients to receive visitors						
	13.	A place where it is easy for the patients to talk to the staff						
	14.	A place where the patients have someone to talk to if they so wish						
Safety	7.	A place where there is something nice to look at (For example: "landscape", "image", "painting", etc.)	0.92	0.97	0.56	0.361	AVE > MSV	AVE > MSV
	8.	A place where it is quiet and peaceful						
	9.	A place where it is possible to get unpleasant thoughts out of your head						

*AVE = Average Variance Extracted, **CR = Composite Reliability, ***MSV = Maximum Shared Variance, ****ASV = Average Shared Variance

The authors employed a novel EFA to investigate the scale model in Turkish. In contrast with the English version of the study, Turkish items were separated into three subscales instead of four, as illustrated in Table 2. The items in the subdimensions of the questionnaire were changed in Turkish. The safety subscales remained unchanged, except for the addition of a single item, "A place which feels homely even though it is in an institution," from the everydayness subscale. One, "A place which is neat and clean", was transferred to the "Comprehensibility" item. Following the distribution of the other subscales, the items of the comprehensibility and community subscales were grouped into a single subscale, which was named "Comprehensibility" to reflect the expression of comprehensibility in Turkish. An agreement was reached with the scale owner in this process, and with his approval, new sub-dimensions were created.

Following the EFA, the results were presented at a national congress. The congress allowed nursing academics to provide feedback on the scale. The academics suggested performing EFA and CFA, respectively. Considering this suggestion, the researchers performed CFA and reported the fit indices. It was found that X^2/df (< 3), RMSEA, SRMR, and CFI (< 0.90) had acceptable fit levels. The results showed that the PCC-Staff Version had a model fit [40]. A TLI value greater than 0.90 is considered acceptable [43]. The TLI value of the scale is proximate to the acceptable value.

Internal consistency

Since it was the widely recommended one for the Likert scales [44], the researchers performed a Cronbach's alpha internal consistency test to assess the reliability of the Turkish version. DeVellis suggests that an alpha coefficient of at least 0.70 is acceptable for social sciences research [45]. The Turkish version demonstrated strong reliability, considering the threshold values. Notably, the reliability coefficients of the Turkish version were higher than those reported for the original English version, further supporting its reliability.

Convergent and divergent validity

To ensure convergent validity, it is necessary to consider the indicator's factor loading, composite reliability (CR), and average variance extracted (AVE). The values of these functions range from 0 to 1. To ensure adequate convergent validity, the AVE must exceed 0.50 [46]. The argument has been posited that, in instances where the AVE for a psychological construct is below 0.5 but the CR is above 0.7, convergent validity can be considered adequate [47]. The existing literature suggests that, for divergent validity, ASV and MSV values should be lower than AVE values (i.e., MSV < AVE and ASV < AVE) [48]. Convergent and divergent tests conducted for the scale are valid (Table 4).

Test, retest analysis

In scale development and adaptation research, test-retest reliability analysis is recommended to assess the temporal stability of an instrument. This approach involves

administering the scale to the same group at two different time points, typically with a minimum interval of two weeks, and analysing the results using paired-sample t-tests and/or Pearson correlation coefficients [49]. Paired sample t-tests and Pearson correlation coefficients require groups of at least 30 people [50]. To evaluate the stability of the Turkish version of the PCQ-Staff, a test-retest reliability analysis was conducted. Initially, a convenience sampling method was employed to recruit 40 nurses for the study. However, five nurses did not complete the second administration of the questionnaire. The test-retest reliability analysis was conducted on a final sample of 35 nurses. The questionnaire was administered twice to these participants with a fifteen-day interval to assess the temporal stability of the instrument. The comparison of mean scores revealed no statistically significant differences between the two measurement points. Furthermore, the correlation between the two administrations exceeded the recommended threshold of 0.70 [51], indicating strong consistency over time. These findings affirm the scale's stability and reliability in the Turkish context.

The validation and reliability studies of the PCQ-S scale across various languages confirm its robustness and validity [27–30, 52, 53]. However, these studies also indicate that cultural differences influence the distribution of items across sub-dimensions. This finding indicates that during the process of cultural adaptation, a comprehensive evaluation of item-factor relationships, extending beyond general psychometric properties, is imperative.

Limitations

This study is subject to several methodological limitations that merit careful consideration. First, the reliance on convenience sampling constrains the generalizability of the findings, as participants were exclusively drawn from nurses employed at a single private hospital with person-centred care certification. Second, we collected data using a self-administered questionnaire. Since the data for this study were collected using a self-report method, potential biases resulting from participants' self-assessments should be taken into consideration. Finally, although methodological best practices advocate for conducting EFA and CFA on different samples to enhance validation robustness [54], practical constraints in participant recruitment necessitated performing both analyses within the same cohort.

This deviation from standard protocols may conflate model identification with validation, potentially undermining the rigour of psychometric assessment. Future research should adopt multi-site, randomised sampling and longitudinal designs to enhance methodological robustness and address these limitations.

Conclusion and implications

The study's findings confirm that the Turkish PCQ-Staff is a valid and reliable instrument for assessing nurses' perceptions of person-centred climate in hospital settings. The psychometrics demonstrate that the PCQ-S effectively captures staff perceptions regarding the extent to which a healthcare environment fosters person-centred care.

The study's notable strength resides in the satisfactory fit indices derived from the questionnaire adaptation tests. The findings indicate that the Turkish version of the PCQ-S is a valid and reliable instrument. Consequently, a standard instrument has been developed to assess Turkish-speaking employees' perceptions of people-oriented climate and facilitate comparative research at the international level.

Health and nurse managers can utilise this tool to gauge nurses' perspectives on organisational climate and implement targeted quality improvement initiatives accordingly. Furthermore, researchers examining person-centred care may find the questionnaire valuable for evaluating healthcare climate from the standpoint of nurses and other health professionals, thereby contributing to broader efforts in advancing patient-centred healthcare practices. For international researchers, it may be helpful to reach out to the studies that use this tool for future systematic reviews, meta-analyses or benchmarking studies that aim to include research findings from different cultures.

Abbreviations

CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
CVR	Content Validity Ratio
CVI	Content Validity Index
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index
SRMR	Standardized Root Mean Square
SD	Standard Deviation
RMSEA	Root Mean Square Error of Approximation
WHO	World Health Organization
PCQ-S	Person-centred Climate-Staff
CR	Composite Reliability
AVE	Average Variance Extracted
MSV	Maximum Shared Variance
AVS	Average Shared Variance
DI	Discrimination index

Acknowledgements
The authors thank to acknowledge all the nurses who took part in the study. This study was presented as an oral presentation at the 4th National on Nursing Management Congress held on May 23–25, 2024.

Author contributions
Conceptualization: FCA, AKHS, DE Methodology: AKHS, Validation: FCA, AKHS, Investigation & Resources: FCA, Writing: FCA, AKHS Original Draft & Project administration: FCA, Review & Editing: AKHS, Visualization: AKHS, DE, Supervison: AKHS, DE.

Funding
This research did not receive any specific funding from public, commercial, or not-for-profit funding agencies.

Data availability
Data are available upon reasonable request from the first author.

Declarations

Ethics approval and consent to participate
This study was approved by the Koç University Social Sciences Research Ethics Committee (January 26, 2024, 2024.031.IRB3.014). Moreover, before data collection, formal written permission was obtained from the hospital administration. Additionally, the voluntary nurses enrolled in the study provided both verbal and written informed consent. The study was conducted according to the Declaration of Helsinki.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 8 April 2025 / Accepted: 3 September 2025
Published online: 26 September 2025

References

1. Bhati D, Deogade MS, Kanyal D. Improving patient outcomes through effective hospital administration: a comprehensive review. Cureus. 2023;15(10):e47731.
2. WHO. Quality of care: World Health Organization. 2021 [Available from: https://www.who.int/health-topics/quality-of-care#tab=tab_1
3. Eklund JH, Holmström IK, Kumlin T, Kaminsky E, Skoglund K, Höglander J, et al. Same same or different? A review of reviews of person-centered and patient-centered care. Patient Educ Couns. 2019;102(1):3–11.
4. Ortiz MR. Best practices in patient-centered care: nursing theory reflections. Nurs Sci Q. 2021;34(3):322–7.
5. Henderson V. Excellence in nursing. Am J Nurs. 1969;69(10):2133–7.
6. Orem DE, Taylor SG, Renpenning KM. Nursings; concepts of practice. AJN Am J Nurs. 1986;86(1):924.
7. Watson J. Caring Scıence and human caring theory: transforming personal and professional practıces of nursing and health care. J Health Human Serv Adm. 2009;31(4):466–82.
8. Clarke J, Davis K, Douglas J, Peters MDJ. Defining nurse-led models of care: contemporary approaches to nursing. Int Nurs Rev. 2024;72(1):e13076.
9. Oldland E, Bottia M, Hutchinsona AM, Redleya B. A framework of nurses' responsibilities for quality healthcare—Exploration of content validity. Collegian. 2020;25(2):150–63.
10. Byrne A-L, Baldwin A, Harvey C. Whose centre is it anyway? Defining person-centred care in nursing: an integrative review. PLoS ONE. 2020;15(3):e0229923.
11. Giusti A, Nkhoma K, Petrus R, Petersen I, Gwyther L, Farrant L, et al. The empirical evidence underpinning the concept and practice of person-centred care for serious illness: a systematic review. BMJ Global Health. 2020;5(12):e003330.
12. Edvardsson D. Notes on person-centred care: what it is and what it is not. Nordic J Nurs Res. 2015;35(5):65–6.
13. Edgman-Levitan S, Schoenbaum SC. Patient-centered care: achieving higher quality by designing care through the patient's eyes. Isr J Health Policy Res. 2021;10(21):1–5.
14. Yılmaz H, Başara BB, Çağlar IS, Aygün A, Özdemir TA, Kulali B. Health Statistic Yearbook. Türkiye TMoHo, editor: Republic of Türkiye Ministry of Health General Directorate of Health Information Systems; 2024.
15. Sarıgül SS, Biçer İ, Çakmak C. Birinci Basamak Sağlık hizmeti Alan Hastalarda Hasta Merkezli iletişim Düzeyinin Sağlık hizmeti Kullanım Sıklığı ve Hekime Güven Üzerine Etkisi. Hitit J Social Sci. 2025;18(2):297–313.
16. Çelik A, Mertoğlu S. The effect of Patient-centred care competence of palliative care nurses on quality of care. Forbes J Med. 2024;5(2):95–101.
17. Tanriverdi G, Hatice YK, Melike YG, Erdem Ö, Gülyenli N. Comparison of cultural sensitivity and awareness of two groups of nurses who care different Profiles patients. J Public Health Nurs. 2019;1(2):26–37.
18. Yılmaz EH, Tanrıverdi G. Cultural competence and related factors in primary healthcare professionals. J Health Sci. 2023;32(1):13–23.
19. Karayurt Ö, Erol Ursavaş F, İşeri Ö. Examination of the status of nurses Tı provide individualized care and their opinions. Acıbadem Univ Health Sci J. 2018;9(2):163–9.
20. Aktaş Özakgül A, Acaroğlu R, Şendir M, Yalçın Atar N, Eskimez Z. Evaluating the individualized care perceptions of patients and nurses. J Acad Res Nurs. 2022;8(1):20–8.
21. Danaci E, Koç Z. The association of job satisfaction and burnout with individualized care perceptions in nurses. Nurs Ethics. 2019;27(1):301–15.
22. Tamer E, Öztürk H. Hemşirelerin iş Yaşam kalitesi ve Etkileyen Faktörlerin belirlenmesi. Ege Üniversitesi Hemşirelik Fakültesi Dergisi. 2021;37(2):107–19.
23. Kayikci EE, Savci C, Akinci AC. Palliative nurses' empathic tendencies, quality of life, individualized care perceptions. Nurs Ethics. 2025;32(3):941–54.
24. Cihan S, Kasım DS, Özçalık CK, Kalkan A. We are not robots: Understanding the psychosocial support needs of emergency department nurses – A qualitative study. Int Emerg Nurs. 2025;81:101644.
25. Corlin TE, Kazemi A. Staff-based measurement instruments of person-centredness in settings of care for older people: A systematic review. Int J Older People Nurs. 2024;19(2):e12601.
26. Edvardsson D, Sandman PO, Rasmussen B. Construction and psychometric evaluation of the Swedish Language Person-centred climate questionnaire-staff version. J Nurs Adm Manag. 2009;17(7):790–5.
27. Edvardsson D, Koch S, Nay R. Psychometric evaluation of the english Language Person-centred climate questionnaire – staff version. J Nurs Adm Manag. 2010;18(1):54–60.
28. Aljuaid M, Elmontsri M, Edvardsson D, Rawaf S, Majeed A. Psychometric evaluation of the Arabic Language person-centred climate questionnaire—staff version. J Nurs Adm Manag. 2018;26(4):449–56.
29. Vrbnjak D, Pahor D, Bržan PP, Edvardsson D, Pajnkihar M. Psychometric testing of the Slovenian Person-centred climate questionnaire–staff version. J Nurs Adm Manag. 2017;25(6):421–6.
30. Cai L, Ahlström G, Tang P, Ma K, Edvardsson D, Behm L, et al. Psychometric evaluation of the Chinese version of the Person-centred climate questionnaire - Staff version (PCQ-S). BMJ Open. 2017;7(8):e017250.
31. Hernández A, Hidalgo MD, Hambleton RK, Gómez-Benito J. International test commission guidelines for test adaptation: A criterion checklist. Psicothema. 2020;32(3):390–8.
32. Mokkink LB, Terwee CB, Patrick DL, Alonso J, Stratford PW, Knol DL, et al. The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. Qual Life Res. 2010;19:539–49.
33. Yusoff MSB. ABC of response process validation and face validity index calculation. Educ Med J. 2019;11(3):55–61.
34. Yusoff MSB. ABC of content validation and content validity index calculation. Educational Resource. 2019;11(2):49–54.
35. Çapık C, Gözüm S. Intercultural scale adaptation stages, Language and culture adaptation: updated guideline. Florence Nightingale J Nurs. 2018;26(3):199–210.
36. Heggestad ED, Scheaf DJ, Banks GC, Hausfeld MM, Tonidandel S, Williams EB. Scale adaptation in organizational science research: A review and Best-Practice recommendations. J Manag. 2019;45(6):2596–627.
37. Robet FD. Scale Development: Theory and Applications. Fourth Edition ed: SAGE Publication, London. 2017.
38. Karakoç FY, Dönmez L. Basic principles of scale development. World Med Educ J. 2014;13(40):39–49.
39. Schreiber JB. Issues and recommendations for exploratory factor analysis and principal component analysis. Res Social Administrative Pharm. 2021;17(5):1004–11.
40. Kline P. A handbook of test construction introduction to psychometric design. Routledge; 2015.
41. Tsai T-I, Luck L, Jefferies D, Wilkes L. Challenges in adapting a survey: ensuring cross-cultural equivalence. Nurse Res. 2017;26(1). https://doi.org/10.7748/nr.2018.e1581.
42. Doğan N, Soysal S, Karaman H. Aynı Örneklemede Açımlayıcı ve Doğrulayıcı Faktör analizi Uygulanabilir mi?? In: Demirel Ö, Dinçer S, editors. Küreselleşen Dünyada Eğitim. İstanbul: Pegem Akademi; 2017.
43. Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. Struct Equation Modeling: Multidisciplinary J. 1999;6(1):1–55.
44. Vaske JJ, Beaman J, Sponarski CC. Rethinking internal consistency in cronbach's alpha. Leisure Sci Interdisciplinary J. 2015;39(2):163–73.
45. DeVellis RF. Scale development: theory and applications 4ed. SAGE; 2017.

46. Shrestha N. Factor analysis as a tool for survey analysis. Am J Appl Math Stat. 2021;9(1):4–11.
47. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. J Mark Res. 1981;18(1):39–50.
48. Hair JF, Black WC, Babin BJ, Anderson RE. Multivariate Data Analysis. 8 ed: Cengage; 2019.
49. Kennedy I. Sample size determination in Test-Retest and Cronbach alpha reliability estimates. Br J Contemp Educ. 2022;2(1):17–29.
50. Gökdemir F, Yılmaz T. Likert Tipi ölçekleri kullanma, modifiye etme, Uyarlama ve Geliştirme süreçleri. J Nursology. 2023;26(2):148–60.
51. Streiner DL, Norman GR, Cairney J. Health measurement scales: A practical guide to their development and use. New York: OUP Oxford;: United States of America; 2024.
52. Sagong H, Kim DE, Bae S, Lee GE, Edvardsson D, Yoon JY. Testing reliability and validity of the Person-centered climate questionnaire-staff version in Korean for Long-term care facilities. J Korean Acad Community Health Nurs. 2018;29(1):1094952.
53. Bergland Å, Kirkevold M, Edvardsson D. Psychometric properties of the Norwegian Person-centred climate questionnaire from a nursing home context. Scand J Caring Sci. 2012;26(4):820–8.
54. Orcan F. Exploratory and confirmatory factor analysis: which one to use first?? J Meas Evaluation Educ Psychol. 2018;9(4):414–21.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.