International Journal of Women's Health

Dovepress
Taylor & Francis Group

Open Access Full Text Article

ORIGINAL RESEARCH

Adaptation of the "Quality of Prenatal Care Questionnaire" (QPCQ) Into Turkish: A Validity and Reliability Study

İffet Güler Kaya[1], Esra Yılmaz[2], Besey Ören[3]

[1]Department of Midwifery, Istanbul Medipol University College of Health Sciences, Istanbul, Turkey; [2]Specialist Midwife, Health Sciences University, Hamidiye Health Sciences Institute, Istanbul, Turkey; [3]University of Health Sciences, Hamidiye Faculty of Nursing, Department of Nursing, Division of Internal Medicine Nursing, Istanbul, Turkey

Correspondence: İffet Güler Kaya, Istanbul Medipol University College of Health Sciences, Midwifery Department, Email iffetkaya@medipol.edu.tr

Background: An effectively managed prenatal care process guided by evidence-based information can lead to higher satisfaction, fewer hospital admissions, and reduced pregnancy-related morbidity and mortality rates. This study was conducted within a quantitative methodological paradigm and aimed to adapt the Quality of Prenatal Care Questionnaire (QPCQ) into Turkish and evaluate its psychometric properties in a Turkish sample.

Methods: This methodological, cross-sectional study was conducted with 460 postpartum women between January and July 2021. After establishing the linguistic validity of the scale, validity and reliability analyses were conducted. Content validity was evaluated by an expert multidisciplinary panel, and construct validity was tested using exploratory and confirmatory factor analyses. Reliability was assessed using Cronbach's alpha, item–total correlations, and test–retest stability over a 28-day interval.

Results: The Content Validity Index (CVI) of the Turkish version of the QPCQ was 0.945. Cronbach's alpha for the entire scale was 0.936, while the alpha values for the subdimensions ranged between 0.74 and 0.92. In light of the structural equation analysis and model findings, the six-subscale, 46-item original version of the questionnaire was found to have acceptable construct validity without excluding any items. Fit indices (CMIN/DF=3.316, CFI=0.805, GFI=0.726, RMSA=0.076, SRMR=0.056) indicated an acceptable model fit. These values were comparable to those of previous validations conducted in Canada (α=0.96) and Brazil (α=0.97), supporting the robustness of the Turkish adaptation.

Conclusion: The Turkish version of the QPCQ is a valid and reliable instrument for evaluating the quality of prenatal care. This study contributes to the literature by providing the first comprehensive, psychometrically sound tool to measure prenatal care quality in Türkiye, which can be used in both clinical practice and research to improve maternal health outcomes.

Keywords: prenatal care, health care quality, validation, translation, adaptation

Introduction

To reduce the preventable rates of both fetal and maternal morbidity and mortality, it is essential that every pregnant woman, newborn infant, and postpartum mother receives high-quality care based on evidence-based practices throughout the antenatal, intranatal, and postnatal periods. Quality of care is a multifaceted concept, and its measurement is complex.[1] Donabedian conceptualized quality in the context of his model of high-quality health services, delineating it as inputs, care processes, and outputs.[2] In this model, trained manpower and infrastructure represent inputs; technical and social quality represent the process of care; and improved health status and effectiveness represent outputs or outcomes.[3]

The delivery of high-quality and well-structured care is contingent on the judicious utilization of effective interventions, enhancement of health infrastructure, and presence of healthcare professionals who possess optimal skills and attitudes. Previous studies have demonstrated that effective prenatal care can reduce maternal and neonatal morbidity and mortality, increase satisfaction, and improve overall outcomes.[4–6] The statements presented in this introduction are, therefore, supported by empirical findings rather than theoretical perspectives.

Received: 21 August 2025
Accepted: 26 October 2025
Published: 15 November 2025

In 2015, the World Health Organization (WHO) published a framework for maternal and neonatal healthcare quality, emphasizing the need for human and essential physical resources to ensure the provision and experience of care.[1] Key developmental indicators and crucial health markers, including stillbirth, maternal mortality, and neonatal mortality, remain below the desired level. In 2020, approximately 300,000 maternal deaths, 1,900,000 stillbirths, and 2,400,000 neonatal deaths were recorded, highlighting a significant global health problem.[7]

Moreover, in 2020, approximately 800 women died daily from preventable causes related to pregnancy and childbirth, equivalent to one maternal death every two minutes.[8] Sustainable Development Goal 3.1 aims to reduce maternal mortality worldwide to below 70 per 100,000 live births by 2030.[8]

Evidence-based, well-coordinated prenatal care grounded in an informed process has been shown to lead to improved education, higher satisfaction, fewer hospital admissions, and lower pregnancy-related morbidity and mortality rates. Initiating prenatal care at or before 10 weeks of gestation has been shown to enhance maternal and neonatal health outcomes.[4,5] The World Health Organization (WHO) emphasizes evidence-based practices that underscore the quality of prenatal care, advocating a woman-centered approach.[6] Despite the recognized importance of prenatal care, there is a lack of culturally adapted and validated tools to measure its quality across diverse contexts.

Previous adaptations of the Quality of Prenatal Care Questionnaire (QPCQ) have been conducted in Canada, Brazil, Iran, France, and Australia, all of which demonstrated strong psychometric properties.[9–14] However, no such instrument has been validated for use in Türkiye. This study addresses this gap by adapting the QPCQ into Turkish, allowing for a comprehensive assessment of prenatal care quality in the Turkish context.

In summary, the urgency of this research stems from the absence of a validated tool in Türkiye, despite persistent challenges in maternal and neonatal health outcomes. By situating this adaptation within the global literature and explicitly identifying the research gap, this study provides both novelty and practical contributions.

Methods

This methodological study aimed to establish the validity and reliability of the Turkish version of the QPCQ.

Study Design

This cross-sectional study was conducted at a private hospital in the western region of Türkiye. The study population included healthy women aged 18–49 years, who spoke Turkish, had at least a primary school education, gave birth to a single live infant, and received care at the hospital between January 1 and July 30, 2021.

A convenience sampling strategy was employed, as the hospital-based setting enabled direct access to postpartum women during their hospitalization. This approach facilitated the recruitment of an adequate number of participants within the study time frame. However, convenience sampling may limit the generalizability of the findings beyond comparable clinical populations.

For validity and reliability studies, it is recommended that the sample size should be 5–10 times the number of items in the scale.[15] The QPCQ used in this study had 46 items. After a pilot test (28 participants) and preliminary analyses, necessary revisions were made and data collection commenced. Data from the pilot participants were excluded from the final study. A total of 405 participants who met the inclusion criteria and agreed to participate were enrolled in the study. In addition to classical guidelines, more recent psychometric recommendations emphasize that larger sample sizes yield more robust factor solutions and stable parameter estimates in confirmatory factor analyses.[16,17] With 405 participants, the present study not only met but also exceeded these standards, thereby enhancing the robustness and credibility of the findings.

Data Collection

Data were collected using convenience sampling methods. The researchers visited the postpartum ward of the hospital daily. Each day, they obtained a list of postpartum women from the ward head nurse, identified those who met the inclusion criteria, explained the study objectives, and obtained written, informed consent. Data collection tools were administered face-to-face to the participants between postpartum days 1 and 7.

Data Collection Tools

Sociodemographic Data Form: A 13-item questionnaire investigating characteristics such as age, educational level, income status, and obstetric features of the participants.

Quality of Prenatal Care Questionnaire (QPCQ): Developed by Heaman et al (2014), the original scale consists of 46 items across six subscales. In the initial development study, Cronbach's alpha coefficient for the entire scale was 0.96, indicating high reliability. The Cronbach's alpha values for the six subscales were 0.86, 0.85, 0.81, 0.73, 0.82, and 0.93, respectively.[9] The Turkish version of the QPCQ also consists of 46 items divided into six subscales. Items were scored on a 5-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"), with items 8, 15, 23, 28, and 40 being reverse-scored. The total scores ranged from 46 to 230, with higher scores indicating higher perceived quality of prenatal care.

Conduction of the Study

Language and content validity were assessed first. Item analysis was performed for reliability, and item-total correlations were calculated using Pearson's correlation coefficient (r).

The test–retest method was applied to the same group with a four-week interval between the two administrations to evaluate the temporal stability. Cronbach's alpha coefficient and internal consistency were also calculated.

The suitability of the data for factor analysis was evaluated using the Bartlett test and the Kaiser–Meyer–Olkin (KMO) measure. Principal component analysis was used to determine the number of factors, and varimax rotation was applied. Confirmatory factor analysis (CFA) was performed to test the factor structure. The fit indices included χ^2/df, RMSA, GFI, AGFI, NFI, TLI, PNFI, PCFI, and CFI. Statistical significance was set at $p < 0.05$.

Language Validity

Initially, two experts fluent in English and Turkish conducted forward and backward translations of the scale. After comparing the translated items, the expressions that best represented Turkish equivalents were selected. To ensure cultural adaptation, linguistic adjustments were made when direct translation did not fully reflect the cultural meaning. Feedback from bilingual experts and postpartum women in the pilot test guided refinements to terms related to health system accessibility and provider–patient communication, thereby achieving semantic, conceptual, and experiential equivalence to the original instrument. Five postpartum women reviewed the translated scale for its clarity. The Turkish version was deemed appropriate in terms of linguistic validity.

Content Validity

Davis's technique was employed to assess content validity. This study sought the views of 11 academics specializing in midwifery, obstetrics, and women's health nursing, who were proficient in both languages, to evaluate content validity. Experts rated each item as (A) "Represents the content", (B) "Item needs minor revision", (C) "Item needs major revision", or (D) "Item does not represent the content".[18] The Content Validity Index (CVI) was calculated, with a CVI >0.80 considered acceptable The overall content validity index (CVI) was 0.96. Based on the results, no items were removed, minor revisions were made, and the final version was retained.

Construct Validity

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to verify construct validity. KMO and Bartlett's tests were used to assess sampling adequacy and data suitability. Six factors with eigenvalues greater than 1 were identified, consistent with the original structure.[19]

Reliability of the Scale

Internal consistency was assessed using Cronbach's alpha and item–total correlations. Temporal stability was assessed using the test–retest method, conducted four weeks apart with 28 participants. In the Turkish adaptation, Cronbach's alpha coefficients for the subscales ranged between 0.559 and 0.812, and the overall reliability coefficient was 0.732.

Ethical Considerations

Permission was obtained from the developer of the QPCQ (Heaman et al), and ethical approval was granted by the Non-Interventional Clinical Research Ethics Committee of a private hospital in Istanbul (26/11/2020, Decision No: 872, E-10840098-772.02–62,978). Institutional approval and written informed consent from the participants were obtained. This study adhered to the Declaration of Helsinki of the World Medical Association.

Statistical Analysis

Data were analyzed using IBM SPSS (v25) and IBM AMOS (v24). Descriptive statistics included frequencies, percentages, means, and standard deviation. Content validity was assessed using the Content Validity Ratio (CVR) and CVI. Construct validity was tested using EFA and CFA. The model fit was evaluated using multiple indices. Reliability analyses included Cronbach's alpha, item–total correlations, and test–retest stability analyses. Paired-sample *t*-tests were used to compare the test–retest scores. A p-value <0.05 was considered statistically significant.

Results

The findings of this study are presented under three main headings: participants' sociodemographic characteristics, descriptive characteristics of the QPCQ, and validity and reliability analyses.

Descriptive Characteristics of the QPCQ

The average age of the women who participated in the study was 29.01±5.44 y. The mean number of pregnancies was 1.97±0.132, and the mean number of living children was 1.63±0.104.Of the participants, 34.3% had completed middle school and 71.4% were employed. Among the pregnancies, 74.3% were planned, 78.3% resulted in births between gestational weeks 37 and 41, and 55.3% were delivered by cesarean section. During pregnancy, 53.3% of the participants received prenatal care 1–3 times, and 64.4% of those who provided care were physicians. In contrast to previous adaptations of the QPCQ (eg, Canada, Brazil, Iran, France), this study integrated a specifically tailored sociodemographic form, including variables highly relevant to the Turkish maternal context (eg, income status, planned pregnancy, type of healthcare institution). Furthermore, the Turkish adaptation introduced a two-stage pilot process with expert panel feedback, differing from earlier single-step validations. These refinements enhance the methodological novelty. Prenatal care was most frequently received at public hospitals (29.9%) and family health centers (29.1%) and was most commonly delivered by physicians (64.4%) and midwives (56.3%) (Table 1).

Table 1 Distribution of Participants by Their Descriptive Characteristics

	Mean±SD	**Median (min-max)**
Age	29.01± 5.44	18–44
Number of pregnancies	1.97±0.132	2 (1–4)
Number of living children	1.63±0.104	1(1–3)
Number of abortions	0.33±0.60	0 (0–2)
Education Level	**n**	**%**
Primary school	23	5.7
Middle school–High school	139	34.3
University	125	30.9
Master's/Doctoral	118	29.1

(*Continued*)

Table 1 (Continued).

	Mean±SD	Median (min-max)
Employment Status		
Employed	289	71.4
Unemployed	116	28.6
Income Status		
Income less than expenses	94	23.2
Income covers expenses	277	68.4
Income more than expenses	34	8.4
Was the pregnancy planned?		
Yes	301	74.3
No	104	25.7
Gestational week at birth		
28-37	87	21.5
37-41	317	78.3
42	1	0.2
Mode of delivery		
Cesarean	224	55.3
Vaginal birth	181	44.7
Number of prenatal care visits during pregnancy		
1-3	216	53.3
4-6	79	19.5
7 or more	110	27.2
Where did you receive prenatal care during pregnancy? (Multiple selections possible)		
University hospital	40	9.9
Training and research hospital	110	27.2
Public hospital	121	29.9
Family health center	118	29.1
Private hospital	88	21.7
Clinic	3	7
Who provided your prenatal care during pregnancy? (Multiple selections possible)		
Midwife	177	56.3
Nurse	100	24.7
Physician	261	64.4

Abbreviations: SD, Standard Deviation; min-max, Minimum–Maximum.

Construct Validity

The KMO value was 0.945, indicating "excellent" sampling adequacy. Bartlett's test of sphericity was statistically significant (χ^2=10,730.587, df=1035, p<0.01), confirming the appropriateness of the data for factor analysis and the validity of the scale's construct. CFA was performed to confirm the identified factors. The Varimax rotation method was employed as a commonly used orthogonal rotation technique. The item loadings from exploratory factor analysis are summarized in Table 2.

Table 2 Items Extracted From the QPCQ and EFA Results

Factor	Items	Factor Loadings	Explained Variance (%)
Factor 1 – Information Sharing	3. I was provided with adequate information about the tests and procedures performed during prenatal care.	0.593	22.353
	6. My questions were always answered honestly.	0.549	
	11. All healthcare providers monitoring my pregnancy asked about important information related to me.	0.547	
	17. Necessary screenings were performed for potential issues related to my pregnancy.	0.574	
	22. The results of the tests were explained to me in a way I could understand.	0.537	
	33. The healthcare providers monitoring my pregnancy answered my questions in a comprehensible manner.	0.740	
	39. I was given enough information by the healthcare providers monitoring my pregnancy to make my own decisions.	0.522	
	43. The healthcare providers monitoring my pregnancy kept my personal information confidential.	0.499	
	45. I fully understood why the healthcare providers monitoring my pregnancy requested blood tests and other assessments.	0.502	
Factor 2 – Anticipatory Guidance	2. My prenatal healthcare providers offered me options for my birth experience.	0.500	9.536
	4. I received sufficient information to meet my needs regarding breastfeeding.	0.576	
	10. My prenatal healthcare providers prepared me for my birth experience.	0.570	
	13. The healthcare providers monitoring my pregnancy took time to discuss my expectations about childbirth with me.	0.454	
	16. I was sufficiently informed that moderate exercise is safe during pregnancy.	0.428	
	20. I received enough information about nutrition during pregnancy.	0.466	
	24. My prenatal healthcare providers were concerned about how my pregnancy was affecting my life.	0.359	
	27. They helped me connect with community programs that could offer support.	0.531	
	31. I was sufficiently informed about alcohol use during pregnancy.	0.316	
	42. I received enough information about prenatal depression.	0.592	
	46. My prenatal healthcare providers allowed time for me to ask questions about what mattered to me.	0.380	
Factor 3 – Sufficient Time	1. I spent as much time as I needed with the healthcare providers monitoring my pregnancy.	0.557	8.752
	8. My prenatal healthcare providers behaved in a rushed manner.	−0.567	
	18. The healthcare providers monitoring my pregnancy always had time to answer my questions.	0.442	
	30. The healthcare providers monitoring my pregnancy took time to let me speak.	0.620	
	44. The healthcare providers monitoring my pregnancy made time to listen to me.	0.590	

(*Continued*)

Table 2 (Continued).

Factor	Items	Factor Loadings	Explained Variance (%)
Factor 4 – Accessibility	15. The healthcare providers monitoring my pregnancy were rude to me.	0.608	7.007
	23. They behaved in a rushed manner during my prenatal check-ups.	−0.670	
	28. The healthcare providers monitoring my pregnancy made me feel like I was wasting their time.	0.647	
	40. I was hesitant to ask questions to the healthcare providers monitoring my pregnancy.	−0.660	
Factor 5 – Appropriateness	9. I knew how to contact the healthcare providers who were monitoring my pregnancy.	0.404	5.518
	12. Whenever I called the facility about my pregnancy, there was someone to answer my call.	0.620	
	32. I could reach my prenatal healthcare providers if I had questions or concerns.	0.635	
	35. If I needed anything, there was always someone available at the clinic.	0.576	
	38. I could phone my prenatal healthcare providers when necessary.	0.664	
Factor 6 – Support and Respect	5. The healthcare providers monitoring my pregnancy treated me with respect.	0.408	5.352
	7. The healthcare providers monitoring my pregnancy respected my knowledge and experiences.	0.387	
	14. The healthcare providers monitoring my pregnancy respected my decisions.	0.582	
	19. The healthcare providers monitoring my pregnancy were patient.	0.552	
	21. The healthcare providers monitoring my pregnancy supported me in doing what felt right to me.	0.614	
	25. The healthcare providers monitoring my pregnancy supported me.	0.535	
	26. The healthcare providers monitoring my pregnancy listened attentively when I spoke.	0.492	
	29. My concerns were taken seriously.	0.586	
	34. I had control over decisions made about my prenatal care.	0.664	
	36. The healthcare providers monitoring my pregnancy supported my decisions.	0.536	
	37. I felt comfortable around the healthcare providers monitoring my pregnancy.	0.728	
	41. The healthcare providers monitoring my pregnancy respected my values and beliefs.	0.651	
Total Variance			58.519

Factor analysis revealed that the six factors accounted for 58.52% of the total variance. Their individual contributions to the total variance were as follows: first factor, 22.35%; second factor, 9.54%; third factor, 8.75%; fourth factor, 7.01%; fifth factor, 5.52%; and sixth factor, 5.35% (Table 2). These values were within the acceptable 40–60% range for the total variance explained, suggesting a valid and reliable factor structure of the scale. These six factors collectively explained a significant portion of the total variance, supporting the scale's measurement objectives. As no item was eliminated following the analysis, the naming of the subscales remained consistent with that of the original instrument's. The factor loadings ranged from 0.316 to 0.740, supporting the internal consistency of the subscales and the validity of the factor structure (Table 2).

The Scree Plot (Figure 1) illustrates the distribution of eigenvalues for each component in the factor analysis. As shown in Figure 1, the plot leveled off after the sixth factor, indicating a six-factor structure.

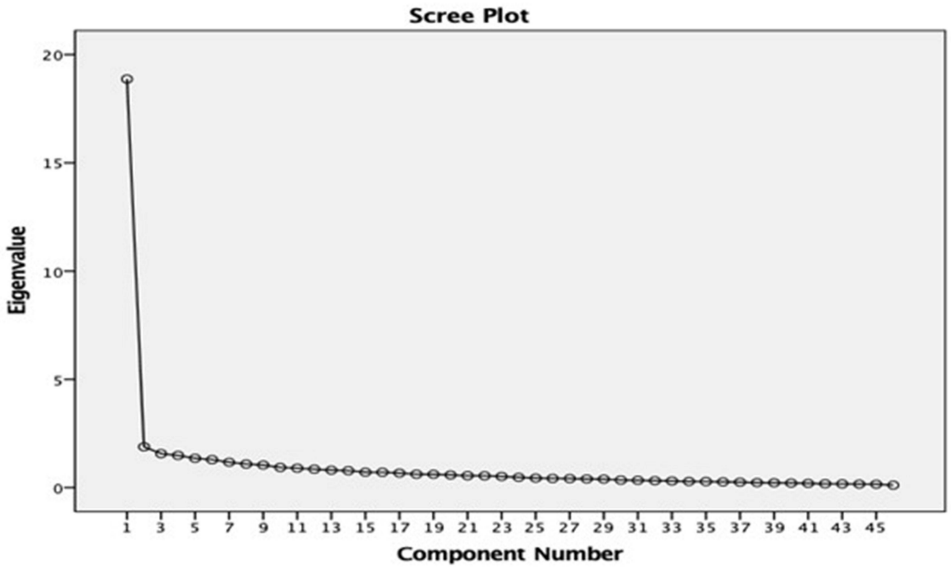

Figure 1 Scree Plot of the QPCQ. This figure illustrates the distribution of eigenvalues for each component of the scale. The sharp decline after the sixth factor (the "elbow point") suggests that a six-factor solution is most appropriate. This visual evidence supports the decision to retain six factors, consistent with the original structure of the QPCQ.

A CFA was conducted to demonstrate the validity of the dimensions obtained from the EFA using AMOS.[20] The fit indices (CMIN/DF=3.316, CFI=0.805, GFI=0.726, RMSEA=0.076, SRMR=0.056) indicated an acceptable model fit (Table 3, Figure 2, Figure 3). Indices such as RMSEA (<0.08) and SRMR (<0.08) are considered acceptable in psychometric research, while a CFI value above 0.80 also reflects an adequate fit, thereby confirming the structural validity of the Turkish version.

Table 3 Path Coefficients for Items

			β^1 (%95 CI)	β^2 (%95 CI)	Std. Error	Test Statistic	p
QPCQ45	<-	F1	1 (1–1)	0.703 (0.613–0.782)	0		…
QPCQ43	<-	F1	0.723 (0.541–0.932)	0.61 (0.494–0.706)	0.098	11.91	**<0.001**
QPCQ39	<-	F1	1.1 (0.932–1.307)	0.776 (0.708–0.831)	0.096	15.09	**<0.001**
QPCQ33	<-	F1	0.898 (0.728–1.088)	0.774 (0.692–0.84)	0.092	15.05	**<0.001**
QPCQ22	<-	F1	0.921 (0.743–1.127)	0.675 (0.574–0.754)	0.097	13.16	**<0.001**
QPCQ17	<-	F1	0.737 (0.54–0.957)	0.577 (0.459–0.677)	0.107	11.26	**<0.001**
QPCQ11	<-	F1	0.732 (0.564–0.936)	0.62 (0.522–0.703)	0.096	12.09	**<0.001**
QPCQ6	<-	F1	0.694 (0.49–0.916)	0.625 (0.493–0.731)	0.109	12.2	**<0.001**
QPCQ3	<-	F1	0.89 (0.714–1.102)	0.693 (0.595–0.773)	0.099	13.51	**<0.001**
QPCQ31	<-	F2	1 (1–1)	0.602 (0.512–0.679)	0		…
QPCQ27	<-	F2	0.792 (0.619–0.999)	0.468 (0.366–0.556)	0.097	8.421	**<0.001**
QPCQ24	<-	F2	0.955 (0.804–1.137)	0.634 (0.549–0.711)	0.085	10.78	**<0.001**
QPCQ20	<-	F2	0.963 (0.805–1.139)	0.699 (0.619–0.768)	0.085	11.58	**<0.001**
QPCQ16	<-	F2	0.796 (0.621–0.983)	0.497 (0.388–0.59)	0.092	8.867	**<0.001**
QPCQ13	<-	F2	0.928 (0.751–1.131)	0.663 (0.562–0.743)	0.097	11.14	**<0.001**
QPCQ10	<-	F2	0.907 (0.736–1.107)	0.653 (0.565–0.727)	0.092	11.02	**<0.001**
QPCQ4	<-	F2	0.742 (0.569–0.915)	0.521 (0.406–0.621)	0.087	9.214	**<0.001**
QPCQ2	<-	F2	0.853 (0.689–1.022)	0.551 (0.45–0.639)	0.086	9.654	**<0.001**
QPCQ42	<-	F2	0.911 (0.709–1.151)	0.521 (0.42–0.618)	0.111	9.22	**<0.001**
QPCQ46	<-	F2	1.015 (0.857–1.194)	0.804 (0.729–0.862)	0.085	12.77	**<0.001**
QPCQ44	<-	F3	1 (1–1)	0.83 (0.767–0.886)	0		…

(*Continued*)

Table 3 (Continued).

			β^1 (%95 CI)	β^2 (%95 CI)	Std. Error	Test Statistic	p
QPCQ30	<-	F3	0.994 (0.867–1.126)	0.813 (0.739–0.875)	0.065	19.83	**<0.001**
QPCQ18	<-	F3	0.993 (0.848–1.143)	0.756 (0.677–0.817)	0.075	17.8	**<0.001**
QPCQ8	<-	F3	0.503 (0.29–0.735)	0.303 (0.178–0.424)	0.114	6.1	**<0.001**
QPCQ1	<-	F3	0.712 (0.56–0.846)	0.573 (0.463–0.674)	0.072	12.38	**<0.001**
QPCQ15	<-	F4	1 (1–1)	0.621 (0.51–0.723)	0		…
QPCQ23	<-	F4	1.109 (0.927–1.362)	0.722 (0.631–0.8)	0.112	10.21	**<0.001**
QPCQ28	<-	F4	1.002 (0.778–1.298)	0.664 (0.544–0.774)	0.133	9.776	**<0.001**
QPCQ40	<-	F4	1.043 (0.85–1.299)	0.638 (0.538–0.726)	0.114	9.539	**<0.001**
QPCQ9	<-	F5	1 (1–1)	0.454 (0.322–0.58)	0		…
QPCQ12	<-	F5	1.604 (1.201–2.302)	0.593 (0.489–0.683)	0.278	8.02	**<0.001**
QPCQ32	<-	F5	1.896 (1.445–2.744)	0.82 (0.769–0.87)	0.334	9.174	**<0.001**
QPCQ35	<-	F5	1.837 (1.335–2.734)	0.778 (0.698–0.844)	0.359	9.011	**<0.001**
QPCQ38	<-	F5	1.977 (1.449–2.901)	0.714 (0.631–0.786)	0.372	8.717	**<0.001**
QPCQ5	<-	F6	1 (1–1)	0.709 (0.592–0.8)	0		…
QPCQ7	<-	F6	0.956 (0.806–1.132)	0.604 (0.491–0.7)	0.082	14.19	**<0.001**
QPCQ14	<-	F6	1.057 (0.874–1.32)	0.658 (0.554–0.747)	0.113	12.97	**<0.001**
QPCQ19	<-	F6	1.168 (0.998–1.432)	0.745 (0.661–0.812)	0.109	14.69	**<0.001**
QPCQ21	<-	F6	1.046 (0.821–1.35)	0.634 (0.531–0.721)	0.133	12.51	**<0.001**
QPCQ25	<-	F6	1.277 (1.063–1.605)	0.784 (0.716–0.844)	0.139	15.46	**<0.001**
QPCQ26	<-	F6	1.27 (1.057–1.593)	0.781 (0.716–0.837)	0.137	15.41	**<0.001**
QPCQ29	<-	F6	1.099 (0.848–1.441)	0.666 (0.557–0.758)	0.152	13.13	**<0.001**
QPCQ34	<-	F6	1.042 (0.825–1.367)	0.638 (0.538–0.728)	0.138	12.58	**<0.001**
QPCQ36	<-	F6	1.166 (0.932–1.513)	0.792 (0.714–0.856)	0.148	15.62	**<0.001**
QPCQ37	<-	F6	1.248 (1.012–1.618)	0.797 (0.726–0.851)	0.155	15.72	**<0.001**
QPCQ41	<-	F6	0.927 (0.702–1.243)	0.6 (0.473–0.713)	0.136	11.83	**<0.001**

Notes: Bold values indicate the reference (scaling) items for each factor. These coefficients were fixed to 1 in the mo therefore, standard errors and confidence intervals were not estimated.
Abbreviations: β_1, unstandardized path coefficient; β_2, standardized path coefficient; p, significance level.

Reliability Analyses

Reliability refers to the repeatability or consistency of measurements in repeated applications. The reliability of the 46-item QPCQ was examined using item-total score correlation, Cronbach's alpha coefficient, and test-retest reliability.

Internal Consistency Analyses

The Cronbach's alpha coefficient for the scale was 0.936. The alpha values for the subscales ranged from 0.74 to 0.92 (Table 4). These findings suggest that the instrument provides a valid structure with a strong internal consistency.

Temporal Stability

The test-retest method was used to assess the scale's stability over time by administering it to 28 participants at four-week intervals. The paired-sample *t*-test showed no significant differences between the two administrations (t=1.24, p=0.373), confirming temporal stability. These findings indicate that the scale produces consistent results over time. Furthermore, the intraclass correlation coefficient (ICC=0.917, p<0.001) demonstrated a strong, positive, and statistically significant correlation, supporting reproducibility (Table 5).

Split-Half Reliability

Spearman-Brown, Guttman Split-Half, and Cronbach's α reliability coefficients were reviewed to calculate the reliability of the two split halves of the scale. The Turkish version of the QPCQ demonstrated a Spearman-Brown correlation of 0.981, a Guttman Split-Half correlation of 0.978, and a split-half reliability correlation of 0.962 (Table 6).

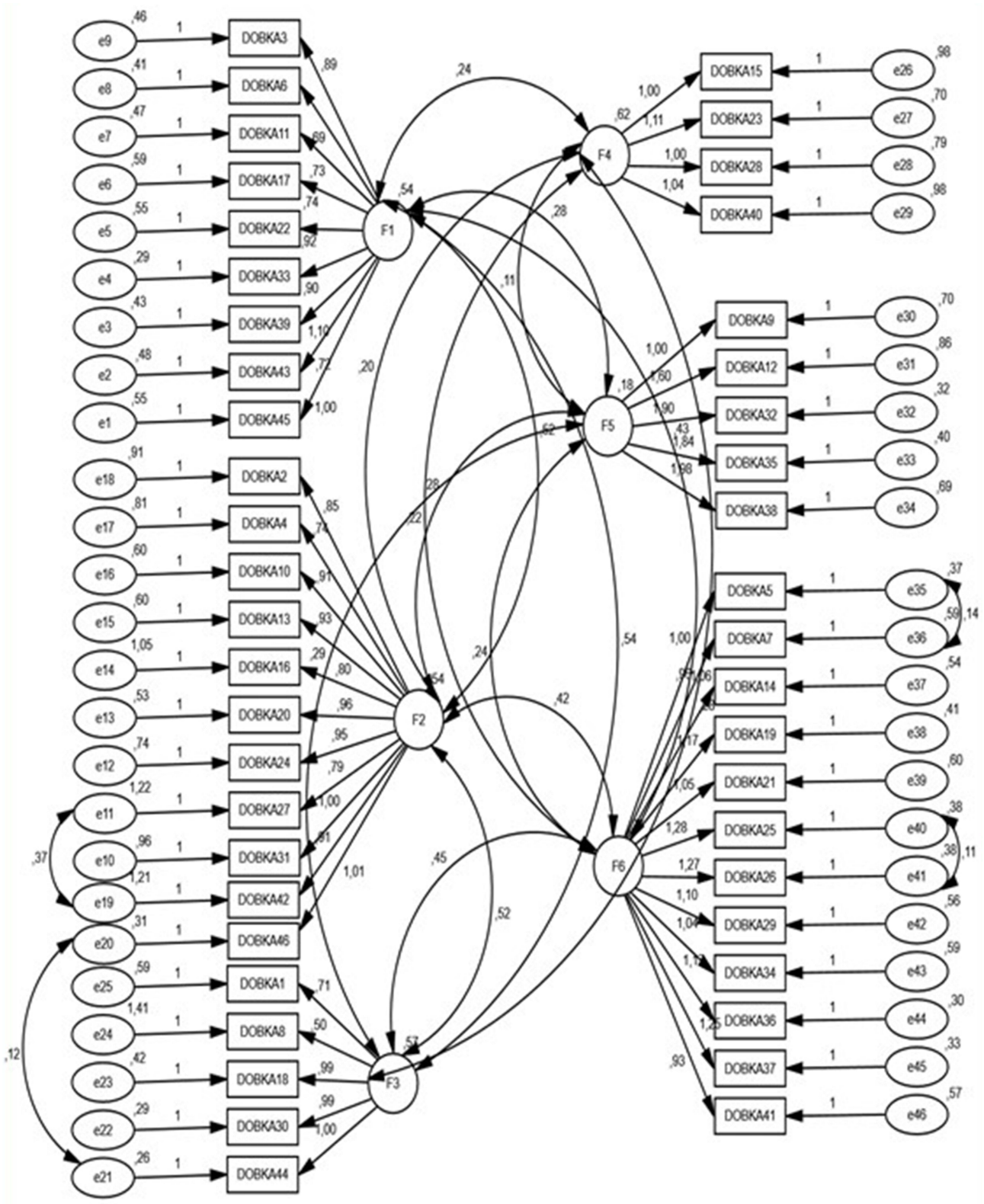

Figure 2 PATH Diagram 1 of the QPCQ for CFA. This figure shows the initial confirmatory factor analysis (CFA) model of the Turkish QPCQ. Rectangles represent observed variables (items), circles represent latent constructs (subscales), and single-headed arrows indicate factor loadings. The double-headed arrows represent correlations between the latent variables. Although the initial model demonstrated acceptable indices, some modifications were needed to improve overall model fit.

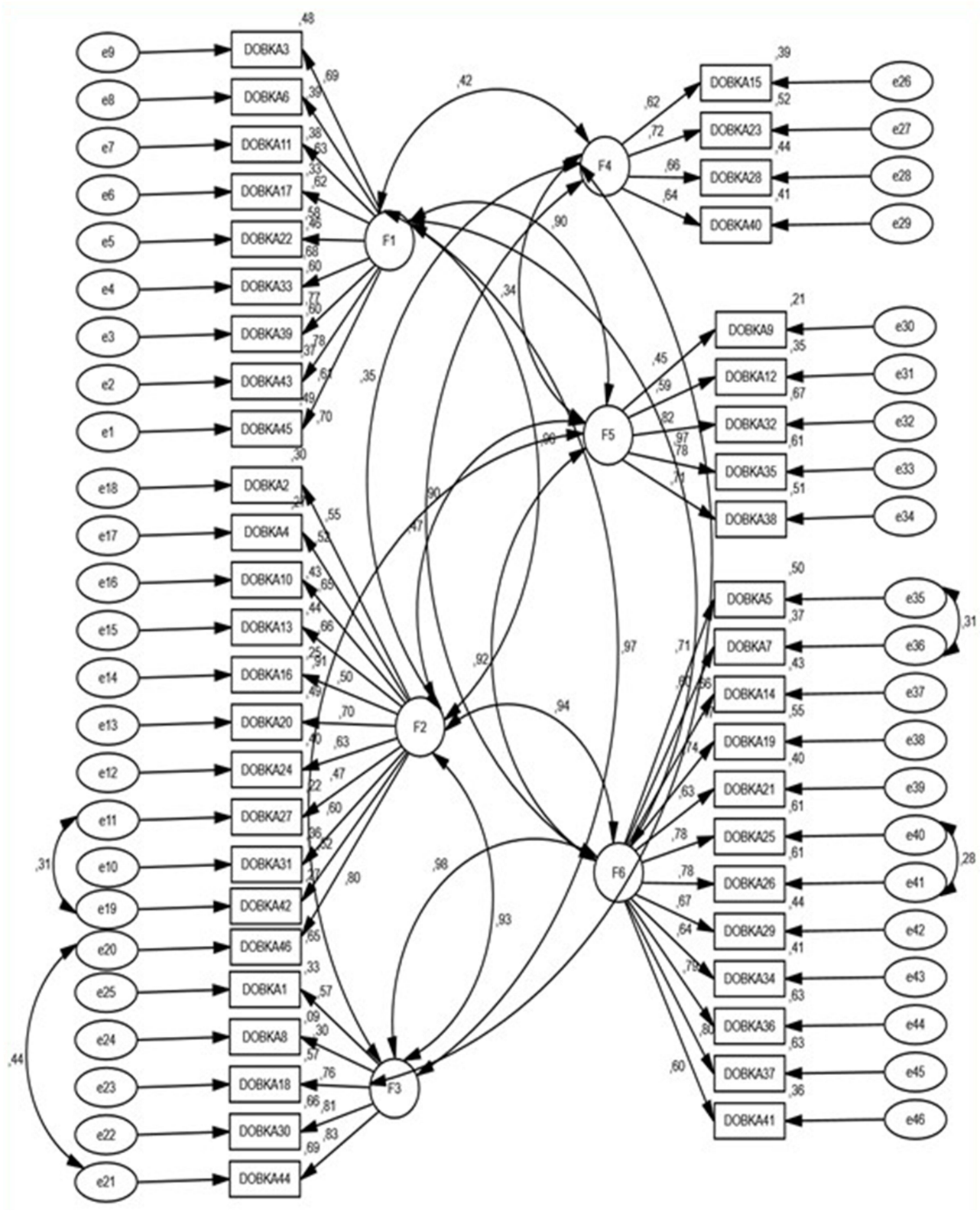

Figure 3 PATH Diagram 2 of the QPCQ for CFA. This figure displays the modified CFA model of the Turkish QPCQ after introducing parameter adjustments suggested by modification indices. The standardized factor loadings between latent constructs and items improved, and correlations between subscales were clarified. This refined model demonstrated acceptable fit indices (CMIN/DF=3.316, CFI=0.805, RMSEA=0.076, SRMR=0.056), confirming the structural validity of the Turkish version.

https://doi.org/10.2147/IJWH.S562278

Table 4 Internal Consistency Analysis of the QPCQ and Its Subscales

	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Total Score Mean (SD)	Factor loading
Factor 1 – Information Sharing	0.742		32.091(5.47)	
3. I was provided with adequate information about the tests and procedures performed during prenatal care.	0.686	0.618		
6. My questions were always answered honestly.	0.852	0.066		
11. All healthcare providers monitoring my pregnancy asked about important information related to me.	0.706	0.505		
17. Necessary screenings were performed for potential issues related to my pregnancy.	0.700	0.522		
22. The results of the tests were explained to me in a way I could understand.	0.692	0.541		
33. The healthcare providers monitoring my pregnancy answered my questions in a comprehensible manner.	0.693	0.697	689	689
39. I was given enough information by the healthcare providers monitoring my pregnancy to make my own decisions.	0.700	0.508		
43. The healthcare providers monitoring my pregnancy kept my personal information confidential.	0.688	0.524		
45. I fully understood why the healthcare providers monitoring my pregnancy requested blood tests and other assessments.	0.686	0.549		
Factor 2 – Anticipatory Guidance	0.835		40.579(8.11)	
2. My prenatal healthcare providers offered me options for my birth experience.	0.818	0.555		
4. I received sufficient information to meet my needs regarding breastfeeding.	0.823	0.494		
10. My prenatal healthcare providers prepared me for my birth experience.	0.815	0.615		
13. The healthcare providers monitoring my pregnancy took time to discuss my expectations about childbirth with me.	0.817	0.579		
16. I was sufficiently informed that moderate exercise is safe during pregnancy.	0.823	0.500		
20. I received enough information about nutrition during pregnancy.	0.814	0.630		
24. My prenatal healthcare providers were concerned about how my pregnancy was affecting my life.	0.816	0.581		
27. They helped me connect with community programs that could offer support.	0.862	0.271		
31. I was sufficiently informed about alcohol use during pregnancy.	0.818	0.550		
42. I received enough information about prenatal depression.	0.819	0.542		
46. My prenatal healthcare providers allowed time for me to ask questions about what mattered to me.	0.816	0.620		

(*Continued*)

Table 4 (Continued).

	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Total Score Mean (SD)	Factor loading
Factor 3 – Sufficient Time	0.756		18.209(2.98)	
1. I spent as much time as I needed with the healthcare providers monitoring my pregnancy.	0.723	0.491		
8. My prenatal healthcare providers behaved in a rushed manner.	0.680	0.613		
18. The healthcare providers monitoring my pregnancy always had time to answer my questions.	0.660	0.679		
30. The healthcare providers monitoring my pregnancy took time to let me speak.	0.657	0.688		
44. The healthcare providers monitoring my pregnancy made time to listen to me.	0.827	0.263		
Factor 4 – Accessibility	0.754		19.21(3.59)	
15. The healthcare providers monitoring my pregnancy were rude to me.	0.712	0.524		
23. They behaved in a rushed manner during my prenatal check-ups.	0.675	0.591		
28. The healthcare providers monitoring my pregnancy made me feel like I was wasting their time.	0.700	0.546		
40. I was hesitant to ask questions to the healthcare providers monitoring my pregnancy.	0.701	0.544		
Factor 5 – Appropriateness	0.800		19.184(3.73)	
9. I knew how to contact the healthcare providers who were monitoring my pregnancy.	0.812	0.407		
12. Whenever I called the facility about my pregnancy, there was someone to answer my call.	0.784	0.531		
32. I could reach my prenatal healthcare providers if I had questions or concerns.	0.733	0.672		
35. If I needed anything, there was always someone available at the clinic.	0.728	0.685		
38. I could phone my prenatal healthcare providers when necessary.	0.744	0.649		
Factor 6 – Support and Respect	0.920		47.290(8.42)	
5. The healthcare providers monitoring my pregnancy treated me with respect.	0.913	0.675		
7. The healthcare providers monitoring my pregnancy respected my knowledge and experiences.	0.917	0.585		
14. The healthcare providers monitoring my pregnancy respected my decisions.	0.915	0.642		
19. The healthcare providers monitoring my pregnancy were patient.	0.912	0.701		

(*Continued*)

Table 4 (Continued).

	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Total Score Mean (SD)	Factor loading
21. The healthcare providers monitoring my pregnancy supported me in doing what felt right to me.	0.917	0.602		
25. The healthcare providers monitoring my pregnancy supported me.	0.909	0.770		
26. The healthcare providers monitoring my pregnancy listened attentively when I spoke.	0.910	0.753		
29. My concerns were taken seriously.	0.916	0.615		
34. I had control over decisions made about my prenatal care.	0.916	0.622		
36. The healthcare providers monitoring my pregnancy supported my decisions.	0.910	0.763		
37. I felt comfortable around the healthcare providers monitoring my pregnancy.	0.910	0.762		
41. The healthcare providers monitoring my pregnancy respected my values and beliefs.	0.918	0.561		
Cronbach's alfa:0.936				

Table 5 Comparison and Correlation for the QPCQ's Temporal Stability (N=28)

QPCQ	Mean±SD	t	p	ICC	p
First Administration	176.68±4.76	1.24	0.373	0.917	0.000
Second Administration	169.36±4.64				

Abbreviations: SD, Standard Deviation; *t*-test, *t*-test; ICC, Intraclass Correlation Coefficient.

Table 6 Distribution of Total QPCQ and Subscale Scores

	Minimum	Maximum	Mean (SD)
Subscale			
Factor 1 – Information Sharing	9	45	36.06(6.08)
Factor 2 – Anticipatory Guidance	11.00	55.00	40.47(8.10)
Factor 3 – Sufficient Time	4.00	20.00	8.92(3.76)
Factor 4 – Accessibility	4.00	20.00	8.92(3.76)
Factor 5 – Appropriateness	5.00	25.00	18.68(3.98)
Factor 6 – Support and Respect	12.00	60.00	47.27(8.44)
Toplam QPCQ	51	230	169.62(26.07)

The mean scores for Information Sharing, Anticipatory Guidance, Sufficient Time and Accessibility, Appropriateness, and Support and Respect were 36.06 (SD=6.08), 40.47 (SD=8.10), 8.92 (SD=3.76), 18.68 (SD=3.98), and 47.27 (SD=8.44), The overall QPCQ score was 169.62 (SD=26.07). Together, these results demonstrate that the Turkish version of the scale achieved an acceptable model fit and strong reliability.

Discussion

The QPCQ is a comprehensive instrument that evaluates information sharing, structure of care, technical performance, and interpersonal interactions, thereby capturing the clinical and experiential dimensions of prenatal care. Its purpose is not only to assess the quality of prenatal care but also to inform improvement initiatives that enhance organizational structures, care processes, and maternal and neonatal health outcomes. High-quality healthcare systems must incorporate effectiveness, evidence-based practices, patient-centeredness, equity, and strong provider–patient relationships. In maternal and newborn health, quality requires effective communication, education, information exchange, and respect.[21]

The findings of this study confirmed that the Turkish adaptation of the QPCQ demonstrates strong psychometric properties, consistent with previous international validations. The overall Cronbach's alpha of 0.936 and subscale values ranging from 0.74 to 0.92 indicate satisfactory reliability of the scale. While these results are consistent with cross-cultural adaptations conducted in Canada (α=0.96), Brazil (α=0.97), the United States (α=0.97), Australia (α=0.97), and France (α=0.97), a deeper analysis shows that certain subscales in the Turkish version yielded slightly lower alpha values. These variations may be explained by cultural nuances in item interpretation, differences in healthcare delivery models, or participants' sociodemographic factors, highlighting the importance of contextual influences in cross-cultural psychometric research.

Reproducibility was also demonstrated, as the intraclass correlation coefficient (ICC=0.917, $p<0.001$) confirmed stability and consistency over time, exceeding the ICC of the original Canadian validation (ICC=0.81, $p<0.001$).[9,22] The presence of the six factors was further supported by the model fit indices. Notably, the RMSEA (0.076) and SRMR (0.056) fell within acceptable ranges, with the RMSEA comparable to or slightly higher than those reported in the French (0.06)[13] and Persian (0.048)[11] adaptations. Taken together, these results confirm the structural validity and reliability of the Turkish QPCQ while also highlighting minor cultural differences that warrant further exploration.

The novelty and scientific contribution of this study lie in being the first adaptation of the QPCQ into Turkish, incorporating both linguistic and cultural adjustments that reflect Türkiye's unique maternal health context. Unlike previous adaptations, this study integrated a specifically tailored sociodemographic form and a two-stage pilot process, further strengthening methodological rigor and innovation.

The limitations of this study must be acknowledged. Data collection was restricted to a single province, limiting the generalizability of the findings to the broader Turkish population. Additionally, convenience sampling may have introduced selection bias, despite the sample size being sufficient. These constraints underscore the need for cautious interpretation of the results.

Future studies should expand on these findings by conducting longitudinal validation to assess the Turkish QPCQ's stability over time. Testing the instrument in rural and underserved populations will be critical for evaluating its applicability across diverse healthcare contexts. Broader geographic and institutional applications will enhance the tool's robustness and generalizability.

In conclusion, this study provides the first psychometrically validated Turkish version of the QPCQ. Its methodological rigor, cultural adaptation, and empirical findings not only strengthen prenatal care research in Türkiye but also contribute significantly to global efforts to measure and improve the quality of maternal healthcare.

Conclusion: The results of this study indicate that the Turkish version of the QPCQ is a high-quality, reliable, and valid measurement tool for assessing prenatal care quality among Turkish women. The findings directly align with the study's research questions, confirming the psychometric robustness of the Turkish version.

This study contributes to the literature by providing the first validated Turkish tool for evaluating prenatal care quality, thereby filling an important gap in maternal health research. However, limitations must be acknowledged, particularly the single-province sample and the use of convenience sampling, which may restrict generalizability.

Future studies should conduct longitudinal validation and apply the tool across diverse populations and regions, including rural and underserved settings, to enhance its robustness and applicability.

The Turkish QPCQ has potential policy and practice implications: it can guide national maternal health strategies, inform accreditation standards for prenatal care services, and support evidence-based improvements in healthcare delivery.

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Ethics Approval Statement

The study was approved by Istanbul Medipol University, Human Researches Ethics Committee (Date: 21.11.2020, Number: E-10840098-772.02-62978). The study followed the rules of the Helsinki Declaration. Written informed consent was also obtained from the participants.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

There is no funding source.

Disclosure

The authors declare that they have no conflicts of interest in this work.

References

1. Tunçalp Ö, Were WM, MacLennan C, et al. Quality of care for pregnant women and newborns: the WHO vision. *BJOG*. 2015;122(8):1045–1049. doi:10.1111/1471-0528.13451
2. Donabedian A. The quality of care: how can it be assessed? *JAMA*. 1988;260(12):1743–1748. doi:10.1001/jama.1988.03410120089033
3. Khatri RB, Mengistu TS, Assefa Y. Input, process, and output factors contributing to the quality of antenatal care services: a scoping review of evidence. *BMC Pregnancy Childbirth*. 2022;22(1):977. doi:10.1186/s12884-022-05331-5
4. Ramírez SI. Prenatal care: an evidence-based approach. *Am Fam Physician*. 2023;108(2):139–150.
5. Kouanda S, Ouedraogo AM, Sogo AE, NAMAI Research Group. New antenatal model in Africa and India (NAMAI) study: implementation research to improve antenatal care using WHO recommendations. *Health Res Policy Syst*. 2023;21(1):82. doi:10.1186/s12961-023-01014-5
6. Lattof SR, Moran AC, Kidula N, et al. Implementation of the new WHO antenatal care model for a positive pregnancy experience: a monitoring framework. *BMJ Glob Health*. 2020;5(6):e002605. doi:10.1136/bmjgh-2020-002605
7. Boerma T, Campbell OMR, Amouzou A, et al. Maternal mortality, stillbirths, and neonatal mortality: a transition model based on analyses of 151 countries. *Lancet Glob Health*. 2023;11(7):e1024–e1031. doi:10.1016/S2214-109X(23)00195-X
8. World Health Organization (WHO). Trends in maternal mortality: 2000–2020. Geneva: World Bank Group and United Nations Population Division; 2023. Available from: https://www.who.int/publications/i/item/9789240068759. Accessed November 11, 2025.
9. Çokluk Ö, Şekercioğlu G, Büyüköztürk Ş. *Sosyal Bilimler İçin Çok Değişkenli İstatistik: SPSS ve LISREL Uygulamaları*. Ankara: Pegem Akademi;2012. [in Turkish].
10. Nunes RD, Parma GC, Campos AC, Locatelli P, Traebert J. Cross-cultural adaptation and psychometric properties of the Brazilian-Portuguese version of the quality of prenatal care Questionnaire (QPCQ). *Rev Saude Publica*. 2018;53:01. doi:10.11606/S1518-8787.2019053000565
11. Zeidi BM, Ebadi A, Kariman N, Ozgoli G, Fakari FR, Rafeerad S. Psychometric evaluation of Persian version of quality of prenatal care questionnaire. *Int J Pediatr*. 2021;9(8):14280–14292.
12. Dailey RK, Peoples A, Zhang L, et al. Assessing the perception of prenatal care quality among Black women in the United States. *J Midwifery Women's Health*. 2022;67(2):235–243. doi:10.1111/jmwh.13319
13. Sword W, Heaman M, Biro MA, et al. Quality of prenatal care questionnaire: psychometric testing in an Australian population. *BMC Pregnancy Childbirth*. 2015;15(1):214. doi:10.1186/s12884-015-0644-7
14. Sword W, Heaman M, Peterson WE, Salvador A, Akhtar-Danesh N, Bradford-Janke A. Psychometric testing of the French language quality of prenatal care Questionnaire. *J Nurs Meas*. 2015;23(3):436–451. doi:10.1891/1061-3749.23.3.436
15. Heaman MI, Sword WA, Akhtar-Danesh N, Bradford A, Tough S, Janssen PA. Quality of prenatal care questionnaire: instrument development and testing. *BMC Pregnancy Childbirth*. 2014;14(1):1–16. doi:10.1186/1471-2393-14-188
16. Kyriazos TA. Applied psychometrics: sample size and sample power considerations in factor analysis (EFA, CFA), and SEM in general. *Psychology*. 2018;9(08):2207–2230. doi:10.4236/psych.2018.98126
17. Lorenzo-Seva U, Ferrando PJ. Determining sample size requirements in EFA solutions: a simple empirical proposal. *Multivariate Behav Res*. 2024;59(5):899–912. doi:10.1080/00273171.2024.2342324
18. Davis LL. Instrument review: getting the most from your panel of experts. *Appl Nurs Res*. 1992;5(4):194–197. doi:10.1016/S0897-1897(05)80008-4
19. Harrington D. *Confirmatory Factor Analysis*. Oxford: Oxford University Press; 2009.
20. Karagöz Y. *SPSS ve AMOS Uygulamalı Nitel-Nicel-Karma Bilimsel Araştırma Yöntemleri ve Yayın Etiği*. Ankara: Nobel Akademik Yayıncılık;2021. [in Turkish].

21. Renfrew MJ, McFadden A, Bastos MH, et al. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet*. 2014;384(9948):1129–1145. doi:10.1016/S0140-6736(14)60789-3
22. Şimşek ÖF. *Yapısal Eşitlik Modellemesine Giriş: Temel İlkeler ve LISREL Uygulamaları*. Ankara: Ekinoks;2007. [in Turkish].