

# Measuring Patients' Perceptions of Patient-Centered Care: A Systematic Review of Tools for Family Medicine

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## ABSTRACT

**PURPOSE** Patient-centered care is widely acknowledged as a core value in family medicine. In this systematic review, we aimed to identify and compare instruments, subscales, or items assessing patients' perceptions of patient-centered care in family medicine.

**METHODS** We conducted a systematic literature review using the MEDLINE, Embase, and Cochrane databases covering 1980 through April 2009, with a specific search strategy for each database. The search strategy was supplemented with searching by hand and expert suggestions. We looked for articles meeting all of the following criteria: (1) describing self-administered instruments measuring patient perceptions of patient-centered care; (2) reporting quantitative or psychometric results of development or validation; (3) being relevant to an ambulatory family medicine context. The quality of each article retained was assessed using a modified version of the Standards for Reporting of Diagnostic Accuracy. Instrument items were mapped to dimensions of a patient-centered care conceptual framework.

**RESULTS** Of the 3,045 articles identified, 90 were examined in detail, and 26, covering 13 instruments, met our inclusion criteria. Two instruments (5 articles) were dedicated to patient-centered care: the Patient Perception of Patient-Centeredness and the Consultation Care Measure, and 11 instruments (21 articles) included relevant subscales or items.

**CONCLUSIONS** The 2 instruments dedicated to patient-centered care address key dimensions but are visit-based, limiting their applicability for the study of care processes over time, such as chronic illness management. Relevant items from the 11 other instruments provide partial coverage of the concept, but these instruments were not designed to provide a specific assessment of patient-centered care.

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## INTRODUCTION

In the 1950s American humanistic psychologist Carl R. Rogers developed the concept of client-centered therapy.<sup>1,3</sup> This approach was promoted in the medical field by psychoanalyst Michael Balint, who introduced the term "patient-centered medicine."<sup>4,5</sup> A number of authors compared traditional medical approaches with patient-centered care. Today, patient-centered care is widely acknowledged as a core value in family medicine.<sup>6-8</sup> It has been associated with positive outcomes: reduction of malpractice complaints and improvements in physician satisfaction, consultation time, patients' emotional state, and medication adherence.<sup>9,10</sup> Patient-centered care may also increase patient satisfaction and empowerment, as well as reduce symptom severity, use of health care resources, and health care costs.<sup>11</sup>

Although many authors refer to the patient-centered care concept, definitions often differ.<sup>10,12-19</sup> The model developed by Stewart et al<sup>10</sup> is most frequently cited in family medicine.<sup>11,14,20</sup> It proposes 6 dimensions: exploring

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both the disease and the illness experience, understanding the whole person, finding common ground, incorporating prevention and health promotion, enhancing the patient-doctor relationship, and being realistic. Mead and Bower<sup>14</sup> reviewed the conceptual and empirical literature to develop a model of the various aspects of the doctor-patient relationship encompassed by the concept of patient-centered care. They identified the following dimensions: biopsychosocial perspective, patient-as-person, sharing power and responsibility, therapeutic alliance, and doctor-as-person.

A clear conceptual framework is an essential first step for measurement. In the absence of a clear consensual model in the literature, we decided to keep the 4 dimensions common to Stewart et al and Mead and Bower's review: (1) disease and illness experience (patient-as-person in Mead and Bower's model), (2) whole person (biopsychosocial perspective), (3) common ground (sharing power and responsibility), and (4) patient-doctor relationship (therapeutic alliance). Figure 1 represents the patient-centered care framework used as the conceptual basis in our review.

Various methodological approaches have been taken in designing instruments to measure patient-centered care, the 2 most predominant being direct observation of the clinical encounter (structured objective checklist) and self-assessment of the patient's or the physician's experience of the encounter.<sup>21</sup> Many studies have shown that measures of the patients' perceptions are more successful at predicting outcomes than either observation or physicians' perceptions.<sup>9-11,22</sup> Experts also claim that patient-

administered questionnaires are the best way to measure patient-centered care attributes of primary health care.<sup>23</sup>

In this study, we aimed to identify and compare instruments, subscales, or items assessing patients' perceptions of patient-centered care in family medicine.

## METHODS

Our review process was based on important domains and elements identified by the Agency for Healthcare Research and Quality for systematic reviews.<sup>24</sup>

### Inclusion Criteria

We looked for articles meeting all of the following criteria: (1) describing self-administered instruments measuring at least 2 dimensions of the conceptual framework of patient-centered care, (2) reporting quantitative or psychometric results of development or validation, and (3) being relevant to the context of ambulatory family medicine.

### Search Strategy and Article Selection

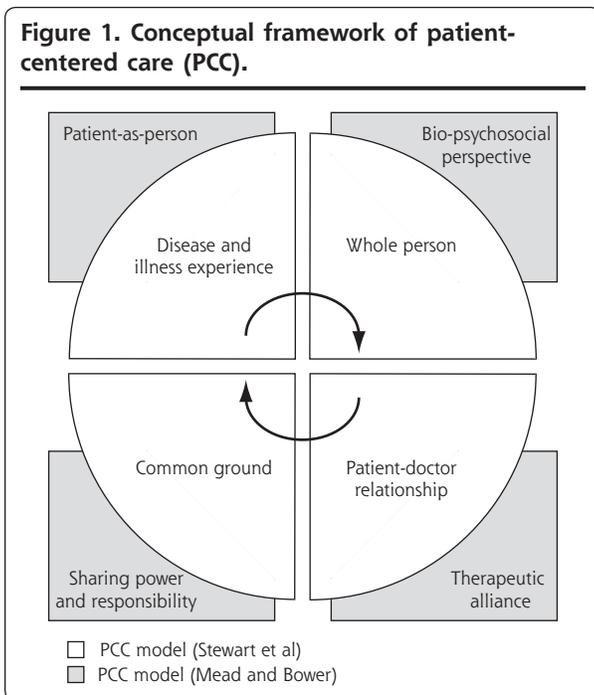
We conducted an electronic literature search of the MEDLINE (1980–), Embase (1980–), and Cochrane (1991–) databases for English and French articles published between 1980 and April 2009. An information specialist developed and ran specific strategies for each database (Supplemental Appendix 1, available online at <http://www.annfammed.org/cgi/content/full/9/2/155/DC1>). The following MeSH terms and key words were used: "patient-centered care" and its linguistic variations, "questionnaire," "process assessment (health care)," "quality assurance, health care," "psychometrics," "validation studies," "reproducibility of results," "factor analysis, statistical," "outcome and process assessment (health care)," and "outcome assessment (health care)." To broaden the scope of our research, we also applied the following search strategy to the same databases using "patient-centered care" and its linguistic variations, "family practice," "primary health care," "primary medical care," and "primary care."

We also examined reference lists for additional relevant articles (searching by hand). In addition, we consulted experts to identify articles describing instruments, including subscales or items that assess dimensions of patient-centered care.

All search results were transferred to a reference database (Refworks), and duplicates were eliminated. Titles and abstracts were read by one team member (M.L.) to exclude articles that were not eligible. We excluded references clearly not meeting our inclusion criteria and retained all other references for complete reading. If there was any doubt, the full article was retrieved and read to apply selection criteria. Two



**Figure 1. Conceptual framework of patient-centered care (PCC).**



authors (M.L., M.E.P.) independently appraised the full text of the retrieved articles to identify any that were potentially eligible. Articles meeting all inclusion criteria were retained for quality assessment and data extraction. Discrepancies between the 2 reviewers were resolved by team consensus.

### Assessment of Study Quality

We assessed study quality with a modified version of the Standards for Reporting of Diagnostic Accuracy STARD (Supplemental Appendix 2, available online at <http://www.annfam.org/cgi/content/full/9/2/155/DC1>).<sup>25-27</sup> The STARD is a result of the Consolidated Standards of Reporting Trials (CONSORT) initiative,<sup>28</sup> and has been adopted by many leading biomedical and psychology journals.<sup>29</sup> Using the modified 15-item scale,<sup>30</sup> 2 researchers (M.L., M.E.P.) independently determined a global quality score for each article. Scores were compared, and consensus was reached. Studies were excluded if the quality score was less than 8 of a maximum score of 15.

### Data Extraction

The following data were extracted for each instrument: development procedures and conceptual base, quality score, description of the instrument (number of dimensions and items), response scale, and psychometric properties when available (internal consistency, test-retest fidelity, and predictive validity).<sup>31</sup> Data extraction was performed independently by 2 members of the team (M.L., M.E.P.), and disagreements were resolved by consensus.

Instrument subscales or items were mapped to dimensions of our patient-centered care conceptual framework. Our initial intention was to map only at the subscale level, but we realized that an item-level analysis was required, because certain subscales contained items that mapped with more than one dimension of the consensual framework and because we found scales without any subscales.

## RESULTS

### Articles Included in the Review

The search strategies identified 3,208 references, of which 3,045 were

unique after removing duplicates. Most of these references were excluded as clearly not meeting our inclusion criteria by reading the abstract. Sixty-three articles were retained to be read completely; 20 additional references were identified by a hand search, and 7 were included as a result of experts' suggestions. Of these 90 articles, 64 were excluded: 23 addressed a concept other than patient-centered care and did not measure at least 2 dimensions of the conceptual framework<sup>32-54</sup>; 11 reported on instruments assessing physicians' or nurses' perceptions<sup>55-65</sup>; 19 did not deal with quantitative instruments<sup>21-22,66-82</sup>; 7 were not relevant to an ambulatory family medicine context (6 in an inpatient context<sup>83-88</sup> and 1 in specialty medicine<sup>89</sup>); 1 measured relations between the patient and the nurse specifically<sup>79</sup>; 1 described an instrument designed to evaluate staff (very general questions)<sup>90</sup>; and 2 did not provide sufficient information on the development and validation of the instrument.<sup>91,92</sup> A final sample of 26 articles (Table 1) was retained for data

**Table 1. Instruments Covered by the 21 Articles Included in the Review**

Instrument	Authors	Country	Year	Quality Score <sup>a</sup>
Patient Perception of Patient-Centeredness (PPPC)	Stewart et al <sup>9</sup>	Canada	2000	8 (11) <sup>b</sup>
	Mallinger et al <sup>93</sup>	United States	2005	13
Consultation Care Measure (CCM)	Little et al <sup>11</sup>	United Kingdom	2001	11
	Little et al <sup>94</sup>	United Kingdom	2001 <sup>b</sup>	10
	Smith et al <sup>95</sup>	United Kingdom	2007	11
Patient Reactions Assessment (PRA)	Galassi et al <sup>96</sup>	United States	1992	8
Perceived Involvement in Care Scale (PICS)	Lerman et al <sup>97</sup>	United States	1995	12
	Loh et al <sup>98</sup>	United States	2007	11
Component of Primary Care Instrument (CPCI)	Flocke <sup>99</sup>	United States	1997	14
	Flocke et al <sup>100</sup>	United States	1998	11
	Flocke et al <sup>101</sup>	United States	1999	11
Medical Communication Competence Scale (MCCS)	Cegala et al <sup>102</sup>	United States	1998	10
Primary Care Assessment Survey (PCAS)	Safran et al <sup>103</sup>	United States	1998	12
	Safran et al <sup>104</sup>	United States	2006	12
	Duberstein et al <sup>105</sup>	United States	2007	9
Interpersonal Processes of Care (IPC)	Stewart et al <sup>106</sup>	United States	1999	10
	Stewart et al <sup>107</sup>	United States	2007	14
General Practice Assessment Survey (GPAS)	Ramsay et al <sup>108</sup>	United Kingdom	2000	13
	Jayasinghe et al <sup>109</sup>	Australia	2008	12
Patient Perception of Quality (PPQ)	Haddad et al <sup>110</sup>	Canada	2000	12
Primary Care Assessment Tool-Adult (PCAT-A)	Shi et al <sup>111</sup>	United States	2001	12
	Haggerty et al <sup>112</sup>	Canada	2008	11
Consultation and Relational Empathy (CARE)	Mercer et al <sup>113</sup>	United Kingdom	2004	12
	Mercer et al <sup>114</sup>	United Kingdom	2005	12
	Mercer et al <sup>115</sup>	United Kingdom	2008	11
Instrument on Doctor-Patient Communication Skills (IDPCS)	Campbell et al <sup>116</sup>	Canada	2007	12

<sup>a</sup> Maximum score is 15.

<sup>b</sup> Evaluation of an unpublished paper on PPPC (Stewart et al, 2004, available from authors on request), combined with the initial assessment of the study quality of the main article.

extraction as outlined in the selection process shown in Figure 2.

The quality scores of the final sample ranged from 8 to 14 of 15; all articles were retained for the review.

**Instruments Dedicated to Patient-Centered Care**

Five articles covering 2 instruments were included (Table 2): the Patient Perception of Patient-Centeredness (PPPC)<sup>9,93</sup> and the Consultation Care Measure (CCM).<sup>11,94,95</sup>

**Patient Perception of Patient-Centeredness**

The PPPC,<sup>9,93</sup> which was developed in Canada, is based on empirical studies of the doctor-patient relationship and Stewart et al’s model.<sup>10</sup> It measures patient perceptions of patient-centered care during the last visit with a family physician. The instrument has 14 items using a 4-point Likert scale from completely to not at all, and no subscales. Cronbach’s  $\alpha$  reliability for the global score was .71. The PPPC showed significant correlations with better recovery from discomfort, alleviation of concerns, and better emotional health

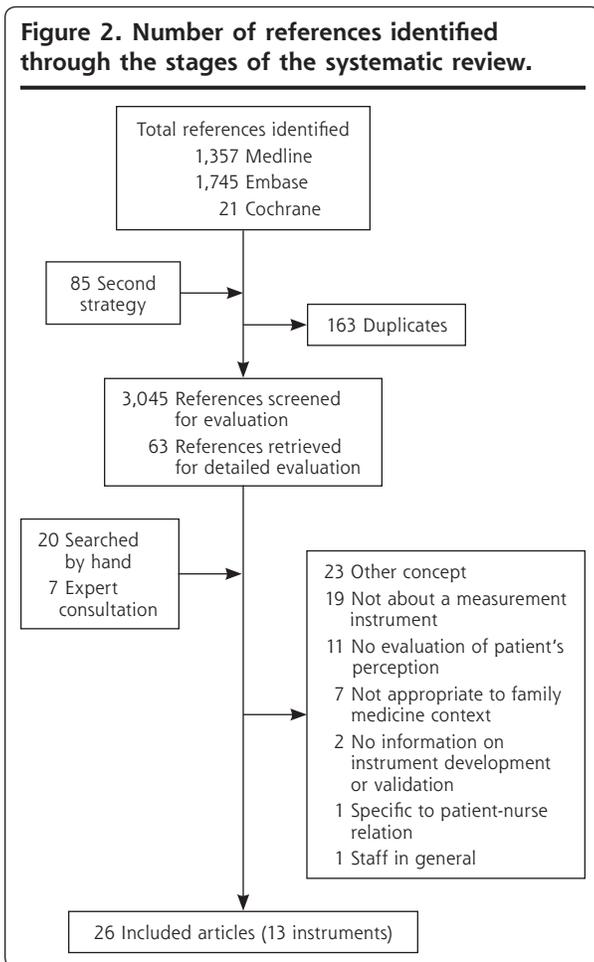
2 months after the initial visit, and with use of fewer diagnostic tests and referrals.<sup>9</sup> Patients’ perception of patient-centered behaviors was strongly associated with patients’ satisfaction with information.<sup>93</sup>

The PPPC measures 3 of the 4 dimensions of the conceptual framework (Table 3): disease and illness experience (4 items), whole person (1 item), and common ground (9 items).

**Consultation Care Measure**

The CCM,<sup>11,94,95</sup> which was developed in Great Britain, is based on empirical studies of the doctor-patient rela-

**Figure 2. Number of references identified through the stages of the systematic review.**



**Table 2. Characteristics of Instruments Measuring Patient-Centered Care**

Instrument	Origin
Patient Perception of Patient-Centeredness (PPPC)	Existing literature and empirical studies on the doctor-patient relationship and the Stewart et al model
Consultation Care Measure (CCM)	Existing literature and empirical studies on the doctor-patient relationship, the Stewart et al model, and patient interviews
Patient Reactions Assessment (PRA)	Existing instruments, existing literature and empirical studies on the physician-patient relationship, interviews with patients and caregivers, and clinical experiences of the research team
Perceived Involvement in Care Scale (PICS)	Existing literature and empirical studies on patient participation in medical care, observations of the principal researcher, expert consultations
Component of Primary Care Instrument (CPCI)	Interim report by the Institute of Medicine (IOM) in 1994 defining primary care and its components
Medical Communication Competence Scale (MCCS)	Existing literature and empirical studies on doctor-patient communication
Primary Care Assessment Survey (PCAS)	Interim report by the Institute of Medicine (IOM) in 1994 defining primary care and its components
Interpersonal Processes of Care (IPC)	Focus group, existing literature and empirical studies on the doctor-patient relationship and the quality of care, Stewart et al model and cognitive interviews
General Practice Assessment Survey (GPAS)	PCAS
Patient Perception of Quality (PPQ)	Existing instruments, existing literature and empirical studies on quality of care, patient interviews and expert consultations
Primary Care Assessment Tool-Adult (PCAT-A)	Primary Care Assessment Tool-Child, expert consultations
Consultation and Relational Empathy (CARE)	Existing literature and empirical studies on empathy and in-depth qualitative work on patient’s views on holistic care
Instrument on Doctor-Patient Communication Skills (IDPCS)	Existing instruments (PPPC and Core Competency of Interpersonal and Communication Skills), revised conceptual framework adapted from the Calgary-Cambridge guide and expert consultations

tionship, Stewart et al's model, and patient interviews. It also measures patients' perceptions of patient-centered care during the last visit with a family physician. The instrument has 5 subscales: communication and partnership (11 items), personal relationship (3 items), health promotion (2 items), positive and clear approach to the problem (3 items), and interest in effect on life (2 items), for a total of 21 items using a 4-point Likert scale ranging from very strongly agree to neutral/disagree.

Cronbach's  $\alpha$  reliability ranged from .84 for the positive and clear approach to problem subscale, to .96 for the communication and partnership subscale. Satis-

faction was related to communication and partnership and positive approach. Enablement was more significantly related with interest in effect on life, health promotion, and positive approach. Positive approach was associated with reduced symptom burden at 1 month. Referrals were fewer if patients felt they had a personal relationship with their doctor.<sup>11</sup>

The CCM assesses all the conceptual dimensions (Table 3): disease and illness experience (6 items), whole person (2 items), common ground (9 items), and patient-doctor relationship (1 item).

Both instruments are based on Stewart et al's model

Conceptual Base	Description	Subscale (Items)
Stewart et al model	14 Items, 4-point Likert scale (completely to not at all)	No subscale (14/14, $\alpha = .71$ )
Stewart et al model	21 Items, 4-point Likert scale (very strongly agree to neutral/disagree)	Communication and partnership (11/11, $\alpha = .96$ ), personal relationship (3/3, $\alpha = .89$ ), health promotion (2/2, $\alpha = .87$ ), positive and clear approach to problem (3/3, $\alpha = .84$ ) and interest in effect on life (2/2, $\alpha = .89$ )
Dimensions of the physician-patient medical relationship	15 Items, 7-point Likert scale (very strongly disagree to very strongly agree)	Patient information index (2/5, $\alpha = .87$ ), patient communication index (1/5, $\alpha = .91$ ) and patient affective index (5/5, $\alpha = .90$ ) Excluded: Patient information index (3/5) and patient communication (4/5)
Dimensions of patient participation	13 Items, dichotomous scale (yes/no)	Doctor facilitation (5/5, $\alpha = .60-.73$ ) Excluded: Patient information (4/4) and patient decision making (4/4)
IOM's definition of primary care and dimensions of primary care	52 Items, 6-point Likert scale (strongly disagree to strongly agree)	Accumulated knowledge (7/7, $\alpha = .88$ ), interpersonal communication (6/6, $\alpha = .75$ ), advocacy (2/9, $\alpha = .88$ ), family context(2/3, $\alpha = .82$ ) and community context (2/2, $\alpha$ not available) Excluded: Comprehensive care (6/6), preference for regular physician (4/4), coordination of care (6/6), family context (1/3), duration of relationship (2/2) and continuity (3/3)
Dimensions of medical communication	40 Items (patient's version), 7-point Likert scale (strongly agree to strongly disagree)	No subscale (24/40, $\alpha = .79$ for information giving, $\alpha = .76$ for information seeking, $\alpha = .85$ for information verifying, and $\alpha = .92$ for socioemotional communication) Excluded: Patients' self-competence items (16/40)
IOM's definition of primary care	51 Items, 6-point Likert scale (very poor to excellent)	Contextual knowledge of patient (5/5, $\alpha = .92$ ), communication (6/6, $\alpha = .95$ ), interpersonal treatment (4/5, $\alpha = .95$ ) and trust (5/8, $\alpha = .86$ ) Excluded: Organizational access (6/6), financial access (2/2), longitudinal continuity (1/1) and visit-based continuity (2/2), preventive counseling (7/7), integration (6/6), interpersonal treatment (1/5), thoroughness of physical examination (1/1), trust (3/8), screener items (2/2)
Dimensions of interpersonal care processes	29 Items, 5-point Likert scale (never to always)	Hurried communication (5/5, $\alpha = .65$ ), elicited concerns, responded (3/3, $\alpha = .80$ ), explained results, medication (4/4, $\alpha = .81$ ), patient-centered decision-making (3/3, $\alpha = .75$ ) and compassionate, respectful (5/5, $\alpha = .71$ ) Excluded: Discrimination (4/4) and disrespectful office staff (5/5)
Dimensions of primary care	30 Items, 6-point Likert scale (very poor to excellent)	Communication (2/4, $\alpha = .90$ ), interpersonal care (3/3, $\alpha = .93$ ), trust (2/4, $\alpha = .69$ ) and knowledge of patient (3/3, $\alpha = .91$ ) Excluded: Accessibility (8/8), technical care (5/5), communication (2/4), trust (2/4) and nursing care (3/3)
Dimensions of quality of care	22 Items, 5-point Likert scale (negative to positive)	Interpersonal aspects of care (5/5, $\alpha = .91$ ) and technical aspects of care (5/12, $\alpha = .91$ ) Excluded: Technical aspects of care (7/12) and outcomes of care (5/5)
Dimensions of primary care	74 Items, 4-point Likert scale (definitely not to definitely)	Ongoing care (12/20, $\alpha = .92$ ) Excluded: First-contact accessibility (4/4), first contact utilization (3/3), ongoing care (8/20) coordination of services (8/8), comprehensiveness services available (21/21), comprehensive service received (13/13) and community orientation (5/5)
Dimensions of empathy	10 Items, 5-point Likert scale (poor to excellent)	No subscale (10/10, $\alpha = .92$ )
The Stewart et al model and communication theories	19 items, 5-point Likert scale (strongly disagree to strongly agree)	No subscale (19/19, $\alpha = .69$ )

**Table 3. Patient-Centered Care Measurement Instruments Included in the Review**

Instrument	Number of Items Assessing Conceptual Framework Dimension			
	Disease and Illness Experience	Whole Person	Common Ground	Patient-Doctor Relationship
Patient Perception of Patient-Centeredness	4	1	9	0
Consultation Care Measure	6	2	9	1
Patient Reactions Assessment	0	0	2	6
Perceived Involvement in Care Scale	2	0	3	0
Component of Primary Care Instrument	5	5	3	6
Medical Communication Competence Scale	0	0	18	6
Primary Care Assessment Survey	4	1	4	12
Interpersonal Processes of Care	4	0	8	8
General Practice Assessment Survey	2	1	2	5
Patient Perception of Quality	0	1	4	5
Primary Care Assessment Tool-Adult	4	4	2	2
Consultation and Relational Empathy	2	1	2	5
Instrument on Doctor-Patient Communication Skills	2	0	10	3

and measure patients' perceptions of patient-centered care during the last visit with a family physician with a similar length of administration. The CCM has better Cronbach's  $\alpha$  reliability for each subscale than the overall PPPC. Both instruments show that a higher level of patient-centered care is associated with better health outcomes in the short term. The PPPC does not assess patient-doctor relationship, whereas only 1 item of CCM assesses this dimension.

**Patient-Centered Care Dimensions in Other Instruments**

Included were 21 articles validating 11 instruments. These instruments are the Patient Reactions Assessment (PRA),<sup>96</sup> the Perceived Involvement in Care Scale (PICS),<sup>97,98</sup> the Components of Primary Care Instrument (CPCI),<sup>99-101</sup> the Medical Communication Competence Scale (MCCS),<sup>102</sup> the Primary Care Assessment Survey (PCAS),<sup>103-105</sup> the Interpersonal Processes of Care (IPC),<sup>106,107</sup> the General Practice Assessment Survey (GPAS),<sup>108,109</sup> the Patient Perception of Quality (PPQ),<sup>110</sup> the Primary Care Assessment Tool-Adult Edition (PCAT-A),<sup>111,112</sup> the Consultation and Relational Empathy (CARE),<sup>113-115</sup> and the Instrument on Doctor-Patient Communication Skills (IDPCS).<sup>116</sup>

Table 2 displays all of these instruments: name of the instrument as given by the developer, development procedures and conceptual base, description of the instrument (number of dimensions and items), response scale, included subscales with Cronbach  $\alpha$  coefficients, and excluded subscales. Supplemental Appendix 3,

available online at <http://www.annfammed.org/cgi/content/full/9/2/155/DC1>, displays the subscales and items of instruments measuring patient-centered care. The majority contain subscales except for the MCCS, CARE, and the IDPCS. Seven assess physician care over time (PRA, CPCI, PCAS, IPC, GPAS, PPQ, and PCAT-A). The number of items ranges from 10 (CARE) to 74 (PCAT-A). Other psychometric properties are presented in Supplemental Appendix 4, available online at <http://www.annfammed.org/cgi/content/full/9/2/155/DC1>. They all use a Likert scale except for the PICS (yes/no answer). Quality scores ranged from 8 to 14 out of a possible 15 (Table 1).

All of these instruments assess, at least partially, the "common ground," "disease and illness experience" (except the PRA, MCCS, and PPQ), and "patient-doctor relationship" (except the PICS) dimensions (Table 3). Only 6 instruments (CPCI, PCAS, GPAS, PPQ, PCAT-A, and CARE) measure the "whole-person" dimension. The CPCI, the PCAS, the GPAS, the PCAT-A, and the CARE assess, at least partially, all dimensions of the conceptual framework.

**DISCUSSION**

Although patient-centered care has been defined in various ways by different authors, we identified, in this review, instruments that address 2 or more dimensions of a conceptual framework consisting of 4 core dimensions that are common to 2 conceptual models in family medicine.<sup>10,14</sup>

If clinicians, researchers, or decision makers are interested in instruments specifically dedicated to measure patient-centered care, our review identified 2 instruments, the PPPC and the CCM, both of which showed that higher levels of patient-centered care were associated with better health outcomes in the short term.<sup>9,11</sup> Length of administration is similar for both of them. The CCM briefly evaluates the patient-doctor relationship (1 item) whereas the PPPC does not measure this dimension.

For clinicians, researchers, or decision makers interested in a broader scope of health care delivery, our review identified 11 instruments that also address dimensions of patient-centered care. Although all but

the PRA, PICS, and MCCS address at least 3 of the dimensions in our conceptual framework, it is important to note that they reflect how the dimension of patient-centered care relates to another construct, such as comprehensiveness, continuity, or respectfulness. These subscales were not designed to provide an assessment of patient-centered care as such; nonetheless, 1 instrument may be selected over another based on the extent to which patient-centered care is represented as a component of other attributes.

One core element of patient-centered care<sup>10,14,117</sup> is an ongoing relationship with the family physician. It implies that it is probably best assessed by evaluating patient-centered care over time rather than during a single visit,<sup>10</sup> as do both dedicated instruments identified (PPPC<sup>9,93</sup> and CCM<sup>11,94,95</sup>). A measure over time may be particularly relevant for patients suffering from chronic diseases, which by definition require ongoing management for years or decades.<sup>6,9,93</sup> The development of longitudinal measures (evaluating, for example, the last 6 or 12 months) of the PPPC and CCM instruments could evaluate losses or gains in precision and validity. Inspiration could be derived from 7 of the 11 instruments measuring other concepts that assess the dynamics between physician and patient for a prolonged period.

To date, the patient-centered care concept and measurement instruments in family medicine mainly refer to the approach and behavior of family physicians during the care process. Measures of patient-centered care have always been relevant to family medicine at a clinical level to reflect the concordance of practice with one of its core values. It is becoming increasingly important, however, as an organizing principle for change in health services delivery at a systems level. In the United States,<sup>117,118</sup> and more recently in Canada,<sup>119</sup> the patient-centered medical home has been the organizing framework for recent reforms of the health system and specifically of primary care. Within this approach, patient-centered care is part of a broad organization of health care delivery and is measured by such practice indicators as enhanced access procedures, the use of information systems to create disease registries and evaluate quality of care, care coordination within and across health care teams, processes to engage the patient in health promotion and prevention, and regular surveys of patients' experience. Within this framework, assessment of the patient-centered clinical encounter is only one component of evaluating patient-centered care in family medicine.<sup>120,121</sup>

We do not think that there is an inherent contradiction between clinical-level and systems-level patient-centered care. Based on the seminal work by Stewart et al<sup>10</sup> and Little et al,<sup>11</sup> however, we contend that whatever structural and payment reforms may be implemented,

ultimately the patient needs to perceive that his or her individual needs and circumstances are at the heart of the clinical care he or she receives, hence the importance of identifying appropriate measurement instruments.

As valid measures of perceptions of patient-centered care are applied within the patient-centered medical home organizing framework, we will be better able to determine how systems-level dimensions, such as accessibility and coordination of care, fit and whether they should be considered in a patient-centered care model. Additionally, qualitative interviews with primary care patients could help refine the conceptual model empirically to better understand which dimensions are really patient-centered, are most meaningful for the patients, and may have an impact on long-term outcomes.

### Limitations of the Study

One of the main limitations of a systematic review is the potential omission of relevant articles, as well as any unpublished material. Our search strategy relied on key words assigned by authors and may have missed instruments that are relevant to patient-centered care but were not identified. Even so, our search strategy was adapted for different databases, was developed in collaboration with an information specialist, and enabled an exhaustive literature review. Moreover, we identified further articles through searching by hand and consultation with experts. In addition, we decided to focus on instruments relevant to ambulatory family medicine, because we were interested in this particular context. We acknowledge, however, that other instruments have been designed to measure patient-centered care in other contexts (nursing, medical specialty, hospital setting). Examination of these instruments was beyond the scope of the article.

Because patient-centered care is a multidimensional concept, we decided to include instruments measuring at least 2 dimensions of the conceptual framework. This decision led to the exclusion of instruments measuring only 1 dimension, such as shared decision-making, for example.

If clinicians, researchers, or decision makers are interested in instruments dedicated to measuring patient-centered care, our review identified 2 visit-based instruments, the PPPC and the CCM, both of which showed that higher levels of patient-centered care were associated with better health outcomes in the short term. For people interested in a broader scope of health care delivery, we identified 11 instruments that address at least 3 dimensions in our conceptual framework (except for the PRA, PICS, and MCCS). Because these instruments were not designed to provide a specific assessment of patient-centered care, convergent validity of patient-centered care instruments and subscales or items of other instruments could be examined.

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