

# Evaluation of a culturally adapted German version of the Patient Assessment of Chronic Illness Care (PACIC 5A) questionnaire in a sample of osteoarthritis patients

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## Keywords

chronic care model, osteoarthritis, outcome measurements, quality of life, validation

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## Abstract

**Objective** The chronic care model and the 5A approach have achieved widespread acceptance and reflect the core elements of patient-centred care in chronic diseases, including arthritis. Appropriate assessment tools are indispensable to assess whether provided care is in alignment with these evidence-based conceptual frameworks of care. The aim of this study was to examine the validity of a translated and culturally adapted version of the Patient Assessment of Chronic Illness Care (PACIC 5A) questionnaire among osteoarthritis (OA) patients.

**Methods** Of 300 administered questionnaires, 236 (78.6%) were returned. Established statistical approaches were used in order to assess psychometric properties. Test–retest reliability was tested in 75 randomly selected patients who received the questionnaire a second time after 2 weeks. The EUROPEP questionnaire was used in order to address external validity.

**Results** Scale internal consistency was confirmed with values ranging from 0.52 to 0.97 for Pearson's *r*. Internal consistency reliability was satisfying: Cronbach's alpha was 0.78 or higher for all scales. Test–retest reliability (intraclass correlation coefficient) exceeded 0.77. Correlations with the EUROPEP, which is not organized according to a conceptual approach to care, were only strong in corresponding scales.

**Conclusions** The PACIC 5A is a reliable and valid instrument to assess the congruency of care to the chronic care model of OA patients. Its use is encouraged in quality improvement projects but also in further research.

## Introduction

Due to the demographic trend in most industrialized countries, chronic diseases such as arthritis, diabetes, hypertension and asthma are expected to increase tremendously in the upcoming years. Current care is often dominated by reactive and event-driven approaches, which will not succeed in delivering appropriate, patient-centred care. Based on these considerations, the chronic care model (CCM) [1,2] was developed.

The CCM represents a conceptual framework that aims to overcome the increasing and well-documented gap between clinical research findings and real practice [3]. It supports evidence-based proactive and planned care for chronic diseases instead of event-driven and unplanned activities. The six key dimensions of the CCM are: organization of health care, clinical information sys-

tems, delivery system design, decision support, self-management support and community resources. Meanwhile, it has achieved widespread acceptance as a concept for improving the care of chronically ill patients.

A recent review of the literature reiterates that successful improvement strategies concerning chronic diseases are consistent with the concept and components of the CCM [4]. The needs of chronically ill patients and consequently the requirements towards health care providers are quite similar in many chronic diseases. Therefore, the CCM seems to be appropriate for various chronic diseases [5], such as hypertension, diabetes [6,7], and also arthritis. Moreover, it may be potentially appropriate for preventive services [8].

Bonomi *et al.* recently developed the Assessment of Chronic Illness Care to assess whether health care, provided by profession-

als and institutions, is in alignment with the CCM [9]. A corresponding instrument assessing patients' perspective was not available until Glasgow *et al.* developed the Patient Assessment of Chronic Illness Care (PACIC) [10]. It measures the behaviour of professionals and practice teams from a patient's perspective. It represents a brief self-administered instrument containing 20 items arranged in five scales: patient activation, delivery system design/decision support, goal setting/tailoring, problem solving/contextual, and follow-up/coordination. As Glasgow *et al.* could prove, the PACIC has reasonable psychometric characteristics in assessing the quality of care in a study sample with different chronic diseases.

The '5A' model represents an evidence-based approach to induce a behavioural change. It is increasingly adopted to guide improvements in patients' self-management. It was originally developed for smoking cessation interventions and represents nowadays the recommended counselling approach for behavioural changes according to the recommendations of the US Preventive Services Task Force. The key elements are assessment of present behaviour (Assess), patient counselling (Advise), collaborative agreement with the patient about realistic goals (Agree), assisting the patient during his/her lifestyle changes (Assist), and frequent follow-ups (Arrange) [11]. Appropriate assessments to evaluate whether provided care contains elements that comply with the 5A model were not available. Recently, Glasgow *et al.* expanded the PACIC by including six items that assess to what extent doctors' counselling reflects the 5A approach. Glasgow *et al.* validated the PACIC 5A in a sample of diabetes patients [11]. Because conservative arthritis care should always include patients' motivation for physical activity, the extension of the questionnaire with the five 5A-elements seems to be adequate to be evaluated in arthritis patients [12]. Health or quality assessment instruments cannot easily be transferred to different populations, diseases or cultural settings. Therefore, the aim of this study was to translate and culturally adapt the PACIC 5A and to evaluate the appropriateness of the questionnaire in a large sample of osteoarthritis (OA) patients in primary care in Germany.

## Methods

### Recruitment of patients and data collection

The University of Heidelberg performs the PraxArt-project, a project that was financed by the German Ministry for Education and Research to improve quality of life of patients suffering from OA [13]. In total, 1021 OA patients from 75 primary care practices in Germany are currently enrolled in this project. Detailed data on socio-demographic variables, duration of OA as well as information about co-morbidities, medication and health services utilization were available and entered in the analyses. As general practitioners (GPs) prepared a list of all addressed patients, these data were available for respondents as well as for non-respondents. Inclusion criteria were age over 18 years, meeting the criteria of OA to the hip or knee according to the American College of Rheumatology [14,15], and having sufficient German language skills for understanding and answering the questionnaire. In total, 75 practices' GPs consecutively addressed patients who were enrolled in the PraxArt-project, and asked them to answer the PACIC 5A. Most studies validating instruments for

arthritis patients enrolled about 100–200 patients; guidelines on how many patients have to be enrolled for validation are not available [16–19]. We decided to deliver the PACIC 5A to 300 patients. After giving their written informed consent, patients received the questionnaire and a stamped envelope with the postal address of the university to return the questionnaire to the university. Patients were informed that their GP had no possibility to get knowledge about their answers, and to complete the questionnaire on their own. Inclusion of patients did not start unless there was a written and unrestricted positive vote of the ethics committee of the University of Heidelberg, which was received in March 2005. To assess test–retest reliability, follow-up questionnaires were handed out to a subset of 75 randomly selected (by means of SPSS v. 12.0) patients after 2 weeks, together with an explanatory note stating that the follow-up was not meant to remember the initial replies. This period was much shorter than the 12-week interval proposed by Glasgow *et al.* [10]. We decided to shorten this period for two reasons: first, most validation studies used a comparable period, and second, the longer the time interval is, the more likely are changes in therapeutic regime, lifestyle or medication, which would bias the retest reliability. Seventy-one of the 75 patients who were selected for retest returned their questionnaires.

### Translation and cultural adaptation

The German version of PACIC was translated and retranslated according to guidelines for cultural adaptation in order to address content validity [20]. Multiple cultural adaptations were necessary, as for instance in item 18 'referred to a dietician, health educator, or counsellor'. In the doctor-centred German system, these services are usually provided by doctors or at least by specifically trained practice nurses. These services can be offered at the primary care level as well as through consultants. In all items, the aim was to create a more understandable translation capturing the original idea of the item rather than to translate directly. Even though cultural adaptations were required, no item was assumed to be completely inappropriate to the German culture of delivering chronic care. The draft translation was piloted with 15 patients. As in the original version, respondents voted how often they received care according to the CCM in 20 items and to what extent received counselling was according to the 5A approach in six further items. These items were scored on a 5-point Likert scale, ranging from 1 (= no/never) to full accordance: 5 (= yes/always).

### Statistical analysis

Data were transferred into the SPSS program (version 12.0) after questionnaires were scanned with the 'eyes and hands™ FORMS'-Software (version 5) of Read Soft (Readsoft, Helsingborg, Sweden) and were analysed. Scores were calculated according to the scoring instructions for the PACIC 5A questionnaire (see Appendix A), so that results between 1 and 5 were achieved, with 5 representing the highest congruency to the CCM. Descriptive analysis included mean and standard deviation. In order to assess floor and ceiling effects, which could indicate some limitations of the questionnaire, the percentages of participants achieving the lowest and highest possible score were calculated.

## Reliability

First, to assess the impact of socio-demographic variables on the scale scores, which could also limit the questionnaire if strong associations could be revealed, correlations of socio-demographic and disease characteristics were calculated by means of Spearman's rho. In order to assess internal consistency reliability, we calculated Cronbach's alpha to estimate whether each item of a scale was appropriate to assess the underlying concept of its scale. To represent high internal consistency, results of 0.50–0.70 for group comparisons are required. Results over 0.9 (in group comparisons) could indicate some redundancy [16,21,22]. The intraclass correlation coefficient (ICC) was used as an estimate of test–retest reliability [23]. Several calculation modes are possible for the ICC; as we aimed at assessing test–retest reliability, we used the 'one-way-random' mode in SPSS [24]. Even no final recommendations exist for the ICC; values above 0.7 are usually regarded as confirmation of high test–retest reliability. Comparable values were found in most validation studies [17,25,26].

## Internal and external validity

Internal validity, which is also named internal consistency or internal reliability by some authors, was assessed by computing Pearson's *r* correlations of the items with the respective scale corrected for overlap to avoid the bias of self-correlation. As a standard for supporting scale internal consistency, correlations (Pearson's *r*) should be equal to or exceed 0.4 [16,21].

External validity, which is also called convergence validity in some contexts, represents a subset of construct validity because it compares different measures of the same theoretical construct as far as there is no gold standard. It was assessed by Glasgow *et al.* in estimating correlations of PACIC scales with corresponding scales of the Safran and Hibbard Activation Scale. Unfortunately, these questionnaires are not available in German. As estimation for external validity we used the EUROPEP instrument, an instrument that was developed by the European Task Force on Patient Evaluations of General Practice to assess patients' satisfaction with medical care in primary care. The EUROPEP has achieved widespread acceptance and has been used in many European countries. With 38 items it covers the dimensions of availability and accessibility, information and support, medical technical care, doctor–patient relationship, and organization of services [27–29]. It is very similar to the Primary Care Module from the Ambulatory Care Experience Survey, used by Glasgow *et al.* [10]. Our hypothesis was that the correlations between the two measurements should be positive but not close to one as they are measuring different phenomena. While tests for external validity usually compare different systems and a linear relationship cannot be assumed, Spearman rank correlation tests were used as a non-parametric approach, according to most validation studies [18,21,30,31]. In this context, correlations often fall between 0.2 and 0.6, rarely above 0.7; correlations between 0.40 and 0.60 are regarded as good correlations [32].

Construct validity was approached by a factor analysis. Glasgow *et al.* performed a confirmatory factor analysis [10]. We conducted an exploratory factor analysis with varimax rotation. Factors were extracted if achieving an eigenvalue >1 (Kaiser cri-

terion) to assess whether the items reflect the hypothesized concept of the scales.

To assess the impact of certain other chronic diseases on the PACIC, we compared the PACIC scale scores of the whole sample with subgroups with the following co-morbidities: high blood pressure, diabetes, depression, and coronary heart disease asthma/chronic obstructive pulmonary disease. To reveal possible differences of scales among these groups, we performed ANOVA calculations with a *post-hoc* Tukey–Honest correction to avoid errors due to multiple testing.

## Results

In total, 236 of the 300 administered questionnaires (78.6%) were returned. Comparison of patients who returned the questionnaires with the non-respondents regarding the data that were available from patients' file, such as socio-demographic data, OA duration and co-morbidities, revealed no significant differences. Table 1 displays characteristics of the study sample. Women were slightly overrepresented (55.2% of respondents). The mean duration of OA was 14.9 (SD 14.3) years. We calculated correlations (Spearman's rho) to assess whether the displayed variables show a significant correlation with the PACIC 5A scales. Female gender was weak positive correlated with all individual scales as well as the sum scale (range 0.16–0.25, not shown in Table 1). Age showed some weak positive correlation with the PACIC overall score as well as with all scales but patient activation. Education was slightly negatively correlated with all scales. But none of these correlations was statistically significant. No other relevant relations could be observed between the PACIC and socio-demographic data.

Table 2 shows the descriptive statistics of the individual scales: mean, standard deviation, percentage of individuals achieving the lowest scores (indicating no satisfaction), and percentage of patients achieving the highest scores (indicating full satisfaction).

The average overall score of the original PACIC items was 2.44. There was adequate variability in the overall scale and all subscales as indicated by the standard deviation. Notable floor effects only occurred in the follow-up/coordination scale (4.6%), in the patient activation scale (3.8%), and in the goal setting/tailoring

**Table 1** Characteristics of the study sample (*n* = 236)

	Gender		<i>P</i> *
	Male (106/44.9%)	Female (130/55.2%)	
	Mean (SD)	Mean (SD)	
Age (years)	64.22 (14.11)	66.14 (15.01)	0.126
Disease duration (years)	14.33 (15.58)	15.43 (16.12)	0.108
Body mass index	27.19 (4.01)	28.92 (5.86)	0.077
No. of co-morbid conditions (0–10)	2.11 (1.79)	2.25 (1.75)	0.142
Educational level (1–3)	2.45 (1.21)	2.28 (0.93)	0.022
Married/living in partnership, <i>n</i> (%)	80 (75.4)	69 (53.1)	<0.001
Retired, <i>n</i> (%)	69 (65.1)	92 (70.8)	0.068

\*t-test, Chi-Square respectively

**Table 2** Descriptive statistics and score distributions of PACIC 5A ( $n = 236$ )

	Mean (SD)	Ceiling effects (%)	Floor effects (%)	Item–scale correlation	Cronbach's alpha	Test–retest correlation (ICC)
Overall PACIC score	2.44 (1.1)	0	0	–	0.90	0.81
PACIC scales						
Patient activation	2.79 (1.1)	0.4	3.8	0.65–0.88	0.85	0.77
Delivery system design/decision support	2.56 (1.2)	0.8	2.9	0.71–0.89	0.78	0.78
Goal setting/tailoring	2.31 (1.1)	1.2	3.4	0.63–0.90	0.81	0.82
Problem solving/contextual	2.48 (1.2)	0.8	2.1	0.66–0.87	0.86	0.79
Follow-up/coordination	2.01 (1.3)	0.4	4.6	0.59–0.91	0.81	0.85
5A sum score	2.52 (1.1)	0.8	2.1	–	0.83	0.88

ICC, intraclass correlation coefficient; PACIC, Patient Assessment of Chronic Illness Care.

**Table 3** Convergent validity results: correlations between PACIC and EUROPEP

PACIC scales	EUROPEP			
	Availability and accessibility	Information and support	Medical technical care	Doctor–patient relationship
Patient activation	0.22	0.52**	0.21	0.46*
Delivery system design/decision support	0.55**	0.36**	0.47	0.32*
Goal setting/tailoring	0.19	0.56**	0.43**	0.57*
Problem solving/contextual	0.23	0.29*	0.58*	0.41*
Follow-up/coordination	0.17	0.28	0.18	0.17

Spearman rank order correlations were conducted to assess relationship to PACIC scores. Level of significance: \* $P < 0.05$ ; \*\* $P < 0.01$ .

PACIC, Patient Assessment of Chronic Illness Care.

scale (3.4%); ceiling effects were below 1.3% so that both did not represent a limitation of the PACIC. Table 2 also provides the statistical calculations of internal validity and reliability of the German version of the PACIC 5A. Regarding scale internal consistency (internal validity), the correlations of single items and the referring scale (item–scale correlation) ranged from 0.59 to 0.91. The minimum demanded threshold of 0.40 to indicate internal consistency was easily surpassed, suggesting excellent consistency of the scales and high scale internal validity. Cronbach's alpha achieved 0.9 for the overall PACIC. Values for scales were at least 0.78 (delivery system design/decision support scale).

Generally, high values for test–retest reliability (ICC) were found, achieving the highest value for the follow-up/coordination scale (0.85) and the lowest for the patient activation scale (0.77). The correlation between PACIC overall score and 5A summary score was strong ( $r = 0.98$ , not displayed).

### 5A scoring

The mean for the PACIC 5A overall score was 2.52 (SD 1.1), and all scales had adequate variability. Within group repeated measures, results revealed that there were significant differences among the subscales. *Post-hoc* Tukey–Honest tests showed that the Arrange scale mean ( $M = 2.2$ ), as well as the mean for the Assist scale ( $M = 2.2$ ), was significantly lower ( $P < 0.05$  for all comparisons) than all other 5A scale means. By means of repeated ANOVAs, we compared gender, age (65 years or younger/over 65 years) and number of co-morbid conditions (cut-off: two co-morbid conditions). In all these comparisons no significant differences regarding

the specific PACIC scales could be revealed, which means that scores did not vary depending on demographic variables. As the PACIC scales, the 5A scales were highly intercorrelated. The median correlation was  $r = 0.74$ ,  $P < 0.001$  (range 0.62–0.91). Cronbach's alpha was in a range between 0.81 and 0.86 and achieved a median of 0.83 (see Table 2). The mean ICC was 0.88 (range 0.79–0.91). Construct validity of scales was confirmed in the factor analysis (not shown in Table 2). Factor loadings in the varimax rotation analysis were equal to or above 0.55 and the grouping the same as in the English of the version of the PACIC.

### Assessing external validity

Correlations between PACIC 5A scales and the EUROPEP scales, which were used as a reference for external validity, are displayed in Table 3. Strong correlations were achieved between corresponding scales, as for instance for the EUROPEP information and support scale to the PACIC scales of goal setting (0.56) and patient activation (0.52), as well as the EUROPEP scale medical/technical care to the PACIC scale problem solving (0.58). Doctor–patient relationship correlated with patient activation (0.46) and goal setting/tailoring (0.57). For scales that did not reflect corresponding constructs, the correlations were weak.

### Relationship to medical characteristics

Table 4 displays the score distribution of the PACIC 5A scales for different chronic diseases. As mentioned above, because socio-demographic and disease characteristics showed no significant

**Table 4** PACIC scores for arthritis and further chronic co-morbid conditions

Co-morbid condition	n (%)	PACIC overall score	Patient activation	Delivery system design/decision support	Goal setting/tailoring	Problem solving/contextual	Follow-up/coordination
Hypertension	98 (41.5)	2.43	2.85	2.54	2.43	2.19	2.17
Diabetes	39 (16.5)	2.73*	2.89	2.66	2.69*	2.58	2.86*
Depression	35 (14.8)	2.26	2.48	2.41	2.23	2.40	1.77
Coronary heart disease	38 (16.1)	2.49	2.82	2.74	2.33	2.59	1.98
Asthma/COPD	32 (13.5)	2.44	2.62	2.71	2.29	2.46	2.12

Group comparison by ANOVA; level of statistical significance: \* $P < 0.05$ .

COPD, chronic obstructive pulmonary disease; PACIC, Patient Assessment of Chronic Illness Care.

correlations with PACIC scales, ANOVAs were not adjusted. The only significant differences that were revealed by means of Tukey-Honest *post hoc* corrected ANOVAs could be observed for diabetes patients concerning the overall PACIC score, goal setting/tailoring, and follow-up/coordination. The results for patients with a concomitant depression appeared to be consistently lower, but this effect was not statistically significant.

## Conclusions

The German as well as the English version of the modified PACIC, the PACIC 5A, represents a comprehensive, brief and little-time-consuming instrument to assess whether quality of care is in alignment with the CCM. The present findings confirmed the results of the English version regarding validity and reliability among OA patients, but as the results indicated, the PACIC 5A is likely to have same properties also for further chronic diseases. Its expansion with six items provides additional important information to what extent health care providers' interventions are congruent to the well-accepted 5A approach of behavioural change, and enriches the original version of the PACIC. It seems not to be correlated with the type of chronic disease. We recommend using the 5A-expansion if conservative approaches, including motivational strategies, are to be evaluated.

Our findings showed that the instrument had reasonably good internal validity and reliability among OA patients in the primary care setting: the results of the assessment of internal validity and internal consistency showed that the PACIC 5A questionnaire appears to measure what it is supposed to. Its items proved to be selective and non-redundant, reflected in very satisfactory results for Cronbach's alpha. The values for ICC in order to assess test-retest reliability indicated good reproducibility. Glasgow *et al.* discussed the low test-retest reliability in their validation study. We assumed that this was mainly caused by the long interval (3 months) between the two measurement points they used in their study. As assumed, the reduction of the time period to 2 weeks in our study resulted in increased test-retest reliability.

While in the USA more than 1000 health care organizations have participated in health care improvements, the CCM is not yet a well-established concept in Germany. The overall scores, as well as the scale goal setting/tailoring, achieved notably lower values in comparison with the validation study of Glasgow *et al.* Also, the follow-up/coordination scale was rated lower.

As in the validation study of Glasgow *et al.*, demographic variables and different chronic illnesses showed to have little influence

on the PACIC scores. According to their results, the only difference that could be revealed occurred in the diabetes group: these patients achieved significantly higher scores in the overall PACIC, in the goal setting/tailoring scale, and in the follow-up/coordination scale. This could mirror the effects of the newly introduced disease management programme for diabetics in Germany, which demands frequent follow-ups. We found some weak and statistically not significant influence of gender and age on the PACIC: women and older patients tended to achieve higher scores. Former studies assessing patient satisfaction with care indicated that older patients tend to have a more positive assessment of their doctors, which could be an explanation for our findings [33,34].

The scale analysis revealed interesting results concerning how often different CCM and 5A activities are provided. Similar to the findings of Glasgow *et al.*, goal setting and follow-up support activities were conducted significantly less often than other activities. The Assist and Arrange scales (5A model) describe the counselling and referral activities without which behavioural change is unlikely to happen. The fact that the means of these scales were significantly lower than those of the other 5A scales suggests that improvement in self-management support is important and necessary. Physical activity represents an evidence-based approach in decreasing the impact of arthritis on patients' quality of life and would reflect an area of collaborative goal setting between doctors and patients. This core element of the CCM also seems to be underused in arthritis care. Moreover, the comparison of our results with others indicates that the lack of congruency to the CCM seems to be similar in different health care systems [35]. The high correlation found between PACIC overall score and 5A summary score may mainly be due to the fact that to some extent they include similar questions, as already discussed by Glasgow *et al.* [11]. In assessing external validity, correlations of PACIC 5A with corresponding scales from the EUROPEP were strong, if similar dimensions of care were addressed, and weak, if not. So, altogether our assumptions were confirmed: even though many items of the EUROPEP are quite similar to the PACIC, the EUROPEP scales are arranged quite differently and are not underlined by a theoretical framework as the CCM. While the EUROPEP addresses more to care accessibility, delivery and coordination of care, the PACIC additionally covers the dimensions of patient activation, goal setting and problem solving. The fact that the PACIC is strictly based on the conceptual framework of the CCM makes it superior to some previously validated questionnaires that mainly reflect patient satisfaction. Our recommendation is that PACIC should be favoured if chronic care needs to be assessed in OA.

## Strengths and weaknesses

Our study sample was reasonably large and included primary care patients from 75 practices with an age-related normal prevalence of different chronic diseases. Multiple demographic and OA-related data were available. The lack of validated instruments to assess external validity represents a limitation, as well as the fact that no change over time (sensitivity) could be assessed. This will be part of further research.

Especially due to demographic trends, the incidence and prevalence of most chronic diseases is on the rise, including OA. Chronic diseases, including arthritis, represent the biggest challenge for health care systems in the near future [36]. The Institute of Medicine has concluded that patient-centred, collaborative care is essential to improve chronic illness care [37]. The CCM reflects the conceptual framework to these approaches, whereas the 5A approach represents an evidence-based strategy to induce behaviour change. Easily applicable and little-time-consuming measures to assess implementation of both, the CCM and the 5A approach to OA self-management, are indispensable. The PACIC 5A seems suitable to be used in research as well as in quality improvement efforts [5,6]. This finding may indicate that the structure and culture of providing health care in Germany are not yet in alignment with a conceptual framework as the CCM. The complexity of proactive and patient-centred care that also addresses self-management and coping becomes more and more in the focus of policymakers in Germany. Currently, there are some considerations to adjust GPs' reimbursement to quality indicators based on the CCM and PACIC, respectively. Chronic care is increasingly adapted to the CCM, and appropriate assessment instruments are indispensable to increase further implementation of the CCM. As the present study could prove, the German version of the PACIC 5A appears to have a similar strength compared with the original version: it represents an easy-to-use instrument to assess whether provided care is in alignment with the CCM in OA patients. Even it has to be confirmed in further research, the results already indicated that it may have the same qualities for other chronic diseases.

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## Appendix A

### Health care habits survey

Staying healthy can be difficult when you have a chronic illness. We would like to learn about the type of help with your condition you get from your health care team. This might include your regular doctor, his or her nurse, or physician's assistant who treats your arthritis. Your answers will be kept confidential and will not be shared with anyone else.

Think about the health care you've received for your arthritis over the past 6 months. (If it's been more than 6 months since you've seen your doctor or nurse, think about your most recent visit.)

Over the past 6 months, when receiving medical care for my arthritis, I was:

	Almost never	Generally not	Sometimes	Most of the time	Almost always
1. Asked for my ideas when we made a treatment plan.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
2. Given choices about treatment to think about.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
3. Asked to talk about any problems with my medicines or their effects.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
4. Given a written list of things I should do to improve my health.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
5. Satisfied that my care was well organized.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
6. Shown how what I did to take care of my illness influenced my condition.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
7. Asked to talk about my goals in caring for my illness.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>

Think about the health care you've received for your arthritis over the past 6 months. (If it's been more than 6 months since you've seen your doctor or nurse, think about your most recent visit.)

Over the past 6 months, when receiving medical care for my arthritis, I was:

	Almost never	Generally not	Sometimes	Most of the time	Almost always
8. Helped to set specific goals to improve my eating or exercise.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
9. Given a copy of my treatment plan.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
10. Encouraged to go to a specific group or class to help me cope with my chronic illness.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
11. Asked questions, either directly or on a survey, about my health habits.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
12. Sure that my doctor or nurse thought about my values and my traditions when they recommended treatments to me.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
13. Helped to make a treatment plan that I could do in my daily life.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
14. Helped to plan ahead so I could take care of my illness even in hard times.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
15. Asked how my chronic illness affects my life.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
16. Contacted after a visit to see how things were going.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>

Think about the health care you've received for your arthritis over the past 6 months. (If it's been more than 6 months since you've seen your doctor or nurse, think about your most recent visit.)

Over the past 6 months, when receiving medical care for my arthritis, I was:

	Almost never	Generally not	Sometimes	Most of the time	Almost always
17. Encouraged to attend programs in the community that could help me.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
18. Referred to a dietitian, health educator, or counselor.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
19. Told how my visits with other types of doctors, like the rheumatologist or orthopedic surgeon, helped my treatment.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
20. Asked how my visits with other doctors were going.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
21. Asked what I would like to discuss about my illness at that visit.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
22. Asked how my work, family, or social situation related to taking care of my illness.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
23. Helped to make plans for how to get support from my friends, family or community.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
24. Told how important the things I do to take care of my illness (e.g. exercise) were for my health.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
25. Set a goal together with my team for what I could do to manage my condition.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>
26. Given a book or monitoring log in which to record the progress I am making.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>

## Scoring instructions

For PACIC scoring:

PACIC summary score =	Average of first 20 items (do not include items 21–26)
Patient activation =	Average of items 1–3
Delivery system/practice design =	Average of items 4–6
Goal setting/tailoring =	Average of items 7–11
Problem solving/contextual =	Average of items 12–15
Follow-up/coordination =	Average of items 16–20

For 5A scoring

5A summary score =	Average of items 1–4 and 6–26 (exclude item 5 and average the rest)
Assess =	Average of items 1, 11, 15, 20, 21
Advise =	Average of items 4, 6, 9, 19, 24
Agree =	Average of items 2, 3, 7, 8, 25
Assist =	Average of items 10, 12, 13, 14, 26
Arrange =	Average of items 16, 17, 18, 22, 23