

Research paper

Cross-cultural adaptation of the US consumer form of the short Primary Care Assessment Tool (PCAT): the Korean consumer form of the short PCAT (KC PCAT) and the Korean standard form of the short PCAT (KS PCAT)

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ABSTRACT

Background It is well known that countries with well-structured primary care have better health outcomes, better health equity and reduced health-care costs. This study aimed to culturally modify and validate the US consumer form of the short Primary Care Assessment Tool (PCAT) in primary care in the Republic of Korea (hereafter referred to as Korea).

Method The Korean consumer form of the short PCAT (KC PCAT) was cross-culturally modified from the original version using a standardised transcultural adaptation method. A pre-test version of the KC PCAT was formulated by replacement of four items and modification of a further four items from the 37 items of the original consumer form of the short PCAT at face value evaluation meetings. Pilot testing was done with a convenience sample of 15 responders at two different sites. Test–retest showed high reliability. To validate the KC PCAT, 606 clients participated in a survey carried out in Korea between February and May 2006. Internal consistency reliability, test–retest reliability and factor analysis were conducted in order to test validity.

Results Psychometric testing was carried out on 37 items of the KC PCAT to make the KS PCAT which

has 30 items and has seven principal domains: first contact utilisation, first contact accessibility, ongoing accountable care (ongoing care and coordinated rapport care), integrated care (patient-centred care with integration between primary and specialty care or between different specialties), comprehensive care, community-oriented care and culturally-oriented care. Component factors of the verified KS PCAT explained 58.28% of the total variance in the total item scores of primary care.

Conclusions The verified KS PCAT has been characterised by the seven classic domains of primary care with minor modifications. This may provide clues concerning differences in expectations for primary care in the Korean population as compared with that of the US. The KS PCAT is a reliable and valid tool for the evaluation of the quality of primary care in Korea. It will be used to identify any aspects of primary care linked to better or worse health outcomes, and to provide evidence-based evaluations of or recommendations for Korean healthcare policy.

Keywords: cross-cultural adaptation, Korean Standard Primary Care Assessment Tool, Primary Care Assessment Tool, quality of primary care

How this fits in with quality in primary care?

What do we know?

Previously adapted and validated forms of the Spanish version and Korean versions of the Primary Care Assessment Tool (PCAT) will faithfully evaluate the quality of primary care in those countries because they are reported in peer-reviewed journals.

What does this paper add?

This is a cross-cultural adaptation and validation study of the US consumer short form of the PCAT. This study presents a novel tool, the Korean Standard (KS) PCAT, with comparisons of previously validated Spanish and Korean versions. The results of the study suggest that previously reported cross-cultural PCAT versions may not accurately estimate the quality of primary care in their own countries. The novel KS PCAT may be a valuable tool to identify the quality of primary care in Korea, to understand how Koreans meet their primary care needs and in what primary care domains, to explore aspects of Korean primary care linked to better or worse health outcomes and to inform evidence-based evaluations of or recommendations for Korean healthcare policy addressing primary care.

Introduction

Countries with a strong primary care system have better health outcomes, improved equity in health status and reduced total costs compared with those with a weak primary care system.¹ Primary care is very important in optimising the health of populations and minimising disparities across population subgroups.² The Institute of Medicine (IOM) in 1978 defined primary care as offering accessibility, comprehensiveness, coordination, continuity, and accountability³ and redefined the characteristics of primary care as:

the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and the community.⁴

To evaluate the performance of primary care services, several tools have been developed: the Component of Primary Care Index (CPCI);⁵ the Primary Care Assessment Survey (PCAS);⁶ and the Primary Care Assessment Tool (PCAT).^{7,8} Their main components are different from each other: comprehensiveness of care, accumulated knowledge, interpersonal communication and trust in the CPCI;⁹ 11 summary scales of accessibility (organisational, financial), continuity (longitudinal, visit-based), comprehensiveness (contextual knowledge of patient, preventive counselling), integration, clinical interaction (clinician–patient communication, thoroughness of physical examinations), interpersonal treatment and trust in the PCAS;⁶ while four core features (first contact care, longitudinal care, comprehensive care and coordinated care) and three ancillary features (family/patient-centred care,

community-oriented care and culture-oriented care) were included in the PCAT.⁸ Even though the concept of four core and three ancillary domains of primary care was agreed by the committee of nine experts in the USA,⁸

The PCAT was developed in three versions – the consumer, facility and provider versions.¹⁰ The evaluation of primary care performance in Korea is necessary not only for the improvement of health outcomes, health equity and moderating total health costs but also for developing evidence-based health-related public policies. The original consumer version has both short and extended forms. The short form of the consumer version has been validated and used in the USA.⁸ It has also been cross-culturally adapted and validated in Brazil,¹¹ Canada,¹² Spain¹³ and Korea.¹⁴

The Korean consumer form of the short Primary Care Assessment Tool (KC PCAT), which is a cross-culturally adapted form of the consumer version of the short PCAT, and the Korean standard form (the KS PCAT), which is the verified form of the KC PCAT based on Korean experiences of primary care, have been studied since 2006. The KC PCAT has as many items as the original consumer form of short PCAT, and the verified KS PCAT has the seven characteristic domains of primary care with only minor modifications and covers the original, classic concept of primary care.^{3,4} Other researchers published a Korean Primary Care Assessment Tool (KPCAT)¹⁴ in 2009 as a cross-cultural adaptation study of the original PCAT and also published the concept of primary care in Korea,¹⁵ which neglected the concept of culturally-oriented care. This study presents the KS PCAT and compares the original PCAT, the KS PCAT and the KPCAT.

Methods

The study used a cross-sectional design. Variance and sample size were estimated in two ways. The first was by estimation from the available data. A previous study showed that 300 per group was the minimum sample size necessary for validating the PCAT.⁸ The second estimate was reached by using a more conservative approach. Sample size is dependent upon alpha value, beta value, power, variance and meaningful difference.¹⁶ Using a confidence interval of 95%, alpha error 0.05, power 0.955 or 0.9, beta error 0.045 or 0.1 and meaningful difference 0.5 or 0.44 showed sample sizes of 292 or 296 per group.¹⁷ The study has a power of 0.9, alpha of 0.05 and true difference of means 0.265.¹⁷

The study was approved by the Human Subjects Research Education Board, Johns Hopkins University Bloomberg School of Public Health.

Developing the Korean consumer form of Primary Care Assessment Tool

In 1993, Guillemin and colleagues proposed guidelines for cross-cultural adaptation of measures. After reviewing 273 studies, they applied their guidelines to 17 cross-cultural adaptation studies, and found that the guidelines can be summarised into five categories: forward translation; back translation; committee review; pilot testing; and weight of scores (weight of scores may sometimes not be necessary).¹⁸ This study followed their recommendations.

Forward translation of the PCAT

Two professional translators independently performed the forward translation of the PCAT into Korean. They were a clinician and a behavioural scientist and had Korean as their mother tongue. The translation maintained the intent rather than the literal meaning of the original questions.

Committee review

After translation of the original PCAT, KC PCAT developing committee members made constructive recommendations for clarity, generalisability, validity, accuracy and adequacy of the translated KC PCAT. At face value evaluation meetings, the pre-test version of the KC PCAT was made by replacement of four items and modification of a further four items from the 37 items of the original consumer form of short PCAT.

Four items of the PCAT were replaced with extended items in the KC PCAT.

- 1 Item 8 (C3) was replaced with C1. In the current Korean primary care system, there are no patient waiting lists and all patients can be treated on the day of visiting the primary care clinic; therefore, C3 'When your primary care physician (PCP) is open and you get sick, would someone from there see you the same day?' was replaced with C1 'Is your PCP open on Saturday or Sunday?'
- 2 Item 9 (C7) was replaced with C2. There is no experience of night emergency care in Korea, so C7 'When your PCP is closed and you get sick during the night, would someone from there see you that night?' was replaced with C2 'Is your PCP open on at least some weekday evenings until 8 pm?'
- 3 Item 15 (D9) was replaced with D12. The adaptation committee had difficulty with a cross-cultural adaptation of D9 'Does your PCP know what problems are most important to you?' so it was replaced with D12 'Would your PCP help you if you had trouble getting treatments or paying for medicines you needed?'. In Korea, if a PCP has known a patient for over several years, the PCP knows the patient's economic and personal conditions. When patients are in economic distress most Korean PCPs will usually waive or discount patient co-payments. This situation is different from the illegal action of some medical institutions which choose not to receive co-payments to seduce patients to their institutions.
- 4 Item 26 (G6) was replaced with G19. Birth-control focused 'family planning' is inadequate in Korea, which has a very low birth rate, so G6 'Provide family planning or birth control methods' was replaced with G19 'Does your PCP provide a smoking or alcohol counselling service?'

Four items of the PCAT were culturally modified in the KC PCAT:

- 1 Item 13 (D4). The description of D4 was modified from 'If you have a question, can you call and talk to the doctor or nurse who knows you better?' to 'When you have a question, if you call and talk to the doctor, does the doctor know your health situations without consulting your chart?' (In Korea, if a patient's condition is known to his/her PCP by the computerised medical record in the clinic, it is an accessibility issue. However, if the condition is already in the PCP's brain, it may be a longitudinal care issue.)
- 2 Item 17 (B3). The description of B3 was modified from 'When you have to see a specialist, does your PCP have to approve or give you a referral?' to 'When you have to see a specialist, does your PCP help you make an appointment?' because the former is almost always possible in the Korean situation while the latter is not always possible.

- 3 Item 22 (F3). The description of F3 was modified from ‘When you go to your doctor is your record always available?’ to ‘Do your records of treatment or laboratory results in the other clinics or your specific allergies exist in your PCP’s medical record?’ because the former is almost always possible in Korea because of computerised medical recording systems while the latter is not, and the latter is more specifically defined than the former. (In Korea, patients can find out whether their lab results and/or allergy information are in the clinic computer when the PCP is explaining their results to them.)
- 4 Item 40 (K2). The description of K2 was modified from ‘Would you recommend your PCP to someone who does not speak English well?’ to ‘Would you recommend your PCP to someone who does not speak Korean well, or to a disabled person?’ because Koreans do not speak English as their mother tongue.

Back translation

Two back translations and the original questionnaires were included in the back translated material of the KC PCAT, which were reviewed by all committee members. The back-translated material and the committee’s comments, justifications and resolutions for modifications for cross-cultural adaptation were discussed with the authors of the PCAT.

Development of the pre-validation KC PCAT version

Testing with a convenience sample of 15 clients and re-testing after a two-week interval is frequently used as a pre-validation of cross-cultural studies.^{19–21} To develop and finalise the pre-validation KC PCAT version with 37 quality-related questions, a group of 15 patients was convened at two different places in Korea in February 2006. These consumers (patients) did not know of the PCAT or what primary care means. In the first test, a pre-survey evaluation of the KC PCAT was made: the study group was debriefed, being interviewed to identify any problems in wording or understanding of the KC PCAT.²² Following the group’s recommendations, several changes were made to wordings of questions and answers by the development committee in order to refine the KC PCAT version. These 15 patients completed the survey again two weeks after its initial administration.

Validating study

In the public healthcare sector of Korea in 2006, there were 74 community health centres (CHCs) in metro-

politan cities, 88 in medium-sized cities and 83 in rural areas. Also, some CHCs had two or three sub-CHCs in nearby geographical areas. From each CHC or sub-CHC two consumers (patients or clients) were randomly selected. Furthermore, two consumers were randomly selected from the private healthcare clinics for internal medicine, general surgery, family medicine, obstetrics and gynaecology or general medicine in the same geographical regions as the selected public healthcare centres. From February 2006 through to May 2006, 1294 patients were contacted to join the validating study. Patients (consumers or clients) were eligible if they were above 17 years of age and were visitors to various kinds of specialty or general clinics which participated in first-contact care. The KC PCAT, which was designed for postal survey, was distributed by post to randomly selected patients. The original PCAT was designed for telephone survey, which has the disadvantages of excluding people without telephones, higher rates of non-response or non-completion rate and high interviewer bias.¹⁰ However, in Korea, the response rate to mail surveys is very low. Two government-supported mail surveys of pharmaceutical companies showed response rates of 32.7% (54/165) in 2002 and of 15.8% (26/165) in 2003.²³ To enhance the response rate in our survey, the returned mails were checked on a daily basis, and late responders were contacted by telephone (if their telephone numbers had been identified after the random selection) to ask whether they had any difficulties in understanding the KC PCAT.

The Likert responses were tested using Pearson’s bivariate correlations for item–scale convergence, by comparing every coefficient of an item between its domain scale and other domains for item-discriminatory validity, by using Levene’s homogeneity test for equal item variance, by calculating the range of correlations for item–scale correlation and using domain–total Cronbach’s coefficient alpha for the domain–total correlation.²⁴

Data analysis was performed using SPSS 15.0 for windows. Missing data can be treated mainly in two ways – by disregarding individuals with missing covariates and by replacing missing data with imputation when missing data are small in number and the overall covariance structure of the data can be preserved.²⁵ In this study, missing data and ‘Don’t know’ data were given a middle score of 2.5 (the middle score between 1 and 4 is 2.5), and added to the analysis; this method was used for the validation of the original PCAT.⁸ Three responders, one in the public sector and two in the private sector, who ticked more than ten ‘Don’t knows’ were excluded and treated as non-responders.

Results

Characteristics of subjects and response rate

The response rate was 606/1294 (46.8%); 228 male (37.6%) and 378 female (62.4%) patients participated in the study. The male:female population ratio of those older than 14 years of age in Korea in 2006 was 1:1.²⁶ The mean age in Korea in 2006 was 35.4 years,²⁶ compared with the mean sample age of 46.5 ± 14.4 , a difference which may have been caused by the inclusion criteria. The percentage of households which had an income of less than US\$12 000 was 14.8% of the sample (vs 15.3% of the Korean population in 2005 to 2006), and 58.8% (vs 66.8%) had an income of more than US\$24 000, which was a little lower than that of the population.²⁶ The population of Korea is not homogeneously distributed: 9.3 million (20.3%) live in rural areas and 36.6 million (79.7%) live in cities.²⁶ In the sample, 200 rural residents (33% out of 606 subjects) were included, so the rural population was over-sampled in the study (Table 1).

Reliability testing

Test–retest results of the 15 patients convened at two different places in Korea in 2006 are shown in Table 2. Mean differences, correlation coefficients and Cronbach's coefficient alpha were used to ensure internal consistency and the test–retest reliability of the KC PCAT. All paired domains showed no significant mean differences and showed significant correlations. In all domains, except for the domain of culture-oriented care, Cronbach's coefficient alpha was greater than 0.70, which is the minimal acceptable score to be reliable as a coherent domain.⁸ Even though Cronbach's alpha of the domain of culturally competent care (culture-oriented care) was 0.69, less than the criterion of 0.70, the average intra-class correlation of 0.69 was significant ($F(14, 14)=3.23, p=0.02$) and the standardised Cronbach's alpha value was 0.81. Therefore the domain of culturally competent care was included for the KS PCAT.^{27,28}

Factor analysis

Principal component factor analysis with Varimax rotation on data from 606 respondents was used to make domains and identify primary care components

Table 1 Sociodemographic characteristics of sampled subjects in the Republic of Korea 2006

	Sampled subjects ($n=606$)	Korean population ²⁶
Gender		
Male	228 (37.6%)	24.5 million (>14-year-old)
Female	378 (62.4%)	22.5 million (>14-year-old)
Age \pm SD (Mean \pm range)	46.5 ± 14.4 (19–87)	36.5 years old
Family size (range)	2.98 ± 1.41 (1–9)	3.69 persons
Residence		
City	406 (67%)	31.6 million (79.7%)
Rural area	200 (33%)	9.3 million (20.3%)
Socioeconomic status: household income		
Below US\$12 000	90 (14.8%)	22.29%
Above US\$12 000 – below US\$24 000	120 (19.8%)	24.09%
Above US\$24 000 – below US\$36 000	127 (21.0%)	21.49%
Above US\$36 000	229 (37.8%)	32.14%
Missing	40 (6.6%)	
Health insurance cover for the last three years ³³		
Without cover for more than one month during last 36 months	160 (26.4%) per 3 years	10.5% per year
Covered by insurance for all three years (36 months)	439 (72.4%) per 3 years	89.5% per year
Missing	7 (1.2%)	

Table 2 Reliability of test–retest analysis ($n=15$)

Seven main and ten sub-main domains	Number of items	Cronbach's alpha	Standardised Cronbach's alpha	Pearson's correlation test		Paired <i>t</i> -test		Significance (2-tailed)	
				Correlation coefficient	Significance	Mean	Standard deviation		<i>T</i> -value
First contact utilisation	3	0.82	0.86	0.75	0.001	0.04	0.63	0.27	0.79
First contact accessibility	3	0.76	0.78	0.63	0.011	-0.14	0.66	-0.84	0.41
Ongoing-accountable care (ongoing care and coordinated rapport care)	7	0.90	0.91	0.83	0.001	-0.09	0.52	-0.67	0.51
Integrated care (patient-centered care with integration between primary and specialty care or between different specialties)	4	0.85	0.86	0.75	0.001	-0.03	0.56	-0.17	0.87
Comprehensive care	6	0.88	0.88	0.78	0.001	-0.12	0.52	-0.88	0.40
Community-oriented care	4	0.80	0.81	0.69	0.005	0.21	0.65	1.24	0.23
Culturally-oriented care	3	0.69	0.81	0.68	0.005	0.20	0.79	0.98	0.35

of the KS PCAT. A meaningful questionnaire item should have greater than 0.35 factor loadings and should not have secondary loadings greater than 0.35, and all the separate domains of the verified KS PCAT should have at least three meaningful questions.⁸ Principal component factor analysis led to removal of variables 12, 18, 19, 21, 28, 29 and 34 from the KC PCAT, and seven common components were prepared by Varimax rotation in the refined KS PCAT. The variables 10, 11, 16, 17, 32, 33 and 25 showed high scores as Varimax rotated factors in different domains from those of the original PCAT (Table 3). The remaining factors or 30 items explained 58.28% of the variance in components.

Tests of Likert scaled components using verified KS PCAT

Test results for the five assumptions of Likert scaling were satisfied and are presented in Table 4. Each item should have a minimum correlation of 0.30 with its own scale (domain) to have sufficient correlation with the other items and with total scale items.⁸ Pearson's bivariate correlations between items and their domain scales ranged from 0.58 to 0.88, as seen in the first column of Table 4. (Assumption 1 of item-convergent validity.)

Each item satisfied discrimination validity as every coefficient between an item and its own domain scale was greater than the coefficients between the item and its other domains, which indicates 100% success of all the items for their proper inclusion in the KS PCAT domain (scale).⁸ (Assumption 2 of item-discrimination validity.)

All items of seven domains of the KS PCAT showed equal variance by Levene's homogeneity test except for the items in comprehensive care, which were tested on the condition of equal variances not assumed and the results were $t=-0.18$, $p=0.86$, which are not seen in Table 4.^{29,30} (Assumption 3 of equal item variance.)

Equal item-scale correlation was shown in column one of Table 4 as the range of correlations. The range of correlations is markedly narrow, from 0.06 (culturally-oriented care, $0.88-0.82=0.06$) to 0.20 (comprehensive care, $0.78-0.58=0.20$), which was narrower than in the original PCAT which showed a difference of item-scale correlation ranging from 0.17 to 0.38.⁸ (Assumption 4 of equal item-scale correlation.)

All seven domains of primary care exceeded the required minimum item-scale (domain-total) correlation of 0.70 as the results of Cronbach's alpha coefficients ranged between 0.74 and 0.92.⁸ (Assumption 5 of domain-total correlation.)

Interfactor correlation of the verified KS PCAT

All interfactor correlations were positive, which indicated the complementary nature of each primary care domain for the quality of primary care. The interfactor correlations ranged between 0.19 and 0.61, which showed that each primary care domain has a significant unique characteristic and contribution to add to the quality of primary care.

Descriptive features of the verified KS PCAT: central tendency, and homogeneity

In the original PCAT, KC PCAT and KS PCAT, a four-level Likert scale was used. Each score of 4, 3, 2 and 1 stands for very satisfactory, satisfactory, unsatisfactory and very unsatisfactory respectively. The scales of the verified KS PCAT were analysed by mean, standard deviation, percentiles, skewness and kurtosis (Table 5). Only three (first contact utilisation, comprehensive care and culturally-oriented care) among the seven domains showed mean scores above 3, which indicates satisfactory.

The percentage of respondents scoring at the floor (the lowest 25%) or ceiling (the highest 25%) was acceptably low for all scales except for the three domains of first contact accessibility, community-oriented care and culturally-oriented care: more than 35% of clients were distributed at floor level and about 65% experienced less than average quality scores in first contact accessibility and community-oriented care, which showed clients' poor experiences within these two domains; more than 35% of clients were distributed at ceiling level and about 80% experienced more than average quality scores in culturally-oriented care, which indicated that most clients were satisfied with primary care service in this domain.

Discussion

There are four common types of cross-cultural studies and their characteristics are different from each other: generalisability studies, which focus on the study of equivalence; psychological difference studies, which focus on openness to cross-cultural differences; theory driven studies, which focus on the relationship between cultural factors and behaviour; and external validation studies, which focus on understanding of cross-cultural differences.³¹ To develop an instrument which would measure, monitor and aid continuous improvement in Korean primary care, a cross-cultural adaptation study of the original PCAT needed to show

Table 3 Rotated component matrix: principal component factor analysis with Varimax rotation for the Korean consumer form of the Primary Care Assessment Tool (KC PCAT) in Korea 2006* (n=606)

Healthcare sectors	Seven major domains in the verified KS PCAT						
Seven main domains and ten sub-domains in the original English form of Primary Care Assessment Tool (PCAT) and in the pre-validation form of the Korean Standard Primary Care Assessment Tool (pre-validation KS PCAT)	First contact utilisation	First contact access	Ongoing-accountable care (ongoing care and coordinated rapport care)	Integrated care (patient-centred care with integration between primary and specialty or between different specialties)	Comprehensive care	Community-oriented care	Culturally-oriented care
B. First contact (utilisation)							
5. When you need a regular general check up, do you go to your PCP?	0.70						
6. When you have a new health problem, do you go to your PCP?	0.72						
7. When you have to see a specialist, does your PCP help you make an appointment?	0.47						
C. First contact (accessibility)							
8. Can you go there on Saturdays or Sundays?		0.71					
9. Can you go there on weekday evenings until 8 pm?		0.69					
10. When the office is open, can you get advice quickly over the phone?*			0.59				These two items were moved from the domain of 'First contact (accessibility)' in the KC PCAT to the combined domain of 'Ongoing-accountable care (ongoing care and coordinated rapport care)' in the verified KS PCAT
11. When the office is closed, is there a phone number you can call when you get sick?*			0.47				

Table 3 Continued

D. Ongoing care (longitudinality)				
12. When you go to see your PCP, do you see the same doctor or nurse?*	0.39	0.35	Deleted in the verified KS PCAT by the principal component analysis with Varimax rotation method	0.63
13. Does the doctor know your health situations without consulting your chart?				0.65
14. Does your doctor know you well as a person?				0.65
15. Would your PCP help you if you had trouble getting treatments or paying for medicines you needed?				0.64
E. Coordination between doctor and patient (patient–doctor rapport)				
16. Did your doctor discuss with you different places you could have gone to get help with that problem?			These two items were moved from the domain of ‘Coordination care’ between doctor and patient in the KC PCAT to the combined domain of ‘Ongoing-accountable care (ongoing care and coordinated rapport care)’ in the verified KS PCAT	0.66
17. Did your doctor or someone working with your doctor help you make the appointment for the visit?				0.60
18. Did your doctor write down any information for the specialist about the reason for the visit?*			Deleted in the verified KS PCAT by the principal component analysis with Varimax rotation method	0.47
19. After going to the specialist or special service, did your doctor talk with you about what happened at the visit?*				0.56
F. Coordination (information systems)				
20. When you go to your doctor do you bring any of your own medical records?				0.57

Table 3 Continued

28. Home safety, like getting and checking CO or smoke detectors and storing medicine safely**	Deleted in the verified KS PCAT by the analysis with Varimax rotation method	0.54	0.47
29. Ways to handle family conflicts that arise from time to time**	0.53	0.44	
30. Advice about appropriate exercise for you		0.66	
31. Checking on and discussing the medications you are taking		0.52	
I. Family/patient-centered care			
32. Does your doctor ask your ideas and questions when they are planning treatment/care for you or a family member?	0.47	These two items were moved from the domain of 'Family/patient-centered care' in the KC PCAT to the combined domain of 'Integrated care (patient-centered care with integration between primary and specialty care or between different specialties)' in the verified KS PCAT	
33. Has your doctor asked about illness or problem that might run in your family?	0.48		
34. Would your PCP meet with or talk over phones with members of your family if you thought it would be helpful**	Deleted in the verified KS PCAT by the analysis with Varimax rotation method	0.36	0.44
J. Community-orientated care			
35. Would anyone at doctor's office ever make home visits?			0.65
36. Does your doctor know about health problem of your neighbour?			0.77
37. How does doctor get opinions/ideas from people that will help them provide better health care?			0.63

Table 3 Continued

Healthcare sectors	Seven major domains in the verified KS PCAT						
Seven main domains and ten sub-domains in the original English form of Primary Care Assessment Tool (PCAT) and in the pre-validation form of the Korean Standard Primary Care Assessment Tool (pre-validation KS PCAT)	First contact utilisation	First contact access	Ongoing-care (ongoing care and coordinated rapport care)	Integrated care (patient-centred care with integration between primary and specialty or between different specialties)	Comprehensive care	Community-oriented care	Culturally-oriented care
38. Does your PCP survey and participate in the community to find out about health problems s/he should know about?						0.64	
K. Culturally competent care (culturally-oriented care)							0.66
39. Would you recommend your doctor to a friend or relatives?							0.71
40. Would you recommend your PCP to someone who does not speak Korean well or handicapped person?							0.75
41. Would you recommend your doctor to someone who uses folk medicine, such as herbs or homemade medicine, or has special beliefs about health care?	1.17	1.03	1.84	1.51	2.14	1.71	1.30
Initial Eigenvalue							

* Factors with a loading of less than 0.35 were not described for convenience

** Principal component factor analysis was used to validate the KC PCAT. After the Varimax rotation method, variables 12, 18, 19, 21, 28, 29 and 34 were removed from the verified KS PCAT because they had dual factors larger than 0.35

Table 4 Tests of Likert scaling assumptions using verified KS PCAT in Korea 2006 ($n=606$)

	Range of item-own-scale correlation (Assumption 1, 4)	Success rate (%) of item scaling tests (Assumption 2)	Measurements of equal item variance (Assumption 3)		Cronbach's alpha of domain-total scale correlation (Assumption 5)
			Levene's homogeneity	Significance	
First contact utilisation	0.72–0.85	18/18 (100%)	0.01	0.92	0.85
First contact accessibility	0.67–0.74	18/18 (100%)	0.18	0.67	0.74
Ongoing-accountable care (ongoing care and coordinated rapport care)	0.68–0.82	42/42 (100%)	1.10	0.29	0.90
Integrated care (patient-centered care with integration between primary and specialty or between different specialties)	0.70–0.78	24/24 (100%)	2.84	0.09	0.84
Comprehensive care	0.58–0.78	36/36 (100%)	10.30	0.001	0.87
Community-oriented care	0.68–0.86	24/24 (100%)	1.93	0.17	0.88
Culturally-oriented care	0.82–0.88	18/18 (100%)	0.21	0.65	0.92

Table 5 Descriptive features of the Korean Standard Primary Care Assessment Tool (KS PCAT) in the Republic of Korea 2006 (*n*=606)

	Mean domain score*	SD	25 percentile	50 percentile	75 percentile	Skewness	Kurtosis
First contact utilisation	3.16	0.69	2.67	3.17	3.67	-0.59	-0.20
First contact accessibility	2.16	0.81	1.50	2.00	2.67	0.38	-0.56
Ongoing-accountable care (ongoing care and coordinated rapport care)	2.67	0.77	2.14	2.71	3.29	-0.09	-0.79
Integrated care (patient-centred care with integration between primary and specialty care or between different specialties)	2.93	0.73	2.50	3.00	3.50	-0.40	-0.40
Comprehensive care	3.03	0.71	2.50	3.17	3.67	-0.45	-0.54
Community-oriented care	2.22	0.75	1.75	2.25	2.75	0.19	-0.58
Culturally-oriented care	3.13	0.80	2.67	3.00	4.00	-0.69	-0.16

* Mean score of every domain was calculated by sum of means of items in a domain divided by the number of items in each domain. For example, mean score of the domain of 'First contact care' (3.16) was calculated as $(v5+v6+v7)/3=(2.875+3.263+3.436)/3$

generalisability and external validation. Adaptation of the original PCAT to derive the KC PCAT was a generalisability study, and produced an internationally generalisable cross-cultural form of the consumer form of the short PCAT. Preparing the KS PCAT constituted an external validation study of the KC PCAT focused on the understanding of cross-cultural differences. The KS PCAT may not be internationally generalisable because of cultural modifications to the original PCAT or KC PCAT, but this study suggests domestic generalisability because it was based on Korean experiences of primary health care, and it can therefore help us to understand how Koreans meet their primary care needs and in what primary care domains, if any.

The KPCAT study reported in 2009 is a cross-cultural adaptation research of the original PCAT.¹⁴ However, it lacks both domestic generalisability and external validity. In terms of lacking domestic generalisability, the participants of the study were patients or clients who already had access to care, whereas only 30% of adults have a regular source of care in Korea.³² All the participants of the previous study were patients or clients of family medicine clinics; however, since 'only 7.9% of all clinic-based practitioners were family physicians',¹⁴ the study participants could not represent the total population who were treated in primary care clinics. Also, the study assumed nearly full

health insurance cover for all Koreans; however, about 10.5% of the total Korean population is temporarily uninsured (having more than one month of uninsured status in a year) because they cannot pay premiums over three months,³³ and 0.5% of the total population (44 000 families) do not have an electrical supply, a municipal water supply and possibly health accessibility.³⁴

As seen in Table 6, the KPCAT presents 'four ordinary scales (or domains)' of 'personalised care, coordinated function, comprehensiveness, family/community orientation', and the 'first contact' domain of five independent single items, which was arbitrarily developed and was substantiated neither by statistics nor by international views of primary care as a concept. Hence, KPCAT lacks two core features of longitudinal care and first contact care and one ancillary feature of family/patient-centred care or culturally-oriented care.

In Spain, another transcultural adaptation of the short consumer PCAT (ESCA 2006) provided a useful tool to evaluate both the core and the ancillary characteristics of primary care in a population health survey.²² However, in terms of cross-cultural adaptation of the adult form of PCAT, the study succeeded only in identifying first contact care and longitudinal care, failing to address the other two essential and the three ancillary features.

Table 6 Comparison of the items and domains among the original consumer form of the short Primary Care Assessment Tool (PCAT), the Korean Standard version of the short Primary Care Assessment Tool (KS PCAT) and the Korean version of the Primary Care Assessment Tool (KPCAT)

KC PCAT		KS PCAT		KPCAT**			
Major domain	Sub-domain	Included items	Major domain	Included items	Major domain	Included items	
First-contact care	Utilisation	5, 6, 7	First contact (FC) utilisation	5, 6, 7	FC care	1) FC utilisation 2) Facility accessibility 3) Cost 4) Demographic appropriateness 5) Basic health care	6 5 15 40 27
Ongoing care (longitudinality)	Accessibility	8, 9, 10, 11 12,* 13, 14, 15	First contact accessibility Ongoing-accountable care (ongoing care and coordinated rapport care)	8, 9, 25 10, 11, 13, 14, 15, 16, 17	Not available		
Coordinated care	Rapport between doctor and patient Integration between primary and specialty care	16, 17, 18,* 19* 20, 21,* 22	Integrated care (patient-centred care with integration between primary and specialty or between different specialties)	20, 22, 32, 33	Coordinated care		16, 17, 19
Family or patient centredness	Services available	32, 33, 34*	Comprehensive care	23, 24, 26, 27, 30, 31	Not available		
Comprehensive care	Services available	23, 24, 25, 26	Comprehensive care	23, 24, 26, 27, 30, 31	Comprehensive care		23, 26, 27, 31

Table 6 Continued

Original English version of the Primary Care Assessment Tool (KC PCAT)	The Korean Standard version of the short Primary Care Assessment Tool (KS PCAT)	Korean version of the Primary Care Assessment Tool (KPCAT)**				
Major domain	Sub-domain	Included items	Major domain	Included items	Major domain	Included items
	Services provided	27, 28,* 29,* 30, 31				
Community-oriented care		35, 36, 37, 38	Community-oriented care	35, 36, 37, 38	Family/community-oriented care	35, 36, 37, 38
Culturally-oriented care		39, 40, 41	Culturally-oriented care	39, 40, 41	Personalised care	22, 24, 39, 40, 41
Total number of items		37	Total number of items	30	Total number of items	21

* Items 12, 18, 19, 21, 28, 29 and 34 were removed from the verified KS PCAT because they had dual factors larger than 0.35

** Item numbers of the KPCAT were given the number of the item nearest in content/wording to the original PCAT or KC PACT

In contrast with these two cross-cultural PCAT adaptation studies, the validated KS PCAT has seven principal domains of primary care (Table 6). The results of the study may provide clues to the different expectations for primary care in the Korean population compared with that in the USA. The results can help us to understand how Koreans meet their primary care needs and in what primary care domains, as described below.

Two items of the original accessibility sub-domain of the 'first contact' domain (items 10 and 11) and two items of the 'rapport' sub-domain of the 'coordinated care' domain (items 16 and 17) were moved to the 'ongoing care' domain to form combined domains of 'ongoing-accountable care' (ongoing care and coordinated rapport care) in the revised KS PCAT. Two items of the 'integration between primary and specialty care' sub-domain of the 'coordinated' domain (items 20 and 22) and two items of the 'family/patient-centred' domain (items 32 and 33) were combined to form a single combined domain of 'integrated care' (patient-centred care with integration between primary and specialty or between different specialties).

Korean PCPs work together with specialists to deliver PCPs' seven primary care domains; this was the main reason that two sub-domains of 'first-contact care' became independent domains in the KS PCAT and there were also two combined domains of 'ongoing-accountable care' (ongoing care and coordinated rapport care) and of 'integrated care' (patient-centred care with integration between primary and specialty care or between different specialties). Patients in Korea fully understand this, function within this situation, and expressed it in the KS PCAT.

Item 25 (Does your PCP provide a sewing up service for a cut that needs stitches?) changed its domain from 'comprehensive care' (service availability) to 'first-contact care' (accessibility). This was the most problematic change in the KS PCAT. It is well known that comprehensive care includes minor surgical suture and common mental health problems. However, in a small country such as Korea, the international definition of comprehensive care can only be applied to hermit islands. A third of hospitals are within 20 minutes of each other and the teaching hospitals are within two hours of each other by car. Over 90% of PCPs in Korea are specialists, and they open their private clinics in the same building or in the same district, within seven minutes walk of each other. In the Korean context, many procedures that were included in the definition of comprehensive should be moved to the domain of 'first contact accessibility' where 'coordinated care between specialists for the patient, or integrated care' occurs. In the Korean situation, it could be said that the important issue is that suturing is provided in a primary care facility – whether in a comprehensive domain, a coordinated

domain or an access domain (either in a specific primary care facility or in a nearby primary care facility). Interestingly, the KPCAT study showed a similar result: the principal component analysis of 'Basic health care available?' was 'first-contact care' instead of 'comprehensive care'.

Deriving appropriate questions on accessibility is a challenge for primary care in Korea. For better evaluation of first-contact care (accessibility) in the KS PCAT, more items could be adapted from the extended version of the PCAT. Possible questions for adaptation might be: (C9) Do you have to wait more than 30 minutes before you are checked by the doctor?; (C10) Do you have to wait over 30 minutes or talk to more than three people to make an appointment with your doctor?; (C11) Is it difficult for you to get medical care from your doctor when you think it is needed?; and (C12) When you go to your doctor, does someone have to take time off work to take you there?

Limitations

The study has several weaknesses:

- 1 The questionnaire takes about 40 minutes to complete and, compared with usual questionnaires in Korea which can be done within 15 minutes, the KS PCAT can seem lengthy; this may affect client/patient attention causing information bias.
- 2 Ratings of the KS PCAT are subjective; even individuals who experience the same quality of care in a specific domain can rate it differently, and the scores can vary from individual to individual.
- 3 The demographic review of the enlisted clients shows that the study over-sampled women (62.4% vs 50%) and rural residents (33% vs 20.3%), and under-sampled high income groups (58.8% vs 66.8%) when compared with the reported Korean distribution. The sample may represent the true proportions of people who visit primary care clinics or it may have been biased compared with the Korean population.
- 4 In the validation process of the KS PCAT, the seven characteristic domains of the original PCAT changed: two sub-domains of first contact care became two independent domains; 'ongoing care' and a sub-domain of 'coordinated care' (rapport formation or data communication between patient and doctor) merged; and a sub-domain of 'coordinated care' (coordinated information) merged with the 'family' domain. The resultant seven domains of the KS PCAT may need further study to see whether or not these reflect primary health care in Korea.

- 5 Much of the health policy literature shows that improved quality of care in chronic illness is possible through the improvement of primary health-care delivery.^{35,36} In this context, items evaluating the primary care physician's involvement in educating long-term caregivers or family members should be included in a later version of the KS PCAT.
- 6 Primary care clinics have experienced a dramatic decline in their share of patient care in Korea since the implementation of Separation of Prescribing and Dispensing (SPD) by the government in 2000: the share of healthcare expenditure in primary care clinics was 35.5% in 2000, but it gradually declined after the implementation of SPD to 32.9% in 2001, 28.7% in 2003, 25.1% in 2007, 24.5% in 2008 and 22.1% in the first-half of 2010.³⁷ Primary care may have been changed since this validation study of the KS PCAT was conducted, thus requiring a further re-evaluation of the KS PCAT in this altered environment.
- 7 There is controversy around changing or combining domains or items. The PCAT is one of three tools to assess the quality of primary care represented in the IOM definition.^{3,4} So what is important is the idea represented in the IOM definition, not the expressed words or items in the tools. An item change or combining domains of the PCAT does not harm the idea of primary care service itself which is presented by the IOM definition, but only changes the domain field of the tools by which the specific idea (item service) is experienced by customers/clients. Even though we hope to keep an item or a domain as it is in its original form, item or even domain changes during the cross-cultural validation process are not uncommon.^{14,38,39}

Conclusion

Countries with a strong primary care system generally have better health outcomes. The quality of primary care can be evaluated by the PCAT. This study produces a cross-cultural adaptation and validation of the original US form of PCAT in the Republic of Korea to form the KS PCAT. We feel that the KS PCAT is a valuable tool for identifying the quality of primary care in Korea, for understanding how Koreans meet their primary care needs in various primary care domains, for exploring beneficial or hazardous components of primary care linked to better or worse health outcomes and for informing evidence-based evaluations of or recommendations for Korean public policies addressing health care.

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None.

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