Development and Validation of the Pharmaceutical Care Satisfaction Questionnaire

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The development and validation of a survey instrument to assess consumer satisfaction with pharmacy services is discussed. The Pharmaceutical Care Satisfaction Questionnaire (PCSQ) is a 30-item instrument administered by someone other than the pharmacist that uses a Likert scale to score respondents' answers. The PCSQ is written approximately at a seventh grade reading level. Following initial development, the PCSQ was administered to 360 consumers in ambulatory pharmacies and to 311 patients in a multicenter hyperlipidemia outcomes study. The Cronbach coefficient α was .94 for the consumer data, with a 64.8% variance accounted for by the 4-factor solution. A coefficient α of .84 was found on all 30 items in the hyperlipidemia study, with a variance of 63.78% in control patients and 60.16% in treatment patients. The PCSQ is easy to administer and score, with minimal cost. Unlike other satisfaction surveys, the PCSQ contains patient evaluations regarding outcomes of care. A primary limitation of the PCSQ is that it is a newly developed instrument that needs to be used in more studies to strengthen its validity.

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The focus of pharmacy services has expanded beyond the dispensing of medication to the provision of pharmaceutical care (assessment of drug regimens, development of care plans, and execution of follow-up evaluations).[1] It has become increasingly difficult for the pharmacist to quantify the value of his or her services. For pharmacists to have their services valued, they must document activities that illustrate their contribution to the desired patient outcomes. The lack of a widely adopted method of demonstrating the value of pharmaceutical care services has placed pharmacists at a disadvantage when requesting reimbursement for services.

A method for assessing the value of pharmaceutical care is the collection and analysis of data that focuses on outcomes. Outcomes have been conceptualized by Donabedian[2] as an essential component for assessing and ensuring the quality of healthcare. Patient outcomes are those changes in an individual's health or health-related behavior due to an intervention by a healthcare provider. The economic, clinical, and humanistic outcomes (ECHO) model for outcomes research divides outcomes into these 3 categories.[3] Most pharmacoeconomic studies have focused on the clinical and economic outcomes of pharmaceutical care rather than on the humanistic outcomes because of the subjective nature of the latter. However, Coons and Johnson[4] believe that humanistic outcomes are often a better reflection of how profoundly pharmacy services impact patient lives. One humanistic outcome they describe is patient satisfaction with pharmacy services.

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Patient satisfaction is a predictive measure of the probability that a patient will continue to use the services of a particular provider. In a competitive healthcare market, it is important that pharmacists provide competent services in a manner satisfactory to the consumer to ensure that patients will continue to seek their services.[5] Research[6] has shown that consumers often equate satisfaction with quality. According to Pascoe,[7] satisfaction is assumed to consist of a cognitive evaluation of and an emotional response to the structure, process, and outcomes of a system. With the rising cost of health insurance premiums, consumers are demanding quality care for the healthcare dollars they spend. The purpose of this study was to develop and validate an instrument to measure a patient's satisfaction with the care provided by the pharmacist with whom they have established an ongoing relationship. The Pharmaceutical Care Satisfaction Questionnaire (PCSQ) was designed to be (1) convenient to administer, (2) simple to score, (3) able to assess the proficiency of pharmacists in several aspects of pharmaceutical care, (4) adaptable to several ambulatory care settings, and (5) sensitive to patient care expectations.

··· LITERATURE REVIEW ···

Previous pharmacy service studies measuring patient satisfaction focused mainly on the structure (eg, parking spaces) and the process (eg, convenience of prescription filling) rather than on the outcomes (eg, the patient's satisfaction with care) of pharmacy services.[8] Patient satisfaction is an outcome measure, not a structure or process measure. Therefore, those studies failed to adequately measure patient satisfaction. Many may argue that the pharmacy satisfaction studies of Gagnon[8] and Baldwin et al[9] predate the Hepler and Strand[10] definition of pharmaceutical care and, therefore, that the researchers lack a conceptualization of pharmaceutical care. However, before either of these studies was published, Mikeal et al[11] in 1975 defined pharmaceutical care as "the provision of any personal health service involving the decision whether to use and the evaluation of the use of drugs. Such arguments are thus not entirely unfounded. Even those studies published after Hepler and Strand's article still focused on issues not associated with patient satisfaction with pharmaceutical care. Instead, these studies[12,13] dealt more with store management (eg, convenience of parking) and pharmacy technician efficiency (eg, prescription filling).

The Patient Satisfaction Questionnaire of MacKeigan and Larson[12] was specifically designed as an outcome measure. Inclusion of items in this questionnaire dealing with the efficacy of medications, availability of over-the-counter products, and quality of drugs does not correlate with the quality of care provided by pharmacists. The Pharmacy Encounter Survey by Briesacher and Corey[13] mainly addressed the process of prescription filling. Issues of pharmacy location and wait time for prescription filling were identified as components of quality that impact patient satisfaction. Like many previous studies of satisfaction with pharmacy services, this study also did not address the patient's satisfaction with the care provided by the pharmacist.

Studies by Erstad et al,[14] Larson and MacKeigan,[15] and Johnson et al[16] were concerned with patient satisfaction with pharmacy services. The study by Erstad et al[14] was conducted in the institutional setting on a general surgery service and sought to determine whether increased pharmacist contact with patients resulted in greater patient satisfaction. Larson and MacKeigan[15] evaluated satisfaction in relation to pharmacy services in family practice clinics. The study by Johnson et al[16] was conducted in regard to traditional or mail-order pharmacy services and used previously developed questions from the Satisfaction With Pharmacy Services Questionnaire of Larson and MacKeigan.[15] The Larson and MacKeigan[15] tool, which was adapted from the Patient Satisfaction Questionnaire of Ware et al,[17] still contained some physical attributes or marketing items (ie, items 6 and 11). Gourley et al[18] developed a 17-item Pharmaceutical Care Questionnaire to determine patients' satisfaction with their pharmaceutical care in a chronic obstructive pulmonary disease and hypertension multicenter study in the Department of Veterans Affairs patient population. It was developed using items from the La Monica-Oberst Patient Satisfaction Scale, which was developed to measure patient satisfaction with healthcare delivery.[19]

··· METHODS ···

Following the chronic obstructive pulmonary disease and hypertension study, the Pharmaceutical Care Questionnaire was expanded to the 37-item PCSQ by a panel of 10 clinical pharmacy faculty and

10 pharmacy practitioners affiliated with the University of Tennessee Health Science Center College of Pharmacy, Memphis, TN, and one healthcare faculty member from Teachers College, Columbia University, New York, NY. Two external groups reviewed the 37-item PCSQ, one consisting of 50 pharmacists and the other consisting of 25 consumers. To establish content validity, both groups were asked to rate the degree of importance of each item. Pharmacists were asked to rate the degree of item importance based on the expectations pharmacists have of their role with consumers. The consumers were instructed to rate the degree of item importance as it relates to the care the consumer expects from the pharmacists. Both groups were asked to edit existing items and suggest new items for inclusion in the PCSQ. Seven items were deleted from the PCSQ for reasons such as redundancy and lack of fit with role expectations, resulting in a 30-item instrument. The PCSQ uses a 5-point Likert scale (5 = strongly agree and 1 = strongly disagree) to score respondent answers. Item location within the questionnaire was randomized. Reliability, using the Cronbach α, of the 30-item PCSQ was initially evaluated by testing the instrument in a group of 50 consumers. Negatively worded items were reverse scored. A Cronbach α of .50 has been established as a minimum value for group comparisons.[20,21] For this evaluation, a more conservative Cronbach α of .70 was chosen as a minimum acceptable value.

For additional evaluation of reliability and validity, 360 consumers recruited from 10 ambulatory pharmacies (9 retail and 1 hospital based) were given the PCSQ in the community pharmacy or clinic setting. The 10 pharmacies were randomly chosen for participation from a list of 200 ambulatory pharmacies. The consumers represented a convenience sample from patients in each pharmacy (36 patients per site). The sample size was based on the number of questions in the PCSQ. Ten observations per item were needed for reliable factor analysis, and an additional 20% were included to offset any missing data.[20] Negatively worded items were reverse coded. The Cronbach α was calculated for the 30 items. Exploratory analysis with varimax rotation was performed, identifying subscales. The covariance matrix was used for the analysis. Factors with eigenvalues greater than 1.00 were selected.[22] Principal component analysis with varimax rotation was then performed. Items on the PCSQ were divided into subscales based on the factor loadings. All items were assigned to a factor, if its loading was greater than 0.5. Readability analysis was performed on each subscale.[23,24]

The PCSQ was then administered to patients in a multicenter outcomes study of patients with hyperlipidemia in 15 Department of Veterans Affairs medical centers. This study consisted of control patients who received routine care and treatment patients whose hyperlipidemia was managed by pharmacists. Someone other than the pharmacists administered the PCSQ, so patient responses were not influenced by the pharmacist. All patients were given questions 1 through 23 (part I), whereas only treatment patients were given questions 24 through 30 (part II). Treatment and control data were analyzed separately. The statistical methods described previously for the consumer group were used.

··· RESULTS ···

The Cronbach α calculated for the 30 items using the consumer data was .94. Exploratory analysis with varimax rotation resulted in 4 factors. The variance accounted for by the 4-factor solution was 64.8%. All items had a communality score greater than 0.5. Items on the PCSQ were divided into 4 subscales based on the factor loadings. All items were assigned to a factor if its loading was greater than 0.5. There were 5 items with split loadings in which the item had loadings greater than 0.5 on 2 factors. These items were assigned to the factor on which the item had the highest loading. The Patient Understanding subscale consisted of 9 items and had a reliability coefficient α of .92. The Provision of Pharmaceutical Care subscale consisted of 12 items and had a reliability coefficient α of .95. The Patient Empowerment subscale consisted of 5 items and had a reliability coefficient α of .90. The remaining 4 items make up the Pharmacist-Patient Relations subscale, which has a reliability coefficient α of .90. All negatively worded items load exclusively on this factor.

The results of the readability analysis are as follows: Passive Sentences, 0%; Flesch Reading Ease, 72.7; Flesch-Kincaid Grade Level, 7.7; Coleman-Liau Grade Level, 4.6; and Bormuth Grade Level, 8.3.

In the Department of Veterans Affairs medical centers hyperlipidemia outcomes study, 460 patients were enrolled and 379 completed the study. Of the 379 patients (259 in the treatment group and 120 in the control group) completing the study, 311 (82.1%) completed the PCSQ (214 treatment patients and 97 controls). The 68 patients (17.9%)

who did not complete the PCSQ left the facility before completing the questionnaire and were not able to be reached by telephone or written correspondence. The results of patient satisfaction with the services provided by the pharmacists in the lipid study in both control and treatment patients are shown in **Tables 1** and **2**. For the PCSQ mean scores for the hyperlipidemic patients, see Table 1. Selected representative results for individual items from the PCSQ for both treatment and control patients are reported in Table 2. A 4-factor solution was determined, as with the consumer data. The variance accounted for in the control group was 63.78% and in the treatment group was 60.16%. The reliability coefficient α for the 23 items on part I was .83 for control patients and .77 for treatment patients. The reliability coefficient α for all patients (n = 311) on part I was .83. The reliability coefficient α for treatment patients on all 30 items of the PCSQ was .84. The reliability coefficient α for each subscale was as follows: Patient Understanding, .76; Provision of Pharmaceutical Care, .90; Patient Empowerment, .83; and Pharmacist-Patient Relations, .71.

··· DISCUSSION ···

The PCSQ, unlike the other patient satisfaction surveys reviewed,[12-17] contains the patient's evaluations regarding outcomes of the care provided by the pharmacist (eg, "due to working with my pharmacist, I have a better understanding of my medications"). The results from the factor analysis and the internal consistency estimation of reliability supports the PCSQ as an instrument that can reliably measure how satisfied the patient is with the pharmacist's application of technical and interpersonal knowledge to promote a state of well-being for the patient. Donabedian[25] identified these as 2 essential domains relative to the provision of care of good quality. The focus of the PCSQ is shifted away from issues of pharmacy convenience and locale, which do not capture the total pharmacy encounter. Rather, the PCSQ measures the effect of a pharmacist's care on the patient's behavior and satisfaction with pharmacy services. This fulfills one of the criteria of Berkanovic and Marcus[26] for evaluating the relevance of satisfaction data to the organization and the delivery of health services. That is, satisfaction should be shown to be related to subsequent patient behavior.[26] The lower variance in the Department of Veterans Affairs patients may be ascribed to the inapplicability of specific items in this population (eg, those referring to financial arrangements or referral of friends and significant others).

In the hyperlipidemia study, treatment patients were more satisfied with the care they received from their pharmacists than were control patients (Table 2). The PCSQ is currently being used in several outcomes studies, including a diabetes outcomes study and a primary care outcomes study. Approximately 1000 patients are enrolled in these studies. The PCSQ has several strengths that make it a useful instrument to demonstrate the value of pharmacy services to physician groups and third-party payers. The PCSQ was designed to be administered by an agent other than the pharmacist. This limits any bias that the pharmacist might introduce into the results of the tool. By removing the pharmacist as the administrator, the patient does not feel limited in expressing views about the care provided. The patient is also given a copy of the tool to follow during the administration process so that the patient can independently interpret the questions. The reading level of the PCSQ is approximately at the seventh grade level. This allows most of the patients who will be administered the PCSQ to follow as the administrator poses

Table 1. Overall PCSQ Scores for Patients in a Multicenter Hyperlipidemia Outcomes Study

	PCSQ Score*				
Patient Group	**Mean**	**Minimum**	**Maximum**	**Range**	**Variance**
Control (n = 97)	3.6266	1.6701	4.4536	2.7835	0.7582
Treatment (n = 214)	4.0150	1.3738	4.8364	3.5204	1.4964
Total (N = 311)	3.8938	1.4727	4.6945	3.2219	1.2295

PCSQ = Pharmaceutical Care Satisfaction Questionnaire.
*Scores are based on a 5-point Likert scale (5 = strongly agree and 1 = strongly disagree); higher scores indicate more satisfaction.

the questions to them. The PCSQ is easy to administer and score, and the cost is minimal. There are no patient identifiers on the tool. A patient's right to privacy and medical confidentiality is not in question with administration of the PCSQ. The questionnaire is designed for use in various pharmacy service settings. A community-based practice, an ambulatory care clinic, and an inpatient pharmacy service are some of the settings where the PCSQ can be used to measure patient satisfaction with pharmaceutical care. A primary limitation of the PCSQ is that it is a newly developed instrument that needs to be used in more studies to strengthen its validity.

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Table 2. Selective Representative Items From the PCSQ and Results for Patients in a Multicenter Hyperlipidemia Outcomes Study

Item	PCSQ Score, mean (SD)*		
	Treatment Group (n = 214)	Control Group (n = 97)	*P* (2 tailed)
Part I (23 Items Total)†			
My pharmacist:			
Evaluates my medication plan	4.7 (0.5)	4.3 (0.8)	≤ .001
Clears up any problems related to obtaining my medications	4.7 (0.5)	4.3 (0.9)	≤ .001
Considers my ability to pay when providing my medications	3.6 (1.3)	3.4 (1.2)	≤ .054
Changes my medication care plan as needed	4.5 (0.8)	3.6 (1.3)	≤ .001
Provides financial medication records as needed	3.8 (1.0)	3.3 (1.2)	≤ .001
Is pleasant to be around	4.8 (0.4)	4.4 (0.8)	≤ .001
Discusses my medications with my physician to ensure that they are appropriate for me	4.3 (0.8)	3.7 (1.0)	≤ .001
Makes me feel secure about taking my medications	4.7 (0.5)	4.3 (0.7)	≤ .001
Part II (7 Items Total)†			
Due to working with my pharmacist:			
I have improved in notifying my primary healthcare provider when my condition changes	4.5 (0.7)	—	—
I have noted improvement in taking my medications as prescribed	4.4 (0.7)	—	—
If I had a choice:			
I would request that my healthcare system enable this pharmacist to continue these pharmacy services	4.7 (0.5)	—	—

PCSQ = Pharmaceutical Care Satisfaction Questionnaire.
*Scores are based on a 5-point Likert scale (5 = strongly agree and 1 = strongly disagree); higher scores indicate more satisfaction.
†Note that not all of the items in each part are included here.

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