Validation of the Korean Leeds Satisfaction Questionnaire in Rheumatoid Arthritis with Rasch models.

Soo-Kyung Cho[1], Hyoungyoung Kim[1], Yeo-Jin Song[1], Eunwoo Nam[1], Bethan Jones[2], Mwidimi Ndosi[2], Yoon-Kyoung Sung[1]

[1]Department of Rheumatology, Hanyang University Hospital for Rheumatic Diseases and Hanyang University Institute for Rheumatology, Seoul, Republic of Korea

[2]School of Health and Social Wellbeing, University of the West of England, Bristol, UK.

Correspondence to: Yoon-Kyoung Sung, MD, PhD, MPH,

Department of Rheumatology, Hanyang University Hospital for Rheumatic Diseases, Seoul 133-792, Republic of Korea.

Tel: +82-2-2290-9207, Fax: +82-2-2298-8231

E-mail: sungyk@hanyang.ac.kr

ORCIDs:

Soo-Kyung Cho: http://orcid.org/0000-0003-4493-8837

Hyoungyoung Kim: http://orcid.org/0000-0003-1415-461X

Yeo-Jin Song: https://orcid.org/0000-0001-9420-2129

Eunwoo Nam: https://orcid.org/0000-0001-5175-7095

Bethan Jones: https://orcid.org/0000-0002-7253-0751

Mwidimi Ndosi: https://orcid.org/0000-0002-7764-3173

Yoon-Kyoung Sung: http://orcid.org/0000-0001-6691-8939

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COMPETING INTERESTS

The authors declare no conflicts of interest.

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ABSTRACT

Objectives We conducted the cross-cultural adaptation and validation of the Leeds Satisfaction Questionnaire (LSQ) for patients with rheumatoid arthritis (RA) in Korea.

Methods The adaptation of the LSQ from English into Korean was based on guidelines for cross-cultural adaptation for self-report measures. Patients with RA were recruited from an outpatient clinic of a university hospital in South Korea. Validation of the Korean-LSQ with Rasch models was carried out using WINSTEPS. Model fit was determined by Infit and Outfit statistics (≥0.50 and ≤1.50), including the separation index (≥ 2.00) and reliability index (≥ 0.80).

Results The dataset comprised 125 patients, (82.4 % female), with median (IQR) age 49.0 (37-57) years, and disease duration of 2.5 (1.2-3.8) years. The total and subscale scores of the Korean-LSQ demonstrated excellent or good test-retest reliability (0.88 for total, 0.71-0.82 for subscales), and items in the scale also revealed a high internal consistency (α=0.93). The six subscales of the Korean-LSQ were found to have a good fit to the Rasch model and good reliability (Person separation index = 2.63 and reliability index = 0.87; item separation index = 37.03 and reliability index > 0.99). In addition, the unidimensionality of the scale was confirmed by the principal component analysis based on the Rasch residuals.

Conclusion Fit to the Rasch model confirmed that the construct validity, reliability, and unidimensionality of the LSQ were preserved following the adaptation into Korean. The Korean-LSQ is a valid and reliable tool for measuring satisfaction with care in Korean patients with RA.

Keywords: Rheumatoid arthritis, Leeds Satisfaction Questionnaire, Rasch model, Cross-cultural Validation

Running title

Validation of the Korean Leeds Satisfaction Questionnaire

INTRODUCTION

The target of treatment for patients with rheumatoid arthritis (RA) is to achieve the remission or low disease activity state (1, 2). However, approximately 12% and 38% of patients with RA do not achieve remission according to disease activity indices, solely because of a patient global assessment (PGA) score >1, despite having no signs of significant inflammation (3, 4). A recent proposal has suggested that the management of RA should be guided by a dual treat-to-target strategy (dual T2T): the control of inflammation (biological remission), and the control of disease impact (symptom remission) (5). In addition, patient satisfaction is an important indicator of quality of care (6). Satisfaction with care is a predictor of (or associated with) functional status, overall well-being, and future health-related behaviours in various chronic diseases (7-9). Patient satisfaction has also been a predictor of increased adherence to treatment, which is associated with active and engaged self-management of long-term conditions (10, 11). Increased patient satisfaction improves patients' management of RA because patients are more likely to be able and willing to actively self-manage their health conditions (12). Therefore, increased satisfaction can support patients to feel more able to take responsibility for their health and can benefit from associated improved health outcomes (13). Patient satisfaction can also fluctuate based on health conditions, including differences in patient satisfaction based on the number of health conditions patients live with (14). Patient satisfaction is therefore a key outcome of interest to improve quality of life in people with RA.

Care-related factors associated with higher patient satisfaction in patients with RA include being treated

with respect and having their feelings respected, having medical issues explained clearly, and being able to access the clinic easily in person or via telephone (15). Patient satisfaction is also associated with patients being able to access their preferred mode of contact with clinics, telehealth options that are easy to use and options for support that reduce travel time (16). However, patient satisfaction with these factors also differed between health conditions, suggesting the need for condition-specific ways of capturing patient satisfaction.

There are challenges in measuring patients' satisfaction with their care. Qualitative research methods can offer the opportunity to generate rich data about how satisfied patients are with their care. However, exploring patient satisfaction this way is resource heavy and does not allow for reliable comparison between patients or over time. Therefore, understanding patient satisfaction using a questionnaire can provide a means to inform person-centred care and service improvements. Moreover, a questionnaire for assessing patient satisfaction with care for patients with RA in Korea is needed.

The Leeds Satisfaction Questionnaire (LSQ) (17) is a patient-completed questionnaire designed to measure satisfaction among patients attending a rheumatology outpatient clinic. It was developed in the United Kingdom and comprises 45 items grouped into six subscales: general satisfaction, information, empathy, technical competence, attitude, access, and continuity. This study aimed to undertake a cross-cultural adaptation of the LSQ into Korean, and validate the Korean-LSQ in patients with RA. The LSQ was selected as the most appropriate measure for this study because it was originally developed with patients with RA (17, 18). It has demonstrable validity and reliability including responsiveness in

randomised controlled trials in people with RA (18-21) and other rheumatic conditions (22, 23). The LSQ has also been successfully translated into other different languages demonstrating cross-cultural validity (19, 24) therefore setting this tool apart from other measures of patient satisfaction.

METHODS

Study design and population

This was a cross-sectional study involving cross-cultural adaptation of the LSQ into Korean, followed by a survey to validate the adapted tool with Rasch models.

Leeds Satisfaction Questionnaire

The LSQ is a patient reported outcome (PRO) questionnaire developed to measure satisfaction among patients attending an outpatient rheumatology clinic (17). The patients' response for their level of agreement was based on 45 questions, with responses on a scale between 1 (strongly agree) and 5 (strongly disagree). As mentioned above, the LSQ consists of six subscales The scores were entered in the appropriate boxes on the analysis sheet, under columns A, B, C, and so on (Supplementary Table 1). This automatically sorted the statement into the correct groups. If the box contains an 'r', it indicates that the score must be re-coded. This provided a score out of 5 for each subscale. Scores above 3 indicated satisfaction, and below 3 signified dissatisfaction. The mean results for each subscale were then combined to provide a total measure of overall satisfaction. It takes about 15 minutes for the patient to complete.

Cross-cultural adaptation

The cross-cultural adaptation of LSQ into Korean was performed with standardised guidelines of PRO measures suggested by Beaton et al. (25) The forward translation from English into Korean was performed by two independent translators. A third unbiased person held a meeting to discuss translation differences, and one combined version was produced together with a report documenting the process and how issues were resolved. Back-translation was performed by two bilingual back-translators whose mother tongue was English and blinded to the original version. This was a process of validity checking to ensure the translated version accurately reflected the item content of the original version. The expert committee reviewed all the versions and components of the questionnaire and all translated versions, discussing discrepancies raised in previous stages, and a consensus was reached on all items. The pre-final version of the Korean LSQ was produced for field testing. The field test of the adapted Korean LSQ included 30 patients recruited from the rheumatology outpatient clinic at a university hospital in Korea. These 30 patients completed the Korean LSQ and were asked what they thought was meant by each questionnaire item and provided their response.

Study population

Patients were recruited from the rheumatology outpatient clinic at a university hospital in Korea in person. All consented patients were included consecutively in the study. The inclusion criteria were as follows:

- Korean patients with RA diagnosed according to the 1987 ACR and the 2010 ACR/EULAR classification criteria for subjects (26, 27);
- 18 years of age or older;
- Willingness to complete the questionnaire.

The exclusion criterion was a diagnosis of an additional rheumatic disease.

Cross-cultural validation

Participants then completed the final translated version of the Korean-LSQ. Patient demographic data such as age, gender, educational background, and self-reported disease duration were also collected. Upon agreement, we asked patients to reply by mail after completing the same questionnaire two weeks after the first survey to estimate test-retest reliability.

Ethical consideration

This study was approved by the Institutional Review Board of Hanyang University Hospital (HYUN 2015-07-026-001). All patients provided informed consent.

Statistical analyses

Descriptive statistics were summarised using measures of central tendency (median) and interquartile

range (IQR) for continuous data and frequencies (%) were for categorical data. The internal consistency reliability (ICR) is assessed by estimating the Cronbach's alpha (α) to measure inter-relatedness of the items. A value of α greater than 0.7 is considered an acceptable ICR among items (28). Test-retest reliability was assessed using intra-class correlation coefficients (ICC) based on patient completion of the questionnaire 3-5 days apart (29).

Testing validity with Rasch models

Rasch model provides formal representation of fundamental measurement (30); therefore when data from questionnaire are shown to fit to the model, it implies they have a criterion-related construct validity (31), objectivity (32), reliability (33) and statistical sufficiency (34). Rasch analysis comprised three phases: 1) initial testing of all individual 45 items for fit to the Rasch model, 2) testing each subscale for fit to the Rasch model, and 3) final testing of the overall scale, using subscale scores as 'testlets' for fit to the Rasch model. .

To assess unidimensionality, principal component analysis (PCA) of Rasch item residuals was used to examine if the Rasch model explains at least 40% of the variance while the eigenvalue of the first residual factor does not exceed 3 (35). The fit of the observed data to the Rasch model was assessed by the mean-square (MnSq) of infit and outfit (36, 37). Infit focused on the difference between the observed and expected response for items with difficulty level near a persons' ability level. Outfit includes the differences for all items, irrespective of how far the item difficulty is from the ability of the person (30). An item MnSq fit statistic of the range from 0.5 to 1.5 is an acceptable fit to the Rasch model (38, 39).

Positive and high values (> 0.3) of point-measure (PtMea) correlation indicated that the items were working in the same direction to measure a single basic construct (40). In the Rasch model analysis, a reliability index above 0.8 and 0.9 and equivalently, a separation index larger than 2 and 3, were considered good and excellent respectively (40).

After performing PCA to examine the unidimensionality of the subscales, the local independence was assessed in each subscale (40, 41). Generally, standardised Rasch residual correlation values greater than 0.7 indicate local dependency between items because they indicate that more than 50% of the variance is shared between items (42). Following the fit to the model and reliability tests, differential item functioning (DIF) analysis was carried out to examine the invariance of measurement in each subscale. DIF logit scores were compared for each item between males and females using the Welch t-test (43). In further analysis of each subscale, the Rasch rating scale functioning was analysed to examine the appropriateness of the 5-point rating scale of Korean-LSQ.

General data analyses were conducted using the R software version 3.4.2 (R Foundation for Statistical Computing, Vienna, Austria), and the Rasch model analysis, which was carried out using the Rasch computer program WINSTEPS version 3.91.1 (http://www.winsteps.com/winsteps.htm). All tests were two-sided, and p-values less than 0.05 indicated statistical significance.

RESULTS

Cross-cultural adaptation

Issues regarding translation included ambiguity, inexactness of certain concepts, or idiomatic expressions. For example, patients who participated in field tests had difficulty figuring out whom they were referring to as ‘they’ or ‘the person I see in the clinic’. Those two terms were then replaced with ‘my physician’ because, in Korean medical services, the person the patient sees in the outpatient clinic is usually the physician. All issues and resolutions are described in Supplementary Table 2.

Baseline characteristics of patients

Patients with RA (n = 125) from an outpatient clinic in a tertiary referral hospital who completed the Korean-LSQ were included. Their clinical and demographic characteristics are presented in Table 1. The median age was 49 years, and 103 (82.4%) were women. The median disease duration of RA was two and a half years, and the median education duration was 12 years. Among 125 patients, 15 (12%) were treated with biologic disease-modifying anti-rheumatic drugs (bDMARDs). Of the patients who completed the first survey, 107 (85.6%) completesthe second survey two weeks later.

Descriptive statistics of Korean-LSQ and its ICR

Descriptive statistics of each scale and total scores were given using a five-number summary (min, Q_1, median, Q_3, max) (Table 2). The median (IQR) of the Korean-LSQ total scores was 3.81 (3.51-4.09). The median satisfaction score was lowest (3.50) in ‘access and continuity’, while highest (4.25) in ‘technical competence’. Since the ceiling and floor effects were observed in the range of 0-10%, they were

considered negligible.

In terms of ICR, the overall Cronbach's alpha of the Korean-LSQ was 0.94, which supported an acceptable ICR among items. Cronbach's alpha in each subscale ranged from 0.67 to 0.84, except for general satisfaction ($\alpha = 0.58$) involving 3 items only. After removing the 3 items, the overall Cronbach's alpha decreased to 0.92, supporting an acceptable ICR also. ICC of the total scores was 0.89 and of the corresponding subscales ranged from 0.71 to 0.82, demonstrating an excellent or good test-retest reliability between the two measures (Table 2).

Cross-cultural validation in patients with RA using the Rasch model

Initial testing of the individual 45 items for fit with Rasch model

Supplementary Table 3 presents the results of the individual item fit and domain fit statistics. Most individual items (40 of the 45) displayed an acceptable fit to the model. Five items deviating from the model with infit and outfit > 1.50 were:

Item 1: *They don't seem to listen to anything I tell them during my consultation*

Item 2: *I feel that I'm in good hands when I come to the clinic*

Item 10: *Visiting the clinic is not a stressful occasion.*

Item 28: *I am encouraged to ask questions about my arthritis.*

Item 44: *I see the same person nearly every time I come to clinic.*

In addition, the person separation index of 4.14 indicated that the Korean-LSQ items separated the 125

participants into 5 to 6 statistically distinct satisfaction levels, suggesting the patient's well-differentiated satisfaction levels. Person reliability (0.94) confirmed the high reliability of the Korean-LSQ items. Item separation and reliability indices were estimated as 6.52 and 0.98, respectively, supporting that the item's discrimination power is excellent (Supplementary Table 3).

Testing of each subscale for fit with the Rasch model

Following initial analysis for all 45 items, Rasch PCA on item residuals was conducted in each subscale of Koren-LSQ. Most subscales satisfied the criterion of unidimensionality (explained variance: 41.4-58.3%, eigenvalue of 1st residual factor: 1.39-2.17) except 'Technical competence' (explained variance: 38.6%, eigenvalue of 1st residual factor: 1.88). (Table 3). Any evidence of local dependence was not observed in other subdomains except 'General satisfaction' with a magnitude of standardised Rasch residual correlations around 0.7: Item 5 with Items 37 and 13 (-0.72 and -0.68, respectively) (Supplementary Table 4).

Five items deviating from the model with both infit and outfit MnSq greater than 1.50 in the initial analysis were still out of range for infit or outfit MnSq in the analysis of each subscale (Table 4): Item 28 in 'Information,' Item 10 in 'Empathy,' Item 2 in 'Technical competence,' Item 1 in 'Attitude,' Item 44 in 'Access & continuity.' These all items produced acceptable PtMea correlations greater than 0.3 in the analysis of each subscale.

Next, in each subscale, DIF logit scores are compared for each item between groups of males and

females. As a result, most subscales showed that all items in the scale had no DIF in the patient's satisfaction level except two items among 45 items; Item 34: Prescriptions for new tablets are given without any explanation. (p = 0.003) in 'Information' and Item 41: Sometimes the person I see in clinic is too busy to spend enough time with me. (p = 0.010) in 'Attitude' (Supplementary Table 5).

Finally, Rasch rating scale functioning analysis in each subscale revealed that most distributions of the observed frequencies were negatively skewed; only 2-5% of the patients in the first category, while 28-48% of the patients in the fourth category and 21-43% of patients in the fifth category. In all subscales, outfit MnSq of each rating category was less than 2.0 except the first category. Disordering of thresholds (structural calibration) was detected in three subscales ('Information,' 'Technical competence,' and 'Attitude') where the threshold of 'not sure' is reversed with an adjacent category 'agree' or 'disagree.' However, collapsing adjacent categories is viewed as unnecessary because the average measure of each rating category increases as the rating value increases (Supplementary Table 6).

Testing the overall scale using domain scores (testlets)

Following Rasch analysis in each subscale, the overall scale utilizing subscale scores (testlets) was shown to fit the Rasch model. PCA based on the residuals revealed that the Rasch testlet model explained 71.5% of the variance, and the first contrast explained 8.4 9.1% of the variance (eigenvalue = 1.92 1.95), thereby supporting a robust unidimensional nature of the Korean-LSQ (Table 3). Infit and outfit MnSq values were 0.66 to 1.49 and 0.66 to 1.45, respectively, suggesting an acceptable model fit. PtMea correlations

were between 0.79 to 0.84, supporting an acceptable fit to the Rasch testlet model. In addition, the person separation index of 9.91 indicated that the Korean-LSQ items separated the 125 participants into 13 or 14 strata, indicating the patient's well-differentiated satisfaction levels. Person reliability (0.99) confirmed the high reliability of the Korean-LSQ subscales. Item separation and reliability indices were estimated as 2.91 and 0.98, respectively, supporting high confidence in the item's discrimination power (Table 4).

DISCUSSION

This study generated a valid version of the LSQ to assess the satisfaction with care in patients with RA in South Korea. In the first analysis, five Items (out of 45) exhibited lack of fit to the model with infit and outfit > 1.50. However, when the LSQ was analysed as a 6-subscale questionnaire, it displayed good fit to the model.

Current treatment recommendations for RA include shared decisions between patients and rheumatologists as an overarching principle (1, 2). In terms of shared decision-making process, satisfaction with care is important as it is likely to be associated with adherence to treatments and self-management activities (44). Recent studies have shown that satisfaction with care and adherence to treatment were highly associated with likelihood of achieving low disease activity or remission (37). Also, patient satisfaction has been shown to be associated with tapering glucocorticoids in patient with RA(45). The Korean LSQ would help to assess different aspects of satisfaction with care in patients with RA. Tools for assessing different aspects of patient satisfaction are scarce and different studies assess patients' satisfaction differently, some asking only one or two questions.

The Korean-LSQ is a valid and reliable tool for measuring satisfaction with care among Korean patients with RA; however, this study has several limitations. First, the study population is not a random sample, so selection bias cannot be ruled out. However, to reduce the bias, all consented patients were included consecutively in the study according to the inclusion and exclusion criteria. Second, not all individual items did fit well, but subscales (as 'testlets') of the Korean-LSQ supported an acceptable fit to the Rasch model. Rasch PCA based on subscale also revealed a robust unidimensional nature of the Korean-LSQ. Third, only internal validity and test-retest reliability were assessed in this study. External validity, for example, comparisons with other outcomes, would have added another confidence level. Finally, satisfaction may depend on the patient's cultural background. The Korean-LSQ was adapted to the Korean language and culture in the process of cross-cultural adaptation. However, some issues in cross-cultural adaptation process were due to differences in the style of formulating questionnaire items in English and Korean. In Korean, the passive voice is infrequently used and discouraged because of the uncertainty of the doer. The expert committee discussed and solved the problems by finding Korean equivalents that would be comprehensible and accurate from a medical perspective (Supplementary Table 2).

Our study was based on the standardised guidelines for cross-cultural adaptation of PRO measures (46). Furthermore, several tests of validity and reliability were conducted to ensure robust conclusions. Finally, a valid Korean-LSQ that could assess the patients' satisfaction of Korean patients with RA was successfully generated. This will be a useful tool to understand RA patients' satisfaction around aspects of their care, and to evaluate outcomes in clinical studies.

In conclusion, a thorough validation process has established the Korean-LSQ as a valid and reliable tool. Therefore, the test provides an accurate measure of patient satisfaction on care for Korean patients with RA. This tool can help to assess patients' satisfaction in clinical practice.

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Table 1. Baseline characteristics of study population (n = 125)

Variables	N (SD) or N (%)
Demographics	
Age (year)	49.0 (37.0 - 57.0)
Female	103 (82.4)
Disease duration (year)	2.5 (1.2 - 3.8)
Education duration (year)	12.0 (12.0 - 16.0)
Employed	76 (60.8)
Regular exercise	46 (36.8)
Smoking (n = 124)	
Non-smoker	94 (75.8)
Previous smoker	15 (12.1)
Current smoker	15 (12.1)
Disease status	
DAS28-ESR	3.2 (2.5 - 4.6)
DAS28-CRP	3.0 (2.2 - 3.9)
Patient GH VAS (mm)	40.0 (20.0 - 50.0)
Physician GH VAS (mm)	15.0 (5.0 - 30.0)
Pain VAS (mm)	30.0 (20.0 - 50.0)
Sleep disturbance VAS (mm)	10.0 (0.0 - 50.0)
Fatigue VAS (mm)	30.0 (0.0 - 50.0)
HAQ-DI (n = 124)	0.4 (0.0 - 0.9)
EQ-5D	0.8 (0.8 - 0.9)
Medication	
Methotrexate	100 (80.0)
Corticosteroid	100 (80.0)
Biologic DMARDs	15 (12.0)

Categorical data were presented by 'frequency (%)', and continuous data were presented by 'median (Q_1 - Q_3; IQR, interquartile range)'.

DAS28-ESR, disease activity score in 28 joints with erythrocyte sedimentation rate; DAS28-CRP, disease activity score in 28 joints with C-reactive protein; GH, General health; VAS, visual analogue scale; HAQ-DI, health assessment questionnaires-disability index; EQ-5D: EuroQol-5 dimension; DMARDs, disease-modifying anti-rheumatic drugs.

Table 2. Descriptive statistics, internal consistency, and test-retest reliability

	Score					Floor effect	Ceiling effect	ICR (α)	ICC (95% CI)
	Min	Q_1	Median	Q_3	Max	(%)	(%)		
General satisfaction	2.00	3.33	3.67	4.00	5.00	0.00	5.60	0.58	0.74 (0.64 to 0.81)
Information	1.67	3.50	3.83	4.00	5.00	0.00	2.40	0.84	0.79 (0.70 to 0.85)
Empathy	2.13	3.25	3.75	4.00	5.00	0.00	1.60	0.72	0.77 (0.68 to 0.84)
Technical competence	2.75	3.88	4.25	4.63	5.00	0.00	8.80	0.81	0.71 (0.60 to 0.79)
Attitude	1.83	3.50	3.83	4.17	5.00	0.00	5.60	0.67	0.79 (0.71 to 0.85)
Access & continuity	2.00	3.13	3.50	4.00	5.00	0.00	3.20	0.75	0.82 (0.75 to 0.87)
Overall domains*	2.22	3.51	3.81	4.09	4.90	0.00	0.00	0.90**	0.89 (0.83 to 0.92)

* The satisfaction score in overall domains is calculated as the mean of subscale scores.

** Cronbach's α for six subscale scores is 0.90, whereas 0.94 for all single 45 items in the whole domain.

Min, minimum; Q_1, 1st quantile; Q_3, 3rd quantile; Max, maximum; ICR, internal consistency reliability; α, Cronbach's alpha; ICC, intra-class correlation coefficients (excellent, >0.75; good, 0.6-0.75; fair, 0.4-0.6; poor, <0.4); CI, confidence interval.

Table 3. Rasch principle component analysis in each subscale of Korean-LSQ

Subscale	Variance explained	Unexplained variance	First contrast explained variance	First contrast eigenvalue
General satisfaction	57.8%	42.2%	28.0%	1.99
Information	41.4%	58.6%	10.6%	2.17
Empathy	45.7%	54.3%	11.9%	1.76
Technical competence	38.6%	61.4%	14.5%	1.88
Attitude	47.1%	52.9%	12.2%	1.39
Access & continuity	58.3%	41.7%	10.4%	1.99
Rasch testlet analysis (using subscale scores)	71.5%	28.5%	9.1%	1.92

Table 4. Rasch model analyses of Korean-LSQ

Item	Measure	Mean square		Point measure correlation	Rasch separation		Rasch reliability	
		Infit	Outfit		Person	Item	Person	Item
General satisfaction (3 items)								
5	1.30	1.10	1.16	0.74	1.28	6.58	0.62	0.98
13	-1.16	0.98	0.84	0.68				
37	-0.14	0.90	0.86	0.71				
Information (12 items)								
4	-0.42	1.41	1.40	0.47	2.34	5.21	0.85	0.96
6	0.81	0.99	1.01	0.59				
7	-0.40	1.32	1.17	0.48				
8	0.25	1.34	1.32	0.55				
11	0.45	0.73	0.69	0.66				
15	-0.36	1.05	0.92	0.53				
16	-0.83	0.72	0.70	0.54				
23	0.05	0.70	0.71	0.65				
28	1.10	**1.61**	**2.07**	0.37				
34	-1.09	0.88	0.76	0.55				
35	-0.09	1.02	0.98	0.54				
42	0.52	0.72	0.75	0.64				
Empathy (8 items)								
3	1.28	1.14	1.18	0.56	1.59	6.91	0.72	0.98
10	0.59	**1.87**	**2.26**	0.32				
17	-0.72	0.80	0.77	0.53				
18	0.46	0.84	0.93	0.61				
24	-1.33	0.84	0.78	0.54				
25	-0.32	0.79	0.87	0.59				
30	0.60	0.93	0.95	0.64				
32	-0.56	0.59	0.58	0.56				
Technical competence (8 items)								
2	0.32	**1.57**	1.37	0.61	1.82	4.06	0.77	0.94
9	0.08	0.85	0.72	0.66				
21	-0.35	1.15	0.94	0.59				

22	-0.69	1.19	1.02	0.57				
27	-0.80	0.70	0.63	0.62				
33	0.60	0.94	1.05	0.59				
39	-0.25	1.03	0.93	0.62				
40	1.08	1.26	**1.65**	0.58				
Attitude (6 items)								
1	-1.61	**2.36**	**2.26**	0.34	1.38	6.76	0.66	0.98
12	0.36	0.86	0.82	0.61				
20	-0.03	0.74	0.80	0.58				
26	0.37	1.12	1.14	0.55				
41	-0.24	0.94	0.92	0.61				
45	1.15	0.87	0.86	0.68				
Access & continuity (8 items)								
14	0.81	0.78	0.76	0.72	1.87	9.38	0.78	0.99
19	-0.28	1.05	1.14	0.52				
29	0.77	0.70	0.69	0.73				
31	0.96	0.83	0.84	0.70				
36	0.91	0.99	0.98	0.66				
38	-2.25	1.21	**1.91**	**0.26**				
43	0.56	1.07	1.13	0.61				
44	-1.49	**1.64**	**1.52**	0.32				
Rasch testlet analysis (using 6 subscale scores)								
General satisfaction	-0.05	0.66	0.66	0.81	9.91	2.91	0.99	0.98
Information	-0.16	1.44	1.42	0.84				
Empathy	0.22	1.06	1.06	0.82				
Technical competence	-0.13	1.10	1.14	0.80				
Attitude	-0.08	0.98	1.00	0.81				
Access & continuity	0.25	1.49	1.45	0.79				