

Quality indicators to assess quality of pain clinic care from the perspective of patients with chronic pain

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Quality indicators to assess quality of pain clinic care from the perspective of patients with chronic pain: development, usability, comprehensibility, and psychometric quality of the QiPPP questionnaire

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Abstract

To address the lack of appropriate patient-defined quality indicators (QIs) for assessment of pain clinic care in the Netherlands, we developed the “Quality Indicators Pain Patients’ Perspective” (QiPPP) questionnaire. Quality indicators are widely used to measure the quality of the structure, process, and outcome of health care. The Pain Patient United Consortium, together with the University Pain Centre of Maastricht, developed QIs for assessment of care. The aim of this study was to develop QIs from the perspective of patients with chronic pain for assessment of the care provided by a pain clinic, and to validate them on usability, comprehensibility, and psychometric quality in daily pain practice. Quality as defined by patients with chronic pain (in survey and focus groups) was prioritized by consensus and transformed into QI. A first set was tested and fine-tuned, resulting in the QiPPP questionnaire. Five participating pain clinics distributed 200 questionnaires among consecutive patients with chronic pain under treatment. To examine the dimensionality of the QIs, patient responses were analyzed on the basis of reporting frequencies and findings of principal component analysis. For construct validation, the influence of patient characteristics was observed in 3 components. A total of 547 (54.7%) populated QiPPP questionnaires (response rate, 58.9%) were analyzed. The mean score for patient comprehensibility was 8.6 ± 1.4 . The final QiPPP questionnaire included 21 QIs (18 process; 3 outcome) distributed over 7 domains. The QiPPP questionnaire was of sufficient psychometric quality and found to be useful and understandable by patients with chronic pain.

Keywords: QI, Quality assessment, Pain clinic care, Pain patients’ perspective

1. Introduction

Quality of health care is monitored using quality indicators (QIs), which assess aspects related to the structure, process, or outcome of care, depending on the focus of the QIs domains.^{5,10,11}

Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

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Inspired by the results of the assessment, the quality that is provided may improve.⁶ To assess the quality of health care, QIs should reveal the perspectives of health care professionals and patients.^{5,19,35} Therefore, it is essential to gain the patients’ view on what they find to be important criteria for health care quality assessment. Several methods are recommended for incorporating patients’ views, including participation of patients in the early stage of QI development.^{13,32,33} However, to the best of our knowledge, no QIs for assessment of chronic pain care quality have been developed on the basis of criteria defined solely by patients with chronic pain.

In chronic pain management, QIs for assessment of pain facilities solely from the perspective of professionals have been previously developed in the Netherlands.⁸ Currently, pain treatment facilities that apply for pain clinic certification need to meet the national QI standards, which consist of professionally defined structure indicators. In 2015, patients with chronic pain in the Netherlands defined general criteria for what they viewed as important for the quality of pain care.^{25,30} To solve the lack of QIs from the perspective of patients with chronic pain, these mainly process-oriented criteria were transformed into the QI format. This process of QI development jointly with large patient organizations (Pain Patients United Consortium³⁰) and University Pain Center of Maastricht yielded the Quality Indicators Pain Patients’ Perspective (QiPPP) questionnaire, which has good face validity on the basis of consensus among professional and patient representative groups.^{9,23}

To ensure its construct validity, the QiPPP questionnaire must be developed with scientific accuracy.^{13,22} Therefore, it is important to gain insight into the structure and dimensionality of the data and decide on the definitive selection of QIs.⁹ For national comparison, we measured scores per hospital, seeking to determine the extent to which the QiPPP questionnaire discriminates the quality of pain care between hospitals.⁶ Testing the usability and comprehensibility of the QiPPP questionnaire in daily pain practice is most important for QI development from the perspective of patients with chronic pain.^{9,13}

This article aims to describe the process of development of QIs to assess quality of pain care from the perspective of patients suffering from chronic pain with patient participation from the beginning of the process, resulting in the QiPPP questionnaire. On top of that, this article aims to describe the validation of the QiPPP on usability, comprehensibility, and psychometric quality in daily pain practice in the Netherlands. Furthermore, to define the influence of patient characteristics on QIs and to compare hospitals with different settings, the case mix stability for each QI was assessed.^{9,15,31} Finally, recommendations were made for further improvement and prospects for implementing the QiPPP questionnaire for (daily) assessment of chronic pain clinic care.

2. Methods

Chronic pain patient organizations and the Maastricht University Medical Centre (MUMC+) jointly developed QIs for assessment of quality pain care. Using a consensus approach,⁹ the quality criteria already defined in a previous research project^{1,21,25,30} from the perspective of patients with chronic pain (**Table 1**) were used as the starting point of this project and transformed into QI, resulting in the

QiPPP questionnaire. **Figure 1** shows the steps involved in development of these QIs. To validate its usability, comprehensibility, and psychometric quality, the QiPPP questionnaire was administered to a large group of patients. Multidisciplinary pain clinics could participate in this study if they had at least 3 different medical specialists working in the team, had registered status³ for pain clinic (academic or peripheral), and could admit at least 200 patients in a period of 6 months. Five multidisciplinary pain clinics fulfilled the criteria and participated in the study. Patients suffering from chronic pain under treatment at any of the 5 pain clinics were asked to participate in the QiPPP survey. Approval for this study was obtained from the Medical Ethical Committee of the Maastricht University/Maastricht UMC+ (METC 15-4-092).

2.1. Steps involved in quality indicators' development

2.1.1. Step 1: composition of a task force and method

A task force consisting of a delegate from the Pain Patients United Consortium (coauthor I. Thomassen) with governance expertise, health care specialists in chronic pain, and experts in the field of implementation and clinimetrics developed a 3-step design (**Fig. 1**) for development of QIs based on the patients' quality criteria of the previous research projects.^{1,21,25,30} **Table 1** shows the defined quality criteria from the previous projects (*set A* = *Pain Patients United Consortium*; *set B* = *PainPlatform*) used for QI development. At the first meeting, the purpose and design of the intended development process and the content of the previously defined quality criteria defined by patient organizations were discussed. Literature concerning quality of pain care and quality from the perspective of patients with chronic pain was shared.^{12,19,20,25,30}

Table 1
The quality of pain care defined in set A and the top 10 quality criteria of pain care in set B.

Quality criteria Pain Patients United Consortium (set A)
Waiting time <1 mo
Multidisciplinary intake and treatment
Same-day consultation, diagnosis, and treatment plan
Knowing who will be the primary responsible treating physician
Self-management support
Pain and work rehabilitation
Patient involvement in (online) focus groups, questionnaires, and interview
Preliminary information concerning the intake
Preliminary information concerning the multidisciplinary (pain team)
Preliminary to the intake a pain questionnaire: type of pain, duration, location, and the impact of the pain on daily life that needs improvement
Feedback to the patient concerning the pain questionnaire
Stating the expectations of both health care providers and patients
e-Health: self-registration for doctor's appointment (date and time, application, pain score, impact score, quality of life, pain diary, online questions to physician/health carer, online disclosure of medication effects and side effects, mobile (short message service) during waiting time, community online
Need for scale improvement: sleep, daily activities, relations with people, normal (work) activities, mood, and side effects
Electronic patient record/own patient online file
Quality criteria PainPlatform (set b)
Your health care provider listens attentively
Your health care provider listens seriously
Your health care provider involves you in decisions about your treatment
Your health care provider states expectations
Your health care provider has up-to-date knowledge about the latest insights
Your health care provider knows what you want to know
Your health care provider uses appropriate communication skills
Your health care provider communicates regularly with other health care providers
Your general practitioner knows about your personal situation
Your care coordinator is important (one contact person for the patient)

The content of set A was established by a national postal survey (n = 741) of patients with chronic pain (affiliated to a patient organization) to measure their satisfaction with their pain care in partnership with the Erasmus Medical Centre.²⁹ The content of set B was developed from the results of a literature search and from focus groups in partnership with PainPlatform, The Netherlands Institute for Health Services Research (NIVEL),²¹ and the Centre of Expertise for Long-Term Care (VLANS).¹

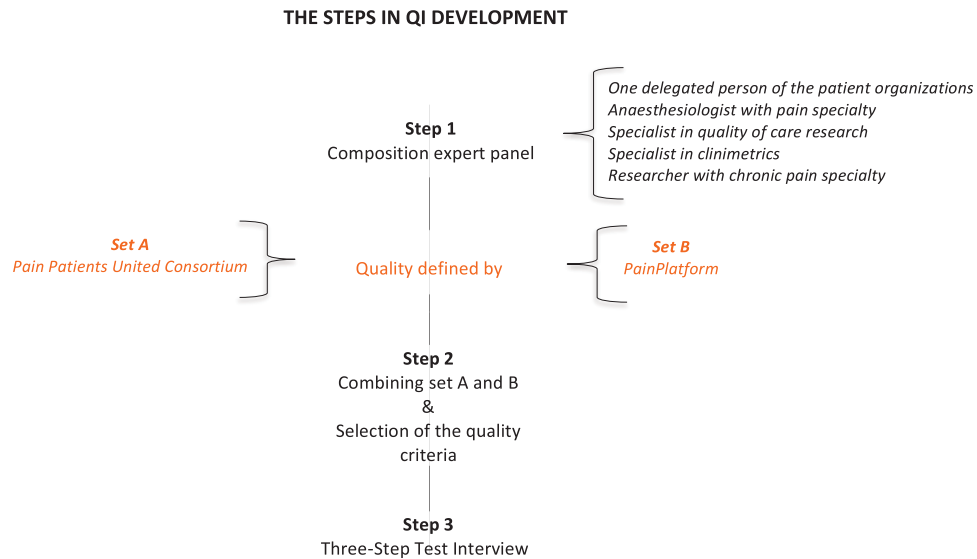


Figure 1. Flow chart of the 3 steps in development of quality indicators (QIs).

2.1.2. Step 2: combination of sets of quality criteria

In collaboration with the delegated representative of the patient organization, the researcher proposed a first draft with combined quality criteria from sets A and B for development of QI. Each quality criteria (mentioned on sets A and B) on this draft was based on the considerations of the availability of data sources, the feasibility of data collection and quality measurement, and the implication of the QIs in the care setting.^{5,26} The items were then clustered in different quality domains based on the content of the item. The researcher and specialist in clinimetrics translated the items (quality criteria) into questions to measure QIs in daily practice after agreement on the definitive list, resulting in the QiPPP questionnaire.^{4,9} The next step was testing the feasibility of the QiPPP questionnaire in daily pain practice.

2.1.3. Step 3: three-step test interview

Before the QiPPP questionnaire was brought into a field test, the QIs were checked to ensure that they were clear and understandable to the patients. There are 2 well-known methods for testing this, ie, “think aloud” and “probing.”⁹ The three-step test interview (TSTI), an observational instrument for pretesting self-completed questionnaires, combines these 2 methods (Table 2).¹⁴ Patients suffering from chronic pain were asked to “say aloud what they think as they think it,” ie, the thoughts that come naturally as part of reading the questions of the QiPPP questionnaire. No explanations of these thoughts were required, starting from the beginning of reading the patient information, to opening the envelope, to filling in the QiPPP questionnaire. Immediately thereafter, the interviewer “retrospectively probed” to reconstruct the actual thoughts, supported by quotes and the notes made. Finally, the patients’ ideas and views were explored. The main aim of the TSTI is to produce data on how respondents (would) complete a questionnaire in daily practice. Responders should be members of the intended population; in this case, patients with chronic pain under treatment in a pain clinic. Preferably, the TSTI should be conducted in the setting in which the completion of the questionnaire by the patient should take place. Seven patients

from UPCM were chosen at random to perceive the TSTI and complete the QiPPP questionnaire during their visit, and one patient was visited at home to complete the QiPPP questionnaire. A pain specialist at UPCM recruited the patients (patients with chronic pain in random order with at least a second pain clinic visit). No specific inclusion criteria were formulated. Within each step of the TSTI, the QiPPP questions were adjusted to accommodate the remarks of the patients.

2.2. Quality Indicators Pain Patients’ Perspective questionnaire validation

Each pain clinic received 200 QiPPP questionnaires to distribute among consecutive patients with chronic pain from December 2015 to May 2016 (to a total of 1000 QiPPP questionnaires). Consecutive patients suffering from chronic pain with multidimensional pain syndromes⁷ signing up for appointment with their doctors at the pain clinic and visiting the pain clinic for at least the second time received the patient information form and QiPPP questionnaire from the desk staff. Patients were requested to provide informed consent for participation before consultation with the doctor. If patients required more information than that provided on the forms, they had the option of asking the physician for the same, and signing their informed consent after their visit. The patients were asked to complete the questionnaire in the pain clinic or at home. The populated QiPPP questionnaire could be anonymously delivered in a sealed envelope at the clinic or sent by postal mail to the researchers. Patients provided informed consent by signature and were not asked for their names or addresses. An independent partner, Center for Data and Information Management (MEMIC), University of Maastricht, scanned the returned QiPPP questionnaires. Thereafter, the data were analyzed using SPSS version 23 (IBM SPSS Statistics Corporation, Armonk, NY).

2.3. Sample size

Considering a possible reduction in the number of items and data structure (principal component analysis [PCA]), the required sample size must include a minimum of 10 times as many patients

Table 2**The 3 steps taken by the researcher to conform to the 3-step test interview method.**

Step 1. Collect observational data regarding the respondent's response behaviour.	<i>The researcher observed all comments and behaviours of the patients about the patient information folder and the questions on the QiPPP list. These were all documented on the QiPPP questionnaire version of the patient (eg, QiPPP questionnaire version 1).</i>
Step 2. The observer only considered those actions or thoughts that has been observed (in the first step) about which he feels not fully informed ("did I hear you say...?" or "you stopped for a while there, what you think?").	<i>The researcher asked explanation on the patient about the observed behaviour and comments that were documented on the QiPPP questionnaire.</i>
Step 3. Respondents are requested to explain their response behaviour, and suggest improvements of wording of questions, layout of the questionnaire, instructions etc. Respondents were asked to paraphrase questions and to comment their definitions for terms used. The researchers make their own analysis of problems detected in steps 1 and 2.	<i>The researcher asked the patient about any suggested improvements. These were documented and processed in a next version of the QiPPP questionnaire.</i>

TSTI METHOD used for the QiPPP questionnaire.
TSTI, three-step test interview.

as variables in the present analysis. As the QiPPP consists of 39 variables, the responses from a minimum of 400 patients were determined to be required for analysis.^{17,34,36}

2.4. Quality indicator measurement

2.4.1. The Quality Indicators Pain Patients' Perspective questionnaire

The QiPPP questionnaire covers 11 different quality domains²⁰: patient–physician contact; one central contact person for the patient; waiting time; pain team information; administration of pain questionnaire; discussion of treatment information between the patient and physician; attention towards work and rehabilitation; shared treatment decision-making; treatment goal; achievement of treatment goal and treatment result; and the result of the pain care process. Each domain consisted of a main question, the quality indicator. To determine patient satisfaction regarding the quality indicator, it was followed by additional questions. For example, "Did you receive treatment information?" is the main question and quality indicator, and "Did you find the information clear?" and "Did you find the information meaningful?" are additional questions to observe the patient satisfaction. The additional questions were meant to provide more detailed information about the content of the quality indicator, which might help clinics improve specific elements of care. The main questions (QIs; 18 process and 3 outcome items) were used to examine the dimensionality of data.

2.4.2. Usability and comprehensibility of the Quality Indicators Pain Patients' Perspective questionnaire

Generally, the usability (manageability) of a questionnaire includes readability, the nature of the questions, and the time to complete a questionnaire.⁴ The patient comprehensibility is about simple language use and whether the questions are understandable for the patients (for instance, if patients do not speak Dutch as their first language). To test the usability and comprehensibility of the questions, patients were required to answer 7 additional questions (shown in the results section). Patients could score these questions about comprehensibility on a score from 0 to 10, in which the higher the score, the better the comprehensibility was.

2.4.3. Case mix

For case mix analysis, patients were further queried regarding sociodemographic and pain-related variables such as sex, age, durations of pain complaint and pain clinic treatment, general health, education level, the name of the pain clinic where the patient was receiving treatment, number of pain clinic visits during that episode, and whether the patient was still under treatment.

2.5. Analysis

2.5.1. Response and missing items

The willingness of patients to answer the QiPPP questionnaire as well as their responses and missing data on an item level were described in terms of frequencies. Patients who attended less than 25% of the items on the QiPPP questionnaire were excluded from analysis.^{9,29} All other missing scores were labeled as missing data.

2.5.2. Patient characteristics, usability, and comprehensibility

Differences in patient characteristics among the 5 pain clinics were analyzed by one-way analysis of variance, with 0.05 as the cutoff level for significance. The following patient characteristics were measured (**Table 3**): sex, age, pain complaints in weeks, treatment duration in weeks, general health status (excellent, very good, good, moderate, and bad), education (8 years, elementary; 9 years, elementary and middle; <10 years, elementary, middle, and high school), and the amount of pain clinic visits (204 visits; >4 visits). Scores for items related to patient usability and comprehensibility were analyzed as mean values and percentages.

2.5.3. Construct validity

For examining data dimensionality, the assumed quality domains were subjected to PCA with oblique rotation.²⁹ Communal variables were evaluated by the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO \geq 0.60). In addition, correlations among variables were determined on the basis of significance calculated by Bartlett test of sphericity ($P < 0.05$). A major rule for performing PCA is the inclusion of 10 times as many patients as variables.²⁹ The following 2 criteria were used to determine which components were appropriate and which to interpret—components with Kaiser criterion score >1 and components occurring before the strong decline in the curve of the scree plot.²⁴ The reliabilities of QI items and those of different quality domains extracted by PCA were analyzed on the basis of Cronbach α (sufficient reliability, $\alpha > 0.60$).²¹ Coherence among different quality domains was evaluated by Pearson correlation analysis.

Table 3**Characteristics of the study population.**

Patient characteristics	Total % (N = 547)	PAIN clinic 1 % (N = 109)	PAIN clinic 2 % (N = 91)	PAIN clinic 3 % (N = 112)	PAIN clinic 4 % (N = 138)	PAIN clinic 5 % (N = 97)	P
Sex							0.465
Male	34.7 (190)	38.4 (43)	37.4 (34)	36.6 (41)	30.4 (42)	30.9 (30)	
Female	58.5 (320)	54.1 (59)	56.0 (51)	55.4 (62)	60.9 (84)	66.0 (64)	
Age*	59.4 (22-89)	59.5 (22-84)	61.6 (31-87)	61.4 (35-87)	57.9 (22-89)	56.8 (23-80)	0.030
Pain complaint duration in weeks†	389.8 (8-2704)	496.6 (12-2600)	342.7 (12-2600)	425.2 (8-2704)	290.6 (8-2704)	423.7 (20-2340)	0.025
<1 y	1.5 (8)	0.9 (1)	2.2 (2)	0.9 (1)	2.9 (4)		
1-5 y	15.4 (84)	11.0 (12)	22.0 (20)	8.9 (10)	25.4 (35)	7.2 (7)	
>5 y	70.9 (388)	70.6 (77)	63.7 (58)	75.9 (85)	61.6 (85)	85.6 (83)	
Treatment duration in weeks†	162.0 (1-1664)	201.0 (1-1664)	118.4 (2-936)	176.5 (6-1664)	106.4 (1-1040)	222.4 (4-1560)	0.003
Treatment duration in weeks (median)	53.0	53.0	32.0	96.0	32.0	104.0	
General health status							0.001
Excellent	3.3 (18)	1.8 (2)	6.6 (6)		4.3 (6)	4.1 (4)	
Very good	8.2 (45)	4.6 (5)	11.0 (10)	3.6 (4)	15.2 (21)	5.2 (5)	
Good	40.8 (223)	37.6 (41)	35.2 (32)	41.1 (46)	44.2 (61)	44.3 (43)	
Moderate	34.2 (187)	36.7 (40)	29.7 (27)	41.1 (46)	26.8 (37)	38.1 (37)	
Bad	6.8 (37)	9.2 (10)	9.9 (9)	6.3 (7)	2.9 (4)	7.2 (7)	
Education							0.143
Low	36.0 (197)	37.7 (40)	36.3 (33)	38.4 (43)	29.7 (41)	41.2 (40)	
Middle	39.7 (217)	36.7 (40)	40.7 (37)	40.2 (45)	39.9 (55)	41.2 (40)	
High	17.0 (93)	18.3 (20)	18.7 (17)	12.5 (14)	21.60 (29)	13.4 (13)	
Pain clinic visits							0.001
2-4	38.8 (212)	37.6 (41)	45.1 (41)	28.6 (32)	54.3 (75)	23.7 (23)	
> 4	49.7 (272)	46.8 (51)	49.5 (45)	61.6 (69)	31.2 (43)	66.0 (64)	

P Value = one-way analysis of variance.

* Mean age.

† Mean pain complaint duration and range in weeks, mean treatment duration and range in weeks.

2.5.4. Case mix analysis

For measuring the influence of patient characteristics of the questionnaire items, the outcomes of extracted PCA components with $\alpha > 0.600$ were subjected to case mix analysis with multivariate backward stepwise linear regression analysis.

2.5.5. Patient scores for the quality indicators in accordance with principal component analysis–extracted components

Scores for each QI are presented as percentages separately for each pain clinic as well as in total for all 5 pain clinics, along with 95% confidence intervals, in accordance with PCA-extracted components. Overall scores of the original QiPPP questionnaire (for all 5 pain clinics), along with the missing scores, are presented as percentage per item (Appendix 1, available at <http://links.lww.com/PAIN/A644>).

3. Results

3.1. The result on the process of the development of the QIs from the perspective of patients with chronic pain

3.1.1. Method and combination of sets of quality criteria

The first draft of a set of QIs contained the following 8 quality domains: continuity of pain care, intake process, waiting time, pain questionnaire, treatment process, contact with pain specialist, treatment goal, and treatment result. For converting the quality criteria into measurable QI, a factsheet was prepared for each QI with

a description of the QIs and proposals concerning how to measure a specific quality in daily pain practice and how to calculate the QI.²⁸

Table 4 provides an example of such a factsheet. The task force discussed the proposed draft and a definite list was obtained. Changes were made, and the quality domains were extended to 11 domains: “continuity of care” was changed to “one central contact person for the patient,” “intake process” was split up into 2 domains, one of which was added to the quality domain “administration of pain questionnaire” and one was changed to “information to the patient about pain team availability,” the “contact with pain specialist was changed to “patient–physician contact,” and “attention for work and rehabilitation,” “achieved treatment goal was added to achieved treatment result,” and “the result of the pain care process” were added. This resulted in the QiPPP questionnaire that consisted of 21 QIs divided over 11 quality domains, which has been used in the following validation study. The QiPPP questionnaire included 2 classifications of the approaches to assessment, ie, the process (n = 18 QI) and outcome (n = 3 QI) of pain care.

3.1.2. Three-step test interview

The QiPPP questionnaire was modified after each interview based on the first 4 patients, brief patient information was added on the QiPPP questionnaire, and patient instruction were shortened. Regarding the questions, for example, one question concerning the pain team information “it is clear for me that there is a possibility that screening and treatment could be performed by various specialists” turned out to be a difficult question, seemed very similar

Table 4
Factsheet example: quality domain of “one contact person for the patient.”

Quality domain: one contact person for the patient	
Why this indicator	Chronic pain patients often are exposed to different specialties, each providing specific tests and treatments. Therefore, one contact person is desirable. This person acts as an intermediary between the patient and the professionals and has an overview of all treatments.
Nominator	All patients with one contact person in caring for their pain complaint
Denominator	The total number of patient in which this indicator is measured
Inclusion/exclusion criteria	None
Question	Do you have one contact person in caring for your pain? Someone to whom you can ask questions and who has an overview of your pain treatments Yes No My contact person and I have a complete overview on my treatments in the pain clinic Totally agree Slightly agree Slightly disagree Totally disagree
Type indicator	Process

to a previous question, and was therefore removed. Furthermore, one question clarifying the question “one contact person for the patient” was added, response categories concerning “treatment

information” were adjusted, and a few minor changes to the text were made. The next 4 patients did not make any additional comments or changes. This resulted in a definite QiPPP questionnaire that was approved by the task force.

3.2. The result of the validation of the Quality Indicators Pain Patients’ Perspective questionnaire

3.2.1. Quality Indicators Pain Patients’ Perspective questionnaire response and missing items

The patient response to the distributed QiPPP questionnaires (n = 1000) was 58.9% (589 patients) (range, 45.5%-83.5% per clinic). **Figure 2** presents a flow chart of QiPPP questionnaire distribution and response at each pain clinic. Only 4 responding patients had attended less than 25% of the items on the QiPPP questionnaire and were, therefore, excluded from analysis. In addition, 38 patients who had reported only one visit to the pain clinic were excluded from analysis. Thus, the final data set for analysis consisted of 547 (55%) respondents, of whom 96.2% had completed 75% to 100% of the questionnaire items. Items that were not scored by the patients mostly concerned the additional items of the QI (the additional, more detailed questions, to observe the patient satisfaction on the QI) (range of nonresponse, 5.3%-15.4%). All missing scores were reported in the overall result of the QiPPP questionnaire (Appendix 1, available at <http://links.lww.com/PAIN/A644>).

3.2.2. Characteristics of the study population

Table 3 presents the patient characteristics of the 5 pain clinics individually and in total. There were significant differences among the pain clinics in terms of patient age ($P = 0.030$), duration of pain complaint ($P = 0.025$), treatment duration ($P = 0.003$), general

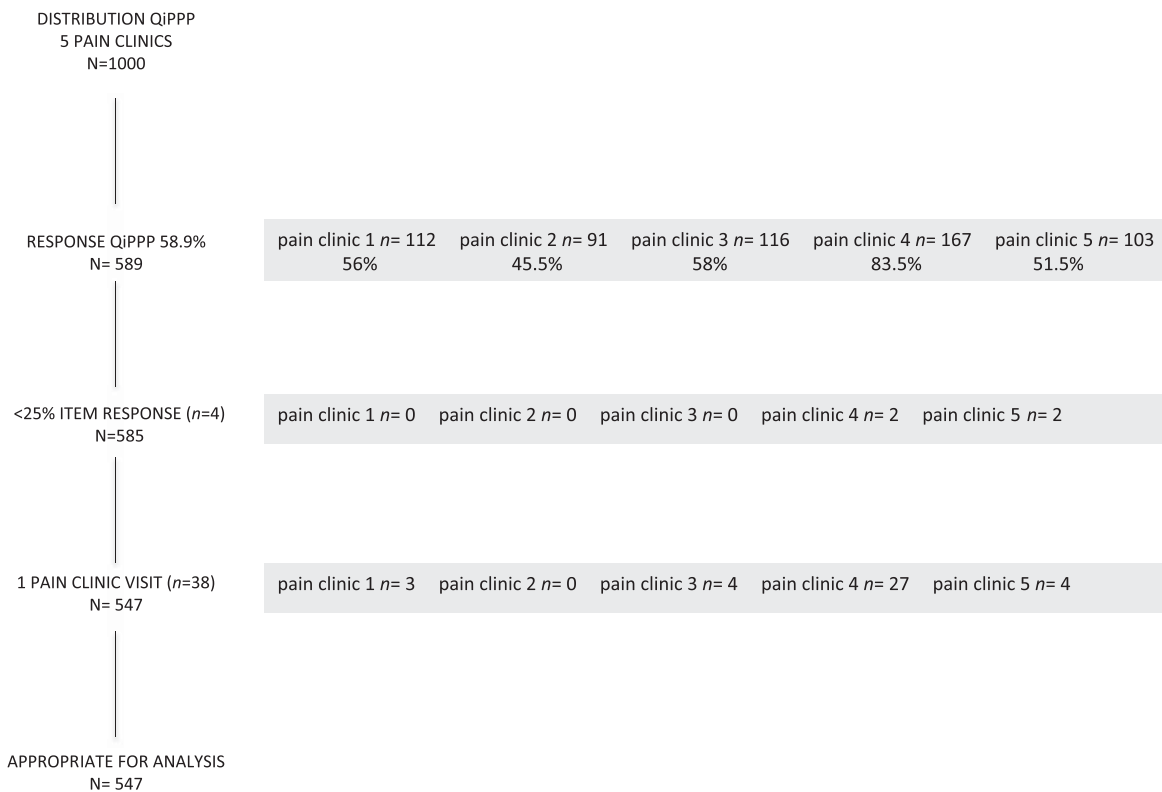


Figure 2. Flow chart showing the distribution of and response to the Quality Indicators Pain Patients’ Perspective (QiPPP) questionnaire at the 5 participating pain clinics.

Table 5
Patient comprehensibility of the Quality Indicators Pain Patients' Perspective questionnaire.

Did you need support to fill in the questionnaire?	
Yes	6.9 (38)
If yes, how did that person help?	
Has read the questions	4.8 (26)
Has written the answers	2.9 (16)
Has answered the questions in my place	0.7 (4)
Has translated the questions into my language	0.7 (4)
A different kind of help:.....	0.7 (4)
No	88.7 (485)
Can you indicate in a score from 0 to 10:	
Whether you find the language of the sentences understandable?	8.6 (1.4)*
Whether you find the content of the sentences clear?	8.6 (1.4)*
Below you can indicate which question(s) were not clear at all for you	
Whether you find that all questions are related to quality of pain care?	8.4 (1.4)*
Below you can indicate which question(s) were not clear at all for you	
What do you think about the number of questions in the list	
Not too many and not too little questions	48.4 (265)
Not too many questions	2.2 (12)
Too little questions	17.7 (97)
No opinion	24.1 (132)
Can you give an estimate of how many minutes you needed to fill in the questionnaire?	12.9 (7.5)†
Do you find it important that you as a patient is able to judge the quality of pain care you received?	8.9 (1.4)*

* Mean score on a 0-10 Likert scale with SD.

† Mean minutes to estimate the QiPPP.

health status of the patients ($P = 0.001$), and average number of pain clinic visits per patient ($P = 0.001$).

3.2.3. Patient usability and comprehensibility of the Quality Indicators Pain Patients' Perspective questionnaire

Overall, 6.9% of the patients ($n = 38$) sought support for completing the QiPPP questionnaire. **Table 5** presents the

different ways of support sought by patients as well as the results of patient comprehensibility. Items enquiring whether the questions were understandable for patients and whether the sentences were clear both scored a mean value of 8.6 ± 1.4 , with a median score of 9 on a 10-point Likert scale. Patients were allowed to specifically indicate the question(s) that were not understandable or were not related to the quality of care in their opinion; the most frequently indicated question in this regard (by 20 patients, 3%) concerned the achievement of treatment goal. Only 3 patients responded to the question: "below, you may indicate which question(s) were not related to the quality of care."

3.2.4. Construct validity of the Quality Indicators Pain Patients' Perspective questionnaire

3.2.4.1. Results of principal component analysis

The QiPPP questionnaire contains 18 process and 3 outcome QIs (21 items in total). The QI "waiting list" did not fit the PCA model because of variations in response options. Therefore, PCA was performed with 20 QIs, initially distributed over the 11 domains conform the development process of the QiPPP questionnaire. On PCA, 6 components with initial eigenvalues > 1.0 were extracted (**Table 6**). **Figure 3** shows the overview of the PCA extraction. Because the component "received pain questionnaire" was one item (component 6, shown in **Table 6**) with a KMO < 0.500 , only the 5 extracted components with a KMO > 0.500 along with their component loadings and Cronbach α values are shown in **Figure 4**. All component loading values were above 0.40, and could, therefore, be statistically assigned to that component. On PCA, it was found that each QI (loading > 0.40) was loaded to one component, which means that the items were assigned solely to that concept of the component. Components 1, 2, and 3 exhibited statistically adequate KMO values for PCA-extracted components; however, the Cronbach α of component 3 was low (-0.435). The concept of component 3 was "treatment outcome." Items on achieved treatment goal (item 27) and treatment result (item 28) seemed to load higher on the concept than on satisfaction regarding the entire pain care received (item 30). Components 4 and 5 exhibited low KMO values, where a minimal KMO of 0.5 was required.²⁴ Considering the component loading of item 12 (0.416), the consistency of component 4 was not very high. The low Cronbach α value of component 5 was low because there were

Table 6
Six components extracted by principal component analysis, with percentage of variance denoted by initial eigenvalues > 1.0 .

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total
1 Shared treatment information & decision-making (6 items)	5.966	29.831	29.831	5.966	29.831	29.831	4.336
2 Patient-physician contact (5 items)	2.063	10.314	40.145	2.063	10.314	40.145	4.081
3 Discussed information on the impact of work, rehabilitation, and daily activities (3 items)	1.656	8.278	48.423	1.656	8.278	48.423	2.864
4 One contact person for the patient (2 items)	1.299	6.494	54.197	1.299	6.494	54.197	3.022
5 Treatment outcome (3 items)	1.230	6.150	61.067	1.230	6.150	61.067	1.372
6 Received pain questionnaire (1 item)	1.044	4.638	66.285	1.044	4.638	66.285	1.234

KMO, Kaiser-Meyer-Olkin Measure of Sampling Adequacy.

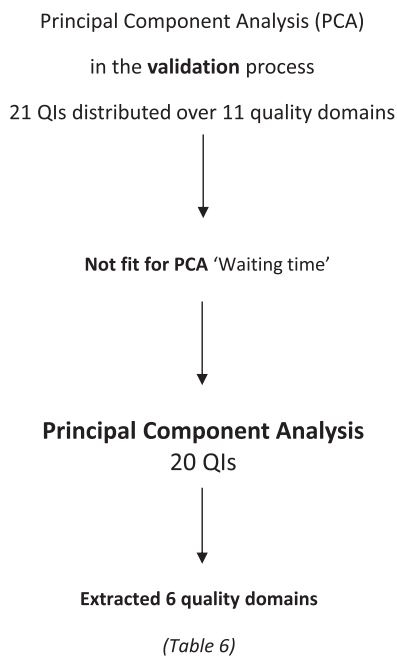


Figure 3. PCA overview. PCA, principal component analysis.

only 2 items loaded on that concept, whereas a minimum of 3 items are preferable. On the basis of PCA findings, the following quality domains could be created (Table 6): (1) shared treatment information and decision-making; (2) patient–physician contact; (3) discussion of the impact of pain and treatment on work, rehabilitation, and daily activities; (4) one contact person for the patient; (5) treatment outcome; and (6) received pain questionnaire. In accordance with the patient organization, the quality domain “waiting list” was added to the final QiPPP questionnaire, resulting in 21 QIs distributed over 7 quality domains.

3.3. Case mix analysis

Components that exhibited appropriate Cronbach α values (>0.600) on PCA were evaluated for case mix stability. The results of multivariate analysis of the sum of scores of all QIs per component revealed that sex, general health status, education level, duration of pain complaint, and number of pain clinic visits were significantly associated with the reported QI scores. Patients with better health status and higher education level scored more positively on domains regarding shared treatment information and decision-making and discussion of impact of pain and treatment on work, rehabilitation, and daily activities. In addition, patients with better health status scored more positively on patient–physician contact. Patients with more than 4 pain clinic visits scored more positively on shared treatment information and decision-making and discussion of impact of pain and treatment on work, rehabilitation, and daily activities than did patients with fewer visits. The longer the duration of pain complaint, the more positive were the patient-assigned scores on discussion of impact of pain and treatment on work, rehabilitation, and daily activities. Furthermore, women scored more positively regarding their contact with the physician than did men. All significant associations are reported in Table 7.

3.4. Patient scores for the quality indicators in accordance with principal component analysis–extracted components

On the basis of the PCA-extracted components, the reported scores of the QIs (main questions) assigned by patients at the 5 pain clinics are presented as mean scores of each pain clinic individually and in total (Table 8). The overall reported scores of all QI items (main items and additional questions) in the QiPPP questionnaire were analyzed as frequencies and presented as percentage scores. The QiPPP questionnaire is presented in Appendix 1 (available at <http://links.lww.com/PAIN/A644>).

4. Discussion

In this study, we developed QIs based on the quality of care criteria defined by chronic pain patient organizations, resulting in the QiPPP questionnaire. As far as we know, no QI questionnaire based on quality criteria defined by chronic pain patient organizations has yet been published. In the development process of the QIs, the QiPPP questionnaire covered 11 quality issues. Subsequently, we evaluated the usability, comprehensibility, and psychometric quality of the QiPPP questionnaire in 587 patients. As a result, we identified the definitive QiPPP questionnaire with 21 QIs (18 process and 3 outcome items) spread over 7 quality domains. The QI items were found to be measurable, understandable by patients, and feasible for quality assessment of pain care from the perspective of patients.

4.1. Quality indicators’ development and final QiPPP questionnaire

All criteria were discussed in the consensus meetings, and several changes were made. Criteria such as “self-management support” and “your health care provider knows what you want to know” seemed to be difficult concepts and were also hard to transform into measurable QIs. Such concepts were not used yet, but could be added in the future when these have been crystallized by patients and professionals. Based on the PCA-extracted components, it seems rational to merge the items on “discussion of treatment information” and “shared treatment decision-making” (component 1). A shared treatment decision cannot be made without proper receipt of treatment information by the patient. Items in component 2 regarding the way patients feel comfortable with and place trust in the consultant also seem reasonably coherent. The Cronbach α values of components 3, 4, and 5 were not high. This is partly because of the low number of QIs within these components (a minimum of 3 QIs are required); however, this might also be because of the differences in response options for the questions.

The TSTI seemed to be an indispensable tool for checking the QiPPP questionnaire for feasibility in a small sample before releasing the list to patients with chronic pain treated in daily pain practice. This was in regards to not only the clarity and intelligibility of the questions but to every aspect of the questionnaire, such as layout, patient information, and readability of the letter font used. Most importantly, it created an opportunity for the researcher to ask why some remarks were made and how the list could be improved in the opinion of the patient. Each remark, hesitation when answering a question, and doubt regarding choice of answer were reported and examined by the researcher. The on comprehensibility received positive scores, with a mean score of 8.6 out of 10, may indicate that the questionnaire was understandable for patients with chronic pain. Therefore, the mean

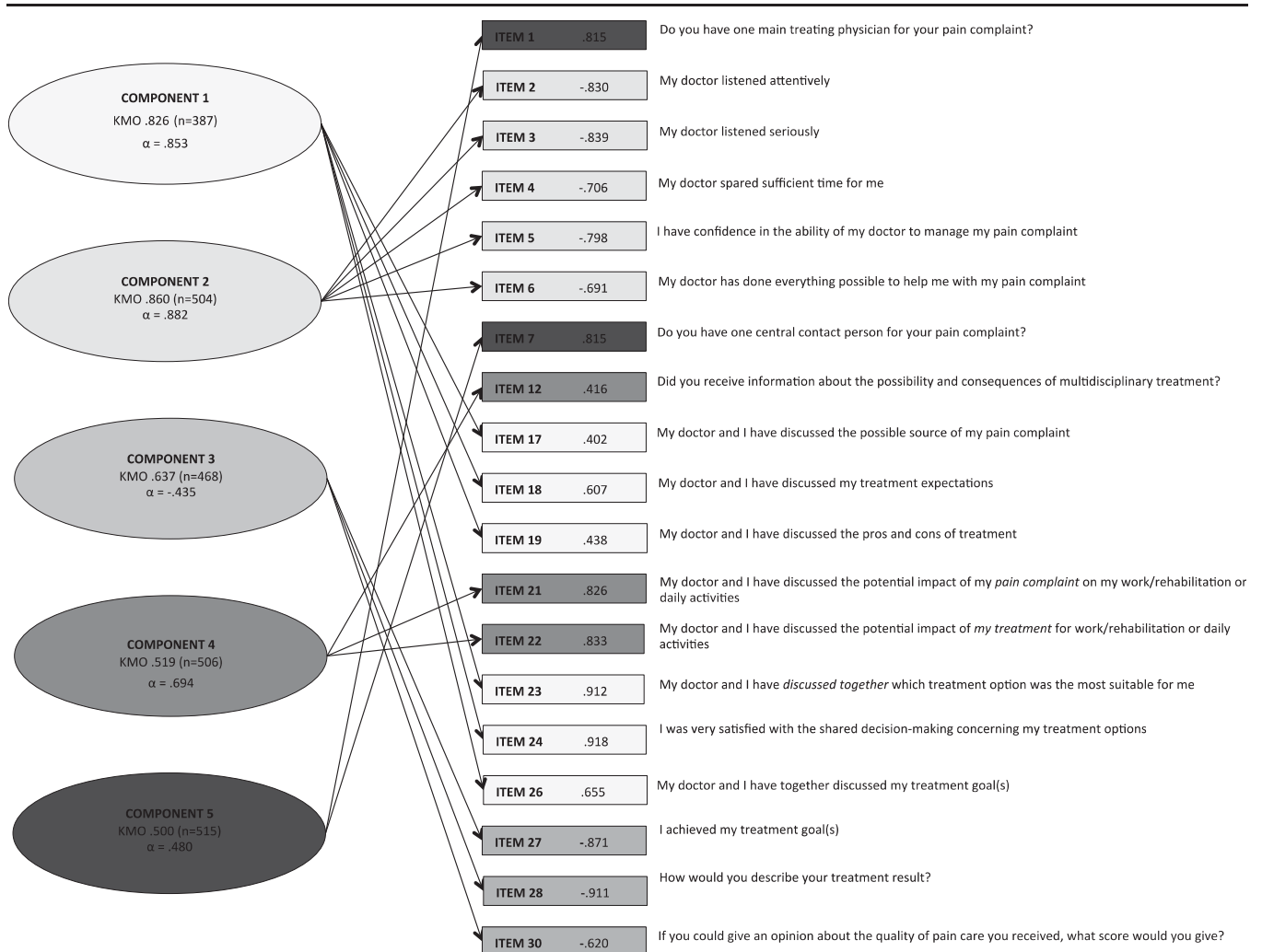


Figure 4. Principal component analysis of the quality indicators of the QiPPP questionnaire expressed in 5 of the 6 extracted components with their component loadings. The 5 components show their Kaiser–Meyer–Olkin measure of sampling adequacies (KMO > 0.500), along with their Cronbach α values.

time of 12 ± 7.5 minutes required for completing the questionnaire is acceptable.

Overall, the patients reported high satisfaction regarding patient–physician contact. Some relevant differences were observed among the clinics in other quality domains, indicating the capacity of the QiPPP questionnaire to identify differences in QIs among hospitals. Whether the QiPPP questionnaire can also identify changes in QIs over time should be evaluated in the near future.

4.2. Missing scores

According to literature, missing scores for up to 15% of the items are acceptable.⁹ In this study, the missing scores were mostly pertaining to the additional questions. These questions were added to observe patient satisfaction with regard to the complied QIs and thus gain an insight into aspects that required quality improvement in pain clinics. Additional questions with high proportions of missing scores pertained to the quality domain on receipt and discussion of treatment information. A reason for this might be that it could be difficult for patients to assess whether the information they had received was complete and reliable. Moreover, a lower educational level in some pain clinics may be contributed. We have to explore in further research in

partnership with the patient organizations whether these additional questions need to be corrected.

In addition, the missing scores for the domains on “achievement of treatment goal” and “treatment result”—10.2% and 9.0%, respectively—are notable. An explanation for these missing scores might be that over 70% of the patients indicated that they were still under treatment; together with the aforementioned long duration of pain complaints, this puts the chronicity of pain in the present patient group beyond doubt. Therefore, in many cases, achieving a treatment end point is challenging, debatable, and, perhaps, sometimes impossible.

4.3. Strength and limitations

Strength of this study is that patients with chronic pain (Pain Patient United Consortium³⁰ and PainPlatform²⁵) themselves defined the QIs. Although only one (fully mandated) delegated person representing the patient organizations served on the expert panel, the QIs were developed in close collaboration and in a consensus-based manner. The patients were involved from the beginning of the QI development process. Another strength of this study is that the QiPPP questionnaire was evaluated in a large and representative patient group, with over 60% of the

Table 7
Case mix stability of 3 components extracted by principal component analysis (Cronbach $\alpha > 0.600$).

Backward multivariate linear regression of the influence of patient characteristics on 3 PCA components with $\alpha > 0.600$	B	95% CI (lower to upper)	P
Process QI			
Component 1 shared treatment information & decision-making			
General health status	0.634	(0.280 to 0.988)	0.001
Education	0.296	(0.059 to 0.532)	0.015
Amount of pain clinic visits	0.862	(0.238 to 0.532)	0.007
Component 2 patient–physician contact			
Sex	−0.494	(−0.781 to −0.208)	0.001
General health status	0.221	(0.062 to 0.381)	0.007
Component 4 discussed information on impact work, rehabilitation, and daily activities			
Duration of pain complaint	0.000	(0.001 to 0.001)	0.017
General health status	0.359	(0.145 to 0.573)	0.001
Education	0.265	(0.120 to 0.410)	0.001
Number of pain clinic visits	0.623	(0.230 to 1.017)	0.002

General health status = excellent, very good, good, moderate, and bad. Education level = low, middle, and high. Number of pain clinic visits = 2 categories (2–4 and >4). CI, confidence interval; PCA, principal component analysis; QI, quality indicator.

patients having had pain complaints for longer than 5 years and therefore, in our opinion, representative of patients in pain clinics in general.^{3,18} Moreover, the methodological quality of this study in terms of measurement properties was evaluated using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) taxonomy checklist.^{9,23} A limitation of this study could be that the respondents completed the QiPPP questionnaire in the waiting room of the pain clinic, before (sometimes after) their consultation with the doctor. Therefore, although the submission procedure involved a closed sealed envelope and a closed post box, it is possible that the results were positively distorted because of social desirability. A web-based (or paper) version of the QiPPP questionnaire to be completed at home might give a better representation of the assessment. Most questions specifically relate to physician contact. This could be a limitation of the study because it merely measures the performance of physicians. Therefore, further research is necessary to ensure that the QiPPP measures, except patient–physician contact, the quality of pain clinic care from patients' perspective. A third limitation of the study could be that we used, although in consultation with the patient organization, the term "doctor" instead of the mentioned term "health care provider" in several questions. This could limit the generalizability and applicability of the questionnaire in other settings. Therefore, additional items querying about other professionals need to be added and tested in practice.

To eliminate any possible influence of determinants on QI scores, we also analyzed the case mix stability of the components. This could be of interest to the pain clinics themselves because these results provide an insight into patient groups that scored better or worse for QIs and could, therefore, help the clinics make focused changes for quality improvement. In addition, differences in clinical settings might have affected the results of comparison of reported QI scores among hospitals. In our opinion, these significant differences in case mix should also be taken into account for quality comparison among pain clinics. Therefore, for future use of the QiPPP questionnaire and proper interpretation of its

results, it is necessary to collect data regarding patient characteristics as well. Because the present questionnaire is the first QI list defined by patients with chronic pain, it is not possible to compare it with other QI questionnaires in this field.

4.4. Generalizability and future research

The present results of the QiPPP questionnaire have been discussed with the participating patient organizations. Together, it was decided to present the quality domains identified on the basis of PCA findings. The 21 main items (18 process- and 3 outcome-oriented QIs) are to be considered as QIs, whereas questions on clarity and meaningfulness (the additional questions) should only serve to add depth to the content on QIs. Appendix 2 attached to this article presents the final version of the QiPPP questionnaire, which includes 21 QIs distributed over 7 quality domains (available at <http://links.lww.com/PAIN/A644>).

In the future, it has been planned to incorporate the QiPPP questionnaire into the Dutch quality register system. Each registered pain clinic can incorporate the QiPPP questionnaire in their quality system and share data on a national level. It is an ongoing process to track future quality standards from the perspective of patients with chronic pain and to keep the QiPPP questionnaire updated. Therefore, we have to investigate other sources in the form of patient-reported outcome measures,^{2,16,27} and maybe expand the QiPPP questionnaire with more outcome-orientated QIs. Furthermore, the outcome measure "complete recovery of pain" needs to be discussed with the patient organization. Because very few patients will achieve this goal, although the quality of care would be exceptional, it is questionable if this item is a good measure of quality of care. Together with patient organizations, we will explore methods for updating the QiPPP questionnaire. Although the QiPPP questionnaire was established by patients with chronic pain and surveyed only in the Netherlands, most quality issues in this questionnaire seem to be applicable to patients in any health care system. In addition, further research

Table 8

Patient scores for the quality indicators.

Outcome on the 21 QI (main items) of the 5 pain clinics		Total of the 5 pain clinics mean and 95% CI	Pain clinic 1 % (N = 109)	Pain clinic 2 % (N = 91)	Pain clinic 3 % (N = 112)	Pain clinic 4 % (N = 138)	Pain clinic 5 % (N = 97)
Process indicators 18							
Component 1							
Item 17: My doctor and I have discussed the possible source of my pain complaint	Yes, completely	73.4 (66.3 to 80.4)	67.9 (74)	67.0 (61)	75.0 (84)	79.7 (110)	77.3 (75)
	Yes, a little	20.0 (13.6 to 26.3)	22.0 (24)	27.5 (25)	19.6 (22)	15.2 (21)	15.5 (15)
	No, not at all	5.4 (2.8 to 8.0)	8.3 (9)	5.5 (5)	2.7 (3)	4.3 (6)	6.2 (6)
Item 18: My doctor and I have discussed my treatment expectations	Yes, completely	72.1 (66.1 to 78.1)	71.6 (78)	67.0 (61)	69.6 (78)	69.6 (78)	79.7 (110)
	Yes, a little	18.4 (14.3 to 22.6)	17.4 (19)	22.0 (20)	21.4 (24)	13.8 (19)	17.5 (17)
	No, not at all	5.0 (1.4 to 8.6)	7.3 (2)	8.8 (8)	3.6 (3)	2.2 (4)	3.1 (3)
Item 19: My doctor and I have discussed the pros and cons of treatment	Yes, completely	68.7 (62.3 to 75.0)	70.6 (77)	61.5 (56)	75.0 (84)	70.3 (97)	66.0 (64)
	Yes, a little	16.7 (11.0 to 22.4)	11.0 (12)	20.9 (19)	12.5 (14)	20.3 (28)	18.6 (18)
	No, not at all	9.8 (5.7 to 13.9)	11.9 (13)	14.3 (13)	7.7 (8)	6.6 (9)	9.3 (9)
Item 23: My doctor and I have together discussed which treatment option was the most suitable for me	Totally agree	70.8 (62.7 to 79.0)	71.6 (78)	67.0 (61)	65.2 (73)	73.9 (102)	79.4 (77)
	Slightly agree	15.6 (11.4 to 20.0)	13.8 (15)	16.5 (15)	20.5 (23)	15.9 (22)	11.3 (11)
	Slightly disagree	3.4 (2.1 to 4.7)	4.6 (5)	4.4 (4)	2.7 (3)	2.2 (3)	3.1 (3)
	Totally disagree	5.8 (3.2 to 8.4)	3.7 (4)	8.8 (8)	7.1 (8)	4.3 (6)	5.2 (5)
Item 24: I was very satisfied with the shared decision-making concerning my treatment options	Totally agree	72.4 (65.8 to 79.0)	73.4 (80)	70.3 (64)	64.3 (72)	76.8 (106)	77.3 (75)
	Slightly agree	13.4 (8.7 to 18.1)	11.9 (13)	14.3 (13)	19.6 (22)	10.9 (15)	10.3 (10)
	Slightly disagree	2.8 (1.7 to 3.9)	1.8 (2)	3.3 (3)	2.7 (3)	2.2 (3)	4.1 (4)
	Totally disagree	6.1 (4.6 to 7.7)	5.5 (6)	6.6 (6)	7.1 (8)	4.3 (6)	7.2 (7)
Item 26: My doctor and I have together discussed my treatment goal(s)	Totally agree	72.6 (64.2 to 81.0)	76.1 (83)	64.8 (59)	67.9 (76)	67.9 (76)	81.9 (113)
	Slightly agree	14.6 (9.8 to 19.5)	11.0 (12)	18.7 (17)	17.9 (20)	10.1 (14)	15.5 (15)
	Slightly disagree	2.8 (-0.68 to 6.2)	0.9 (1)	7.7 (7)	1.8 (2)	1.4 (2)	2.1 (2)
	Totally disagree	4.5 (2.1 to 6.8)	6.6 (7)	4.4 (4)	6.3 (7)	2.2 (3)	3.1 (3)
Component 2							
Item 2: My doctor listened attentively	Totally agree	86.5 (82.3 to 90.7)	83.5 (91)	85.7 (78)	88.4 (99)	91.3 (126)	83.5 (81)
	Slightly agree	8.9 (5.6 to 12.3)	12.8 (14)	8.8 (8)	6.3 (7)	6.5 (9)	10.3 (10)
	Slightly disagree	1.6 (-0.29 to 3.5)	—	3.3 (3)	2.7 (3)	—	2.1 (2)
	Totally disagree	0.7 (0.2 to 1.2)	0.9 (1)	—	—	0.7 (1)	1.0 (1)
Item 3: My doctor listened seriously	Totally agree	89.8 (85.6 to 93.9)	93.6 (102)	89.0 (81)	91.1 (102)	90.6 (125)	84.5 (82)
	Little agree	5.4 (2.6 to 8.1)	3.7 (4)	4.4 (4)	5.4 (6)	4.3 (6)	9.3 (9)
	Little disagree	0.8 (-0.93 to 2.6)	—	3.3 (3)	0.9 (1)	—	—
	Totally disagree	0.7 (0.2 to 1.2)	0.9 (1)	—	0.9 (1)	0.7 (1)	1.0 (1)
Item 4: My doctor spared sufficient time for me	Totally agree	86.8 (80.0 to 93.7)	79.8 (87)	85.7 (78)	92.9 (104)	92.0 (127)	83.5 (81)
	Slightly agree	8.9 (2.9 to 14.9)	16.5 (18)	11.0 (10)	4.5 (5)	6.5 (9)	6.2 (6)
	Slightly disagree	1.0 (-1.2 to 3.2)	—	—	0.9 (1)	—	4.1 (4)
	Totally disagree	0.7 (0.2 to 1.2)	0.9 (1)	1.1 (1)	—	0.7 (1)	1.0 (1)
Item 5: I have confidence in the ability of my doctor to manage my pain complaint	Totally agree	85.2 (80.3 to 90.0)	86.2 (94)	81.3 (74)	86.6 (97)	90.6 (125)	81.4 (79)
	Slightly agree	10.0 (5.1 to 14.8)	11.0 (12)	14.3 (13)	9.8 (11)	3.6 (5)	11.3 (11)
	Slightly disagree	2.0 (-2.8 to 6.9)	—	1.1 (1)	0.9 (1)	—	—
	Totally disagree	0.7 (-0.1 to 1.4)	0.9 (1)	—	—	1.4 (2)	1.0 (1)
Item 6: My doctor has done everything possible to help me with my pain complaint	Totally agree	79.4 (74.1 to 84.5)	79.8 (87)	76.9 (70)	78.6 (88)	86.2 (119)	75.3 (73)
	Slightly agree	12.4 (8.9 to 16.0)	13.8 (15)	14.3 (13)	15.2 (17)	8.7 (12)	10.3 (10)
	Slightly disagree	2.1 (-0.5 to 4.6)	0.9 (1)	4.4 (4)	0.9 (1)	—	4.1 (4)
	Totally disagree	1.2 (0.3 to 2.3)	1.8 (2)	1.1 (1)	—	1.4 (2)	2.1 (2)
Component 4							
Item 12: Did you receive information about the possibility and consequences	Yes	32.4 (22.6 to 42.1)	37.6 (41)	18.7 (17)	33.0 (37)	35.5 (49)	37.1 (36)
	No	54.1 (43.4 to 46.8)	46.8 (51)	68.1 (62)	55.4 (62)	52.9 (73)	47.4 (46)

(continued on next page)

Table 8 (continued)

Outcome on the 21 QI (main items) of the 5 pain clinics		Total of the 5 pain clinics mean and 95% CI	Pain clinic 1 % (N = 109)	Pain clinic 2 % (N = 91)	Pain clinic 3 % (N = 112)	Pain clinic 4 % (N = 138)	Pain clinic 5 % (N = 97)
of multidisciplinary treatment?							
Item 21: My doctor and I have discussed the	Yes, completely	40.6 (36.4 to 44.8)	45.0 (49)	38.5 (35)	39.3 (44)	37.0 (51)	43.3 (42)
	Yes, a little	20.3 (17.3 to 23.3)	18.3 (20)	20.9 (19)	17.9 (20)	23.9 (33)	20.6 (20)
	No, not at all	35.1 (31.9 to 38.3)	32.1 (35)	38.5 (35)	35.7 (40)	36.2 (50)	33.0 (32)
Potential impact of my pain complaint on my work/ rehabilitation or daily activities							
Item 22: My doctor and I have discussed the	Yes, completely	43.7 (37.2 to 50.1)	48.6 (53)	39.6 (36)	44.6 (50)	37.7 (52)	48.5 (47)
	Yes, a little	19.1 (14.6 to 23.6)	14.7 (16)	18.7 (17)	17.9 (20)	24.6 (34)	19.6 (19)
	No, not at all	32.6 (28.1 to 37.1)	29.4 (32)	38.5 (35)	32.1 (36)	33.3 (46)	29.9 (29)
Component 5							
Item 1: Do you have one main treating physician for your pain complaint?	Yes	88.3 (84.7 to 91.9)	88.1 (96)	89.0 (81)	83.9 (94)	92.0 (127)	88.7 (86)
	No	4.0 (1.7 to 6.3)	3.7 (4)	2.2 (2)	7.1 (8)	2.9 (4)	4.1 (4)
Item 7: Do you have a central contact person for your pain complaint?	Yes	74.0 (69.6 to 77.4)	74.3 (81)	75.8 (69)	74.1 (83)	68.1 (94)	76.3 (74)
	No	18.9 (15.4 to 22.3)	14.7 (16)	18.7 (17)	18.8 (21)	22.5 (31)	19.6 (19)
*Waiting list							
Item 11: How long did you have to wait between first registration and first doctors' appointment?	Max 4 wk	50.1 (28.8 to 71.3)	41.3 (45)	44.0 (40)	45.5 (51)	80.4 (11)	39.2 (38)
	Above 4 wk	29.7 (11.7 to 47.6)	32.1 (35)	29.7 (27)	36.6 (41)	5.8 (8)	44.3 (43)
Pain questionnaire							
Item 14: Did you receive a pain questionnaire before or during your visit to the pain clinic?	Yes	67.2 (51.1 to 83.4)	86.2 (94)	64.8 (59)	70.5 (79)	64.5 (89)	50.5 (49)
	No	24.8 (11.0 to 39.0)	9.2 (10)	24.2 (22)	22.3 (25)	28.3 (39)	40.2 (39)
Outcome indicators 3							
Component 3							
Item 27: I achieved my treatment goal(s)	Totally agree	18.3 (12.9 to 23.5)	22.9 (25)	22.0 (20)	12.5 (14)	17.5 (24)	16.5 (16)
	Slightly agree	31.0 (28.3 to 33.7)	30.3 (33)	29.7 (27)	29.5 (33)	34.8 (48)	30.9 (30)
	Slightly disagree	13.1 (10.2 to 16.0)	15.6 (17)	15.4 (14)	12.5 (14)	11.6 (16)	10.3 (10)
	Totally disagree	28.3 (15.6 to 41.1)	19.3 (21)	30.8 (28)	37.5 (42)	15.9 (22)	38.1 (37)
Item 28: How would you describe your treatment result?	Excellent	5.4 (2.8 to 8.0)	3.7 (4)	8.8 (8)	6.3 (7)	4.3 (6)	4.1 (4)
	Good	25.5 (17.8 to 33.2)	28.4 (31)	22.0 (20)	18.8 (21)	34.8 (48)	23.7 (23)
	Moderate	25.7 (19.4 to 32.0)	33.0 (36)	25.3 (23)	18.8 (21)	26.8 (37)	24.7 (24)
	No change	20.4 (13.4 to 27.5)	18.3 (20)	26.4 (24)	25.9 (29)	13.0 (18)	18.6 (18)
	Little worse	5.6 (1.8 to 9.3)	4.6 (5)	4.4 (4)	6.3 (7)	2.2 (3)	10.3 (10)
	Bad	5.7 (1.4 to 9.9)	5.5 (6)	4.4 (4)	11.6 (13)	2.9 (4)	4.1 (4)
	Very bad	3.2 (−0.6 to 7.0)		5.5 (5)	2.7 (3)	0.7 (1)	7.2 (7)
Item 30: If you could give an opinion about the quality of pain care you received, what score would you give?	Health care process score	7.6 (7.1 to 8.0)	7.4 (2-10)	7.5 (0-10)	7.3 (1-10)	8.2 (0-10)	7.3 (0-10)

* Waiting list was not extracted from principal component analysis.

CI, confidence interval; QI, quality indicator.

is needed to ensure that quality assessment using the QIPPP questionnaire might help pain clinics improve their quality.

Conflict of interest statement

The authors have no conflict of interest to declare.

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Appendix A. Supplemental digital content

Supplemental digital content associated with this article can be found online at <http://links.lww.com/PAIN/A644>.

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