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Arabic translation and psychometric validation of the revised Patient Perception of Patient-Centeredness (PPPC-R) questionnaire

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Abstract

Background The Revised Patient Perception of Patient-Centeredness (PPPC-R) scale was originally formulated in English to examine patient-centeredness.

Objective To translate and validate the PPPC-R questionnaire into Arabic.

Methodology Translating the PPPC-R into Arabic involved forward and back translations by bilingual experts. Content validity was checked through the Item and Scale Content Validity Indices. The instrument underwent pilot testing and was then completed by 179 patients in the emergency department to examine construct validity using both confirmatory and exploratory factor analyses. Reliability was tested using Cronbach's alpha to ensure internal consistency.

Results The Item Content Validity Index ranged between 0.66 and 1, and the Scale Content Validity Index was 0.96. Initial confirmatory factor analysis of the Arabic-PPPC-R revealed an inadequate fit, prompting an exploratory factor analysis with Promax rotation, which identified three factors that explained 66.3% of the variance. The refined model, tested again using confirmatory factor analysis, demonstrated an acceptable fit with improved statistical measures, including CFI and TLI values above 0.90 and RMSEA of 0.07. Reliability testing revealed high internal consistency with a Cronbach's alpha of 0.949 for the full scale and between 0.889 and 0.906 for the individual subscales.

Conclusion The study findings showed that the Arabic version of the PPPC-R has good structural characteristics and is a reliable and valid instrument for measuring patient-centeredness.

Keywords Patient-Centeredness, Patient-Centered care, Patient perception, Factor analysis, Translation, Validation

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Background

Patient-centered care (PCC) represents a multidisciplinary and holistic approach designed to enhance the quality of clinical care by prioritizing individual patient needs, preferences, and actively involving them in decision-making [1]. This approach empowers patients by fostering collaborative decision-making processes, supported by the provision of clear and comprehensive information about their health conditions and care plans [2]. Research indicates that implementing PCC practices significantly improves patient satisfaction and the overall quality of care. Furthermore, PCC plays a pivotal role in enriching patient experiences by addressing various dimensions of care, including emotional support, effective communication, education, physical comfort, respect, continuity, and holistic care [3].

The concept of PCC was first introduced in the 1970 s [4]. However, it did not gain widespread recognition until the Institute of Medicine (IOM) in the United States identified it as one of the six core dimensions of quality care, along with safety, timeliness, effectiveness, efficiency, and equity, to achieve optimal healthcare outcomes [5]. According to Delaney [6], PCC aims to foster a collaborative relationship between patients and healthcare providers (HCPs) by taking a comprehensive approach that respects and understands patients' values. This approach enhances patient engagement in decision-making processes regarding their illness, care, and treatment.

PCC is associated with numerous benefits, including improved health outcomes, enhanced patient satisfaction, better adherence to recommended lifestyle modifications and therapies, and more cost-effective care delivery [7]. Therefore, efforts to enhance PCC should consider the patient-centeredness of patients, HCPs, and health systems as integral components [8]. This approach requires healthcare professionals to act as patient advocates, demonstrating a commitment to delivering safe, high-quality care that aligns with patients' needs and preferences.

Despite the significant global attention toward PCC, its adoption remains limited in Arab countries [9]. Therefore, considerable efforts are still needed to ensure that healthcare settings in Arabic-speaking regions fully embrace a patient-centered approach. Addressing this gap requires further studies to identify barriers to implementing patient-centered practices. Thus, without a valid and reliable tool, evaluating PCC and promoting its effective adoption remains challenging. Although there are several PCC tools available in the Arabic language, many of them are specific to particular populations, such as those with chronic illnesses or hospitalized patients [10–12]. There is a noticeable limited gap in tools that assess PCC in acute or outpatient care settings, such as the emergency department (ED). To address this gap, this study aimed to translate and adapt an existing PCC questionnaire, suitable for use with outpatients, into the Arabic language. This adaptation will provide healthcare professionals and researchers with a valuable tool to evaluate and enhance PCC practices in Arab nations.

Overview of the questionnaire

The Revised Patient Perception of Patient-Centeredness (PPPC-R) was used to assess PCC characteristics of care [13] and is based on the Patient-Centered Clinical Method, a conceptual framework that guides healthcare professionals in delivering care that is respectful of and responsive to individual patient preferences, needs, and values [14]. The questionnaire consists of 18 items, distributed into three subscales: Healthcare Process (items 1–8), Roles (items 9 and 10), and Context & Relationship (items 11–18). Each item is measured on a 4-point Likert scale, ranging from 1 (indicating more patient-centered experiences) to 4 (indicating less patient-centered experiences). Scores for the PPPC-R are calculated by obtaining the mean score of all items overall and within subscales, with lower scores indicating PCC.

Method

Study design and procedures

This study was a cross-sectional observational study. Data were collected from October 2024 to February 2025, using a self-reported questionnaire that comprised a structured demographic questionnaire

Setting and sample

This study was conducted in three EDs (one private, one teaching, and one governmental hospital) in Applied Science Private University. Convenience sampling was used to recruit 179 adult patients (aged 18 or older) who were seeking care at the ED for medical-surgical and non-life-threatening conditions during data collection and were able to provide informed consent. Participants were sampled across all three shifts (morning, afternoon, and night) to reduce temporal sampling bias and capture variations in PCC across shifts.

Translation and validation procedure

The translation and validation followed a multi-step process as outlined in Fig. 1.

Translation

The translation of the PPPC-R into Arabic was guided by the WHO method, as described by Sousa and Rojjanasrirat [15]. Initially, two bilingual experts with medical terminologies (holding a PhD in Nursing) conducted forward translation from English to Arabic. Then, a third person, fluent in both languages (a researcher from the

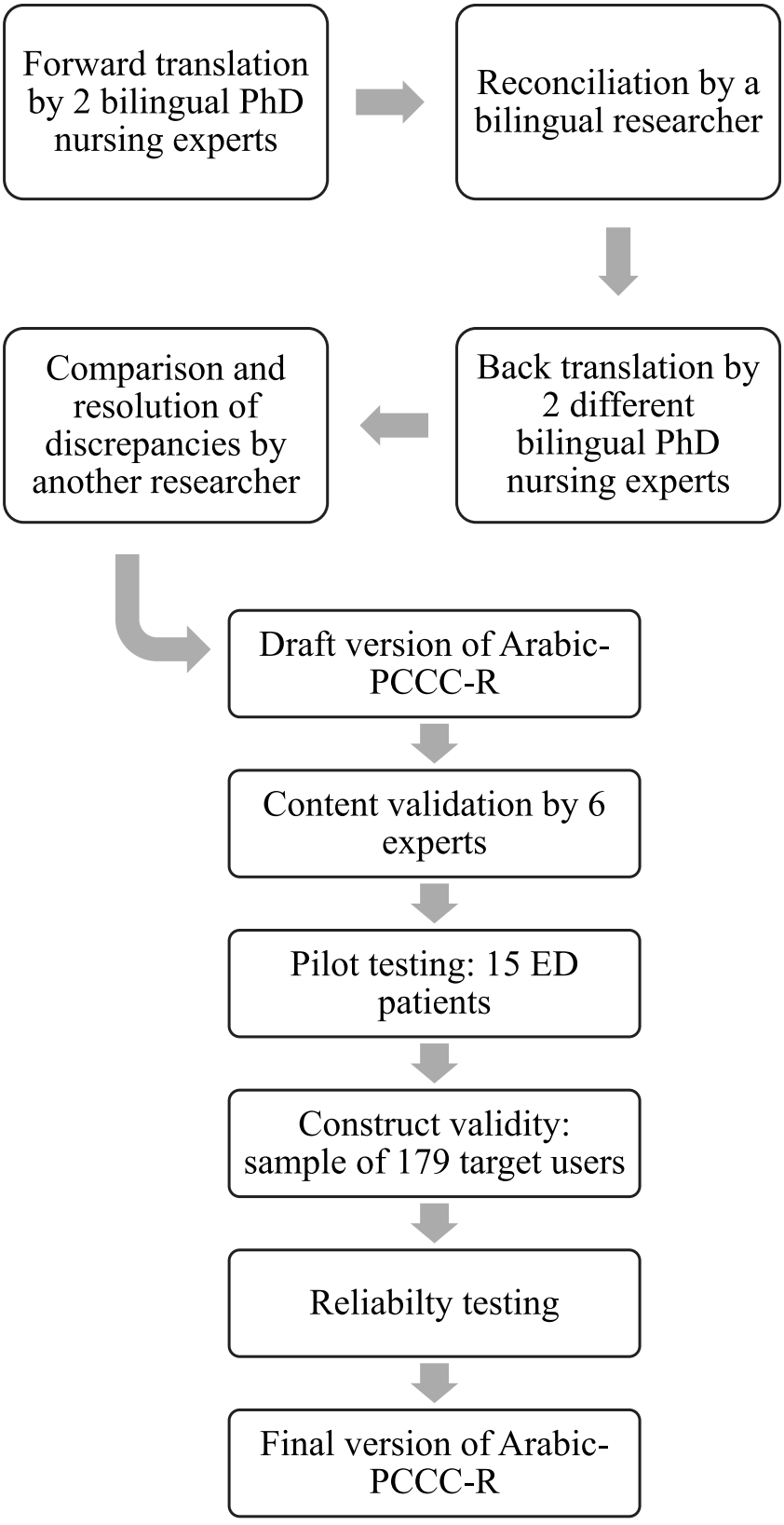

Fig. 1 The flow of the translation and validation process for the Arabic-PPPC-R questionnaire

research team), initially examined how the items and response formats differed between the two Arabic-translated versions. They then combined them to create the best version and compared it to the original English version. Then, two bilingual experts with medical terminology (holding a PhD in Nursing) conducted a back-translation from Arabic to English. Then, a third person fluent in both languages initially examined how the items and response formats differ between the two English-translated versions and compared them to the original Arabic version; ambiguities and discrepancies were resolved by a third person (researcher from the research team).

Content validity assessment

Six experts (PhD-prepared bilingual nursing faculty) rated items on a four-point Likert scale to evaluate the clarity and relevance of each item. The number of penalists was determined based on previous research recommendations [16]. Accordingly, a rating of 1 signified the least relevance and clarity, while a rating of 4 indicated the highest. Scores of 3 and 4 were subsequently dichotomized as "relevant/clear," while scores of 1 and 2 were dichotomized as "not relevant/unclear." The proportion of experts who concurred on the clarity of each item was then computed as the percentage of clarity. Similarly, the proportion of experts who concurred on the relevance of each item was then calculated as the Item-Level Content Validity Index (I-CVI). Lastly, the Scale Content Validity Index (S-CVI/Ave) was calculated by summing all the I-CVI and dividing the total by the number of items, which is 18.

Pilot testing

The instrument was pilot tested on 15 patients recruited from the ED in the selected private hospital in Amman. They were given the instrument and asked if the items were straightforward and easy to read.

Table 1 Participants' characteristics (*N* = 179)

Variable	*N*	%
Gender		
Male	97	54.2
Female	82	45.8
Settings		
Private hospital	61	34.1
Teaching hospital	64	35.7
Public hospital	54	30.2
Time of attending the ED		
A Shift (7:00–14:30)	60	33.5
B Shift (14:30 – 22:00)	66	36.9
C Shift (22:00–7:00)	53	29.6
Triaging level		
Level 3: Urgent	65	36.3
Level 4: Less urgent	20	11.2
Level 5: Non-urgent	94	52.5

Construct validity assessment

Construct validity was checked using Confirmatory factor analysis (CFA) and Exploratory Factor Analysis (EFA) to confirm the scale's factor structure. Initially, the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to check sample adequacy [17]. Furthermore, EFA using principal axis factoring (PAF) with Promax rotation was used to identify factors with eigenvalues greater than one, and a loading of greater than 0.4 was used to relate items to factors [18]. Promax rotation (oblique) was used to account for expected correlation among factors. The number of factors was determined based on Kaiser's criterion of eigenvalues and scree plot examination. The factor structure identified from EFA was then validated using CFA.

Reliability testing

The reliability of the Arabic-PPPC-R was determined by testing the internal consistency reliability coefficient (Cronbach's alpha) for the entire scale, each subscale, and 'if item deleted'.

Ethical considerations

The study was reviewed and approved by the Ethics Committee of the Private University of Applied Science. Permission to translate and validate the Arabic-PPPC-R questionnaire was obtained from the original developers before initiating this study. Additionally, signed consent was obtained from all patients before completing the questionnaire.

Analysis

Data analysis and model fitting were conducted using the Statistical Package for Social Sciences (SPSS) version 27 for Windows (IBM) and the specialized SEM software Amos 28. Descriptive statistics were used to analyse demographic data. For construct validity, both CFA and EFA using PAF with Promax rotation were conducted. Internal consistency was measured using Cronbach's alpha.

Results

Participants characteristics

A total of 179 participants were recruited from EDs in private, teaching, and governmental hospitals in Amman to fill out the translated questionnaire. The mean age of the participants was 42.71 years (SD = 17.75, Range = 18–87), and more than half were male. The patients were recruited during various shifts and at different triage levels. Detailed information on participants' characteristics is presented in Table 1.

Content validity assessment

The I-CVI ranged between 0.66 and 1. According to Polit et al. [19], items with an I-CVI of 0.78 or higher for three or more experts indicate good content validity. Accordingly, all items except item 12 demonstrated acceptable validity (I-CVI = 0.66). The S-CVI was 0.96. This suggests that the scale items were relevant to the scale and the scale was appropriate for the measurement purpose.

Pilot testing

All the pilot sample (15 patients) found the instrument easy to use, with clear and understandable instructions. However, four participants (26%) had to clarify question number 12, which was rephrased by the research team. Furthermore, the time required to complete the questionnaire was determined to be 8–10 min.

Construct validity assessment

Factor analysis

An initial statistical model (CFA) was tested to examine the three subscales in the original PCCC-R. This model did not provide an adequate fit with the hypothesized factor structure of the Arabic-PPPC-R, as indicated by several statistical measures, suggesting the model needs refinement. The chi-square value was significant: $\chi^2 = 261.438$, $\chi^2/df = 2.16$. The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values were 0.889 and 0.871, respectively, which are below a threshold of 0.90 [20]. The Root Mean Square Error of Approximation (RMSEA) was 0.089 with a 90% CI of 0.073 to 0.105, which is higher than a threshold of 0.08 [21].

Therefore, the researchers conducted an exploratory PAF analysis using Promax rotation to examine item loading. The KMO measure of the sampling adequacy was 0.93, and Bartlett's test of sphericity was significant at $p < .001$, reflecting that the sample used to check the construct validity in the current study was adequate [17]. The PAF using Promax rotation initially identified three factors with eigenvalues greater than 1; examining the scree plot supported our decision to keep three factors (Fig. 2).

The extracted factors represent three subscales that explain 66.3% of the variance (Table 2). The first factor, labeled "*Context and Relationship*," comprises seven items, with an eigenvalue of 9.55, accounting for 53.06% of the variance. The factor loadings of the items ranged from 0.539 to 0.770. The second factor is the "*Healthcare Process*," comprising five items; this factor had an eigenvalue of 1.33 and explained 7.08% of the variance. The factor loadings of the items ranged from 0.472 to 0.760. The third factor is the "*Treatment plan*," comprising five items; this factor had an eigenvalue of 1.11 and explained 6.11% of the variance. The factor loadings of the items ranged from 0.550 to 0.651. Item 12 in the original

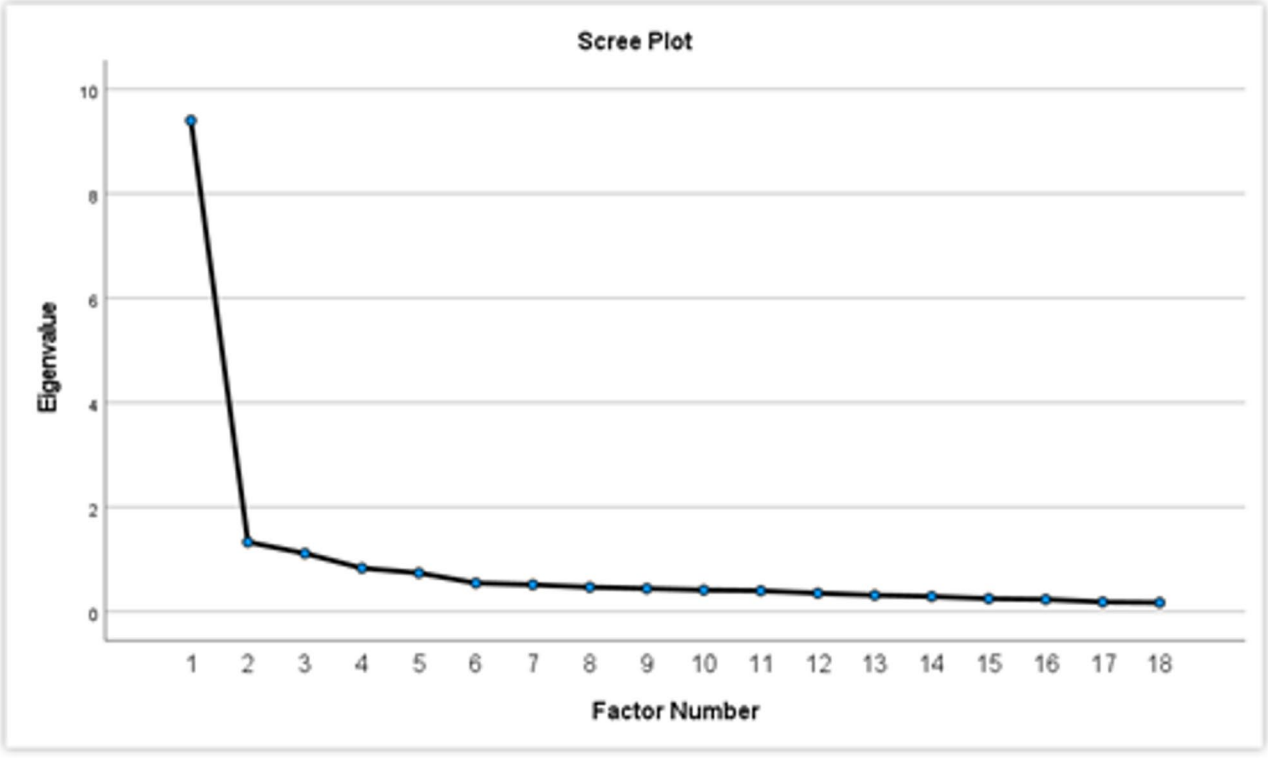

Fig. 2 Scree plot of the items' loading

Table 2 Factor loading of the Arabic-PPPC-R questionnaire items (17 items)

Items	1	2	3	CVI%
Context and Relationship				53.064
Q 11: How much would you say that this provider cares about you as a person?	0.556			
Q 12: How comfortable are you discussing personal problems related to your health with your provider?	0.637			
Q 13: To what extent does your provider respect your beliefs, values, and customs?	0.615			
Q 14: To what extent does your provider consider your thoughts and feelings?	0.770			
Q 15: To what extent does your provider show you compassion?	0.663			
Q 16: To what extent does your provider really listen to you?	0.584			
Q 17: To what extent do you trust your provider?	0.539			
Healthcare Process				60.150
Q 1: To what extent was your main problem(s) discussed today?		0.731		
Q 2: How well do you think your provider understood you today?		0.760		
Q 3: How satisfied were you with the discussion of your problem today?		0.657		
Q 4: To what extent did your provider explain this problem to you?		0.472		
Q 5: To what extent did you agree with your provider's opinion about the problem?		0.512		
Treatment Plan				66.265
Q 6: To what extent did your provider ask about your goals for treatment?			0.617	
Q 7: To what extent did your provider explain treatment?			0.550	
Q 8: To what extent did your provider explore how manageable this treatment would be for you?			0.585	
Q 9: To what extent did you and your provider discuss your respective roles?			0.651	
Q 10: To what extent did your provider encourage you to take the role you wanted in your own care?			0.637	

Extraction Method: Principal Axis Factoring. Rotation Method: Promax rotation

CVI Cumulative Variance Index

questionnaire did not have sufficient clear loading on any of these factors and was eliminated from the final version of the questionnaire. Also, the low I-CVI supported the decision to eradicate item 12.

Then, the new model was tested using CFA. Initially, we examined the normality distribution, which revealed univariate normality (Critical ranges (Cr) between −1.96 and 1.96); however, there was multivariate Kurtosis (Cr = 12.5). The proposed adapted model showed acceptable fit measures: $\chi^2/df = 2.01$. The CFI and TLI values were 0.94 and 0.93, respectively. The RMSEA was 0.07 with a 90% CI of 0.061 to 0.09, and the Standardized Root Mean Square Residual (SRMR) was 0.0421. The standardized estimates of the model's items are presented in Fig. 3, showing relatively high loadings, ranging from 0.64 to 0.84, while the correlations among the factors ranged from 0.80 to 0.87.

Reliability testing

The reliability analysis of the Arabic-PPPC-R Questionnaire, based on a sample of 179 participants, demonstrated strong internal consistency. The Cronbach's alpha coefficient for the Arabic-PPPC-R questionnaire was 0.949. Additionally, Cronbach's alpha was calculated for each subscale: Context and Relationship ($\alpha = 0.889$), Health Care Process ($\alpha = 0.890$), and Treatment Plan ($\alpha = 0.906$). The corrected item-total correlations for individual items ranged from 0.580 (PPPC 14) to 0.761 (PPPC 3), indicating good item discrimination. Cronbach's alpha if an item was deleted remained consistently high, ranging from 0.945 to 0.948, suggesting that all items positively contributed to the overall reliability of the scale. These results support the internal consistency of the Arabic-PPPC-R, with no item significantly weakening the scale's reliability.

Discussion and conclusion

Discussion

The purpose of the current study was to translate and validate the PPPC-R Questionnaire into Arabic. During this verification, one item (item-12: To what extent does your provider know about your family life?) did not provide adequate I-CVI and loading sufficiently on one of the factors and, therefore, was removed from the scale. The Arabic questionnaire is composed of 17 items distributed on three subscales: the *"Health care process"* comprising five items (items 1–5), the *"Treatment plan"* comprising five items (items 6–10), and the *"Context and Relationship"* comprising seven items (items 11–17). The complete Arabic-PPPC-R questionnaire is available in Supplementary File 1.

Compared to the original questionnaire, the first subscale, "*Health care process*," is partially preserved; in the current study, the last three items did not load onto it. The second subscale in the Arabic questionnaire, "*Treatment plan*," is new, comprising the three items from the first subscale and the "*Roles*" subscale from the original questionnaire. The third subscale, *"Context and Relationship,"* was also preserved from the original questionnaire, excluding item 12, which was eliminated in the Arabic version. The new "*Treatment Plan*" subscale highlights that patients highly value being active participants in planning their care, particularly in high-pressure settings

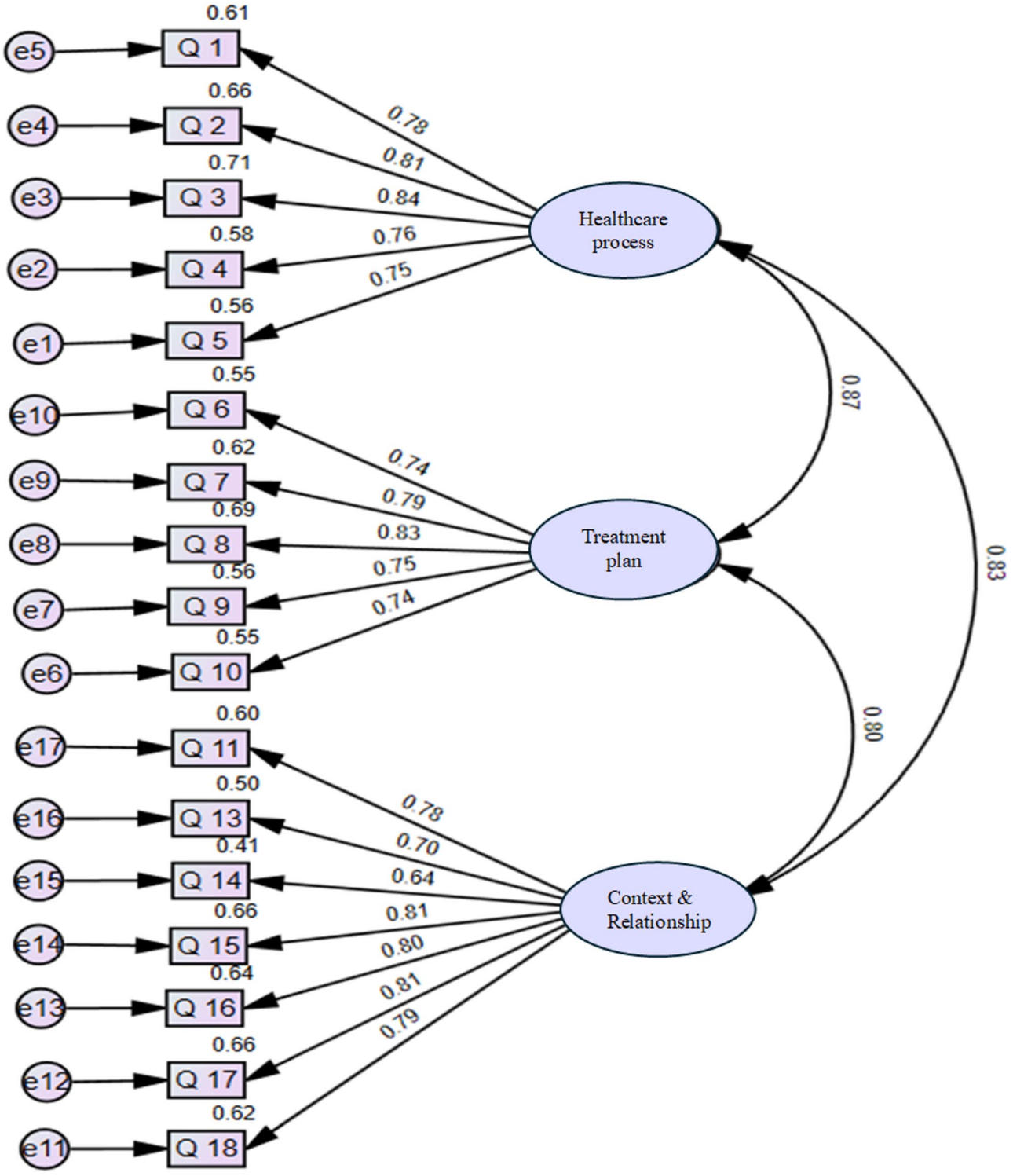

Fig. 3 The final Confirmatory Factorial Analysis for the Arabic Revised Patient Perception of Patient-Centeredness scale (displayed question numbers represent numbers in the original questionnaire)

such as EDs, where decisions are often made rapidly. Items within this subscale reflect the extent to which patients feel heard, informed, and included in treatment decisions. These components align closely with the principles of shared decision-making, individualized care, and mutual respect, key dimensions of the Patient-Centered Clinical Method [14]. This reflects emerging priorities in ED contexts, where time-limited encounters must still adhere to patient-centered principles.

The results of the CFA revealed that the proposed adapted model achieved an acceptable level of fitness with the hypothesized factor structure of the Arabic-PPPC-R. For instance, the χ^2/df ratio, which is the normalized version of the chi-square statistic, was 2.01. Hu and Bentler [22] suggest that a ratio less than three is often considered acceptable. The CFI is an incremental fit index that assesses how much more effectively the proposed model explains the data than a simpler baseline model while accounting for the number of data points and the model's level of sophistication to ensure a fair and unbiased comparison. The TLI measures how much better a proposed model fits the data than a simpler baseline model. This comparison helps determine how well the proposed model explains the relationships within the data. The TLI explicitly compares the proposed model to a more restricted one, typically the null model, which assumes no relationships between the variables. Values above 0.90 for both indices can be considered acceptable [20]. Accordingly, in our model, a value of CFI = 0.94 makes our model acceptable, and values of TLI = 0.93 indicate that our proposed model is a good fit with the hypothesized factor structure of the Arabic-PPPC-R.

The RMSEA is a widely used absolute fit index that measures the discrepancy between the hypothesized model and the observed data per degree of freedom, and the SRMR assesses the discrepancy between the observed covariance matrix and the model-predicted covariance matrix. According to Schermelleh-Engel et al. [21], RMSEA values up to 0.08 are acceptable, while SRMR values less than 0.05 indicate a good fit. Hence, in the current study, an RMSEA value of 0.075 indicates an acceptable fit, and an SRMR value of 0.0421 indicates a good fit. Lastly, the final model (17 items) and each subscale showed good reliability. According to Ursachi et al. [23], Cronbach's alpha of 0.6–0.7 indicates an acceptable level of reliability, and 0.8 or greater indicates a very good level.

Limitations

The study had several limitations. First, the sample used for validation was limited to a specific population in a single geographical area (patients in the EDs in Amman), which may affect the generalizability of the results to other Arabic-speaking regions or populations. Second, the sample size is only 179 patients. Although sample adequacy was tested and confirmed through factor analysis, a larger sample would likely yield even more improved results. Furthermore, the current study did not examine convergent or concurrent validity. While the psychometric properties of the Arabic-PPPC-R were evaluated, further studies are needed to assess its reliability and validity in different healthcare settings and among diverse patient groups. Lastly, due to the cross-sectional design and time limitations in the ED, assessing test–retest reliability and invariance over time was not feasible and is recommended for future studies.

Conclusion

In conclusion, the Arabic-PPPC-R Questionnaire was successfully translated and validated, with 17 items across three subscales: "Health care process," "Treatment plan," and "Context and Relationship." The Arabic-PPPC-R demonstrated satisfactory psychometric properties, including good fit indices from the CFA and strong reliability scores, confirming its robustness and applicability for assessing patient-centered care in Arabic-speaking populations. Although one item was removed due to insufficient psychometric performance, the adapted questionnaire strongly aligns with the original version and offers a reliable tool for evaluating patient perceptions in diverse healthcare settings.

Implications for practice and research

The current study presents a valid and reliable PPPC-R Questionnaire for evaluating patient perceptions of patient-centered care among Arabic-speaking populations in acute care settings. Healthcare providers and researchers can use this validated instrument to measure patient experiences and inform improvements in care delivery, ensuring that healthcare services are more responsive to the needs of Arabic-speaking patients. Improving PCC will significantly impact patients' outcomes, satisfaction, and quality of care. Future research should aim to test the Arabic-PPPC-R in a broader and more diverse sample from different regions to confirm its generalizability and ensure it is applicable in various healthcare settings. Longitudinal studies are also recommended to evaluate the stability and reliability of the scale over time.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12913-025-13191-w.

Supplementary Material 1.

Authors' contributions

Elham H. Othman: Conceptualization, translation and psychometric validation, formal analysis. Mahmoud Aljafreh: Conceptualization, translation and

psychometric validation. Mohammad R. Alosta: Investigation, translation and psychometric validation. Rami Masadeh: Formal analysis, data curation. Bridget L. Ryan: Analysis and interpretation of the data. Anas Alsharawneh: Investigation, data curation. Ahmad Ayed: Investigation, data curation. Ruqayya S. Zeilani: Investigation, data curation. All authors: Writing– review & editing, Writing– original draft, and final approval of the manuscript.

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Data availability
The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
The study was performed in accordance with the Declaration of Helsinki. Research Ethics Committee in The Applied Science Private University approved this study.
Informed consent was obtained from participants.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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