

Original article

Health care quality indicators on the management of rheumatoid arthritis and osteoarthritis: a literature review

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Abstract

Objective. To make an inventory of quality and content of currently available and published sets of health care quality indicators (HCQIs) for RA and OA.

Methods. A systematic review was performed for documents on the development and/or a description of HCQIs for the management of patients with RA and/or OA, using the PubMed, EMBASE, Web of Science, Cochrane and CINAHL databases up to 1 December 2010 and official websites of arthritis organizations. The following data were extracted: general characteristics, contents and quality of developmental process (six aspects related to the definition of target, target group and stakeholders, patient involvement, description of development and test of validity).

Results. The search yielded 498 potentially eligible references and two websites, with ultimately six original HCQI sets for RA and/or OA being identified (one for RA and OA, two for OA and three for RA). The number of HCQI ranged from 7 to 27, with the majority being process indicators. No conflicting indicators between the HCQI sets for one condition were seen. Concerning the quality of the developmental process, all six sets lacked patient involvement.

Conclusion. Only a limited number of HCQI sets for the management of OA and RA are available, mainly including process indicators. The developmental process was methodologically suboptimal in all cases. As improvement of health care quality is an ongoing process, there is a need for development of HCQIs covering different aspects of health care quality (structure, process and outcome) and using appropriate methodology.

Key words: systematic review, quality indicators, rheumatoid arthritis, osteoarthritis.

Introduction

Patients suffering from rheumatic diseases have over the last decade seen a dramatic change in the modes of diagnosis and treatment. This includes for patients with RA diagnosis, pharmacological and surgical treatment as well as rehabilitation [1, 2, 3–6]. For patients with OA,

new strategies for education and self-management and exercise programmes as well as optimized surgical treatment have been developed [7, 8]. The new insights are reflected in numerous guidelines and recommendations for arthritis care that have been developed by international and national scientific societies and health care organizations in rheumatology during the last 10 years [3, 9, 10]. However, unsatisfying adherence to treatment guidelines and large variations in quality of care has been reported [11–14].

One way to quantify health care quality is by the use of validated health care quality indicators (HCQIs) [15]. These are intended to measure the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge [16] and can be related to structures (concerning characteristics of the

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*See supplementary Appendix available at *Rheumatology* Online for a list of members of the EUMUSC.net WP6 group.

health care system and providers), processes (concerning what providers do in delivering care) or outcomes (concerning the results) of health care [17, 18]. HCQIs may be developed from literature search, evidence-based guidelines and expert opinion by scientific societies and health care organizations incorporating scientists, health care providers as well as patient representatives and may improve the quality of arthritis care by various mechanisms. Their usage may raise awareness among individual rheumatologists and practices regarding gaps in their service. Governments and health care funders are increasingly beginning to reward clinicians for efficiency, quality and safety in health care, and therefore measurable aspects of health care structures, processes and outcomes are needed. Also, the public release of data regarding individual rheumatologists' or practices' performance with respect to quality indicators may influence patients' and referring physicians' choices for specific specialists or practices [17, 19].

The EUMUSC.NET project (www.eumusc.net) intends to improve the health of EU citizens by minimizing the impact of musculoskeletal conditions. To bridge the gap between evidence-based guidelines and clinical practice, and to improve and equalize the health care, one task for the EUMUSC.NET project will be to further develop HCQIs that can be used to monitor the structures, processes and outcomes of health care for musculoskeletal conditions in European countries. In preparation and as a basis for the development of HCQIs within the EUMUSC.NET project, a systematic literature review was undertaken in order to make an inventory of the quality and content of currently available sets of HCQIs for RA and OA.

Methods

Search methods for identification of publications on HCQI in the literature

Electronic databases were searched up to 1 December 2010. A PubMed Search strategy was developed by a trained librarian (J.S.) (supplementary Appendix, available as supplementary data at *Rheumatology* Online). The same search strategy was translated to make it applicable for the EMBASE database, the Web of Science database, the Cochrane and the CINAHL databases up to December 2010. The electronic search was limited to papers published in the English language.

Selection of publications on HCQIs from the electronic literature search

The selection of papers was done by three authors (B.S., I.F.P. and T.P.M.V.V.) independently. First, all titles and/or abstracts resulting from the electronic search were screened for the following criterion: the paper included the development and/or a description of one or more sets of HCQIs for the management of patients with RA and/or OA. Based on the first selection of titles and/or abstracts, full-length articles were gathered and again screened for the same inclusion criterion. Only full-length articles or full-length published reports were considered

for inclusion in this systematic review. In case of disagreement, the authors discussed until a consensus was reached.

Search strategy for HCQIs developed by professional organizations

In addition to the search of electronic databases, the reference lists of selected papers were scanned. Moreover, the websites of the following arthritis organizations from English speaking countries were checked: American College of Rheumatology (ACR), Canadian Rheumatology Association (CRA), European League Against Rheumatism (EULAR), British Society for Rheumatology (BSR), Irish Society for Rheumatology (ISR), African League Against Rheumatism (AFLAR), South African Rheumatism and Arthritis Organization (SARAA), Australian Rheumatology Association (ARA), New Zealand Rheumatology Association (NZRA) and Indian Rheumatology Association (IRA). Only sets of HCQIs for the management of RA and/or OA written in English were considered for inclusion.

Data collection

The selected articles and/or sets of HCQIs published on the internet were independently assessed by two authors (B.S. and T.P.M.V.V.). Extracted data were recorded in a pre-developed form. The following descriptive information was systematically extracted: first author, name of quality indicator set, year of publication, country where the set of quality indicators was developed, organization(s) taking the initiative to develop the set of quality indicators, target condition (RA, OA or both) and number of HCQIs were recorded. In addition, all quality indicators described in the identified sets were categorized into structure, process and outcome indicators (categorized by the authors if not explicitly described). Moreover, the setting was registered (interpreted by the authors if not explicitly described), and it was recorded whether the set of HCQIs concerned a new or an updated version.

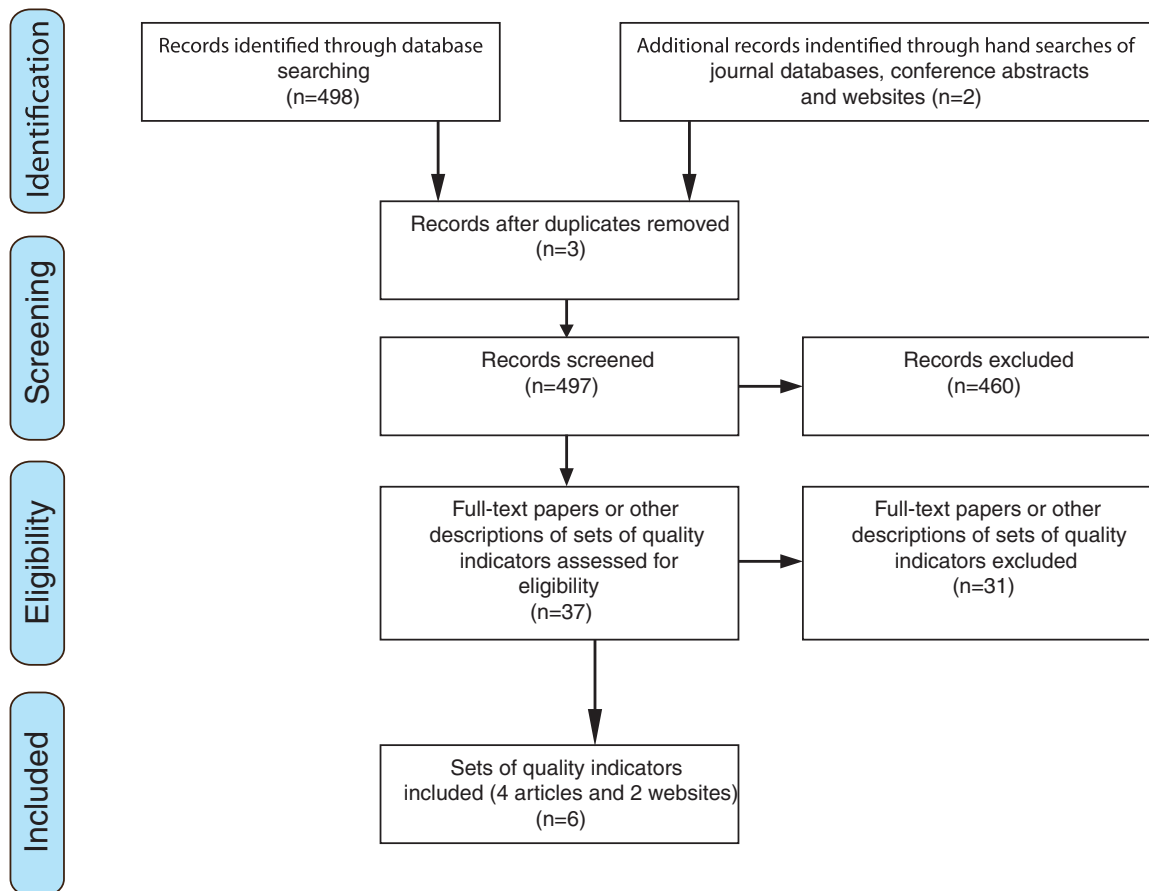
The quality of the sets of HCQIs was described according to the following self-selected number of aspects: defined target, defined target group, stakeholders included, patients' view included, method of development and test of scientific validity (all in yes/no format plus an explanation if relevant). In case of ambiguities concerning the evaluation of the HCQIs the authors were contacted for an explanation.

Results

Selection of the HCQI sets

The selection process is described in a flow diagram (Fig. 1). Our search yielded a total of 498 potentially relevant references and two websites. Three references were duplicates. Four hundred and sixty references were excluded after screening the titles, leaving 37 documents to be further assessed. Reasons for exclusions of 31 full-text papers or other descriptions of HCQI sets were: narrative reviews ($n = 4$), articles not concerning RA or OA or quality indicators ($n = 3$), letter to the editor, erratum,

Fig. 1 Flow chart for quality indicators search.



response to author ($n=6$) and language another than English ($n=2$). Three articles concerned the same HCQI set of which the latest update was selected and the others were excluded ($n=2$), and 14 articles described assessment of quality of care using previously described HCQI sets or adaption of these. Ultimately, we included four articles and two websites that reported the limited number of six original HCQI sets for RA and/or OA.

Characteristics of the HCQI sets

Table 1 shows the characteristics of the selected HCQI sets. The HCQI sets, all published in the English language, were developed between 2001 and 2010 in three continents: USA, Europe and Australia. Three HCQIs concerned RA [20–22], two OA [23, 24] and one HCQI set included indicators for both RA and OA [25]. With respect to the settings, the HCQI sets for RA and OA covered general practice [23, 25], specialist care [20–22, 25] and physical therapy [24].

The number of HCQI ranged from 7 to 27 per set/per condition. Four sets concerned just process indicators [21–23, 25], one HCQI set included both process and outcome indicators [24] and in one case indicators for structure, process and outcome were included [20].

Table 2 shows an overview of the contents of HCQI sets. With respect to OA all three HCQIs sets the management of OA [23–25] included process indicators regarding assessments of pain and function, and exercise. HCQIs for education/information were included in two of the sets [24, 25]. Moreover, two of the sets [23, 25] included HCQIs for pharmacotherapy and surgery, which was naturally not the case in the set of HCQIs that focused only on physical therapy [24]. Regarding the HCQIs concerning RA, one of the four HCQI sets was focused only on measuring disease course [20], while the other three had wider perspectives [21, 22, 25]. The Arthritis Foundation HCQI set [25] including 27 indicators was the most comprehensive while the other two covering RA management as a whole [21, 22] were more brief. All sets included HCQIs for assessment of disease activity and functional status and regular follow-up of the disease course. Two of the HCQI sets included assessment of structural damage [20, 25] and one set also contained a HCQI for early care [25]. Indicators for the management of DMARDs were incorporated in three HCQI sets [20, 21, 25], whereas one set comprised an indicator regarding tuberculosis screening before initiation of DMARD treatment [21]. Unlike the other HCQI sets for RA, the Arthritis Foundation HCQI set

TABLE 1 General characteristics of HCQI sets for OA and RA—results from a systematic literature search

Name of quality indicator set	First author (reference)	Year of publication	Country	Organization, initiative	Target Condition, RA/OA	No. of indicators	Structure	Process	Outcome	Setting	Comment
Arthritis Foundation quality indicator set	MacLean [25]	2004	USA	Arthritis Foundation quality indicator project	RA	27 (RA)	27			General practice, specialist care	Overlap with Ref. [23] (ACOVE)
Quality indicators for the care of OA in vulnerable elders (ACOVE)	MacLean [23]	2007 (2001)	USA	RAND/Pfizer	OA	14 (OA) 10 (analgesic use)	14			General practice	Update of ACOVE-1 (2001). Includes HCQIs for 26 conditions
Quality indicators for treatment of OA in the hip and knee	Jansen [24]	2010	The Netherlands	Researcher's (author's) initiative	OA	18	9	9	9	Physical therapy in primary care	
RA quality indicators	ACR [21]	2008	USA	ACR	RA	7	7			Rheumatology specialist care	Overlap with Ref. [25] (Arthritis Foundation quality indicator set)
Quality indicators for monitoring the disease course in RA	van Hulst [20]	2009	The Netherlands	Researcher's (author's) initiative	RA	18	10	5	3	Rheumatology specialist care	
RA quality indicators	ARA [22]	2010	Australia	ARA—quality and safety sub-committee	RA	10	10			Rheumatology specialist care	No other documents available. No answer on mailed request for documents

ACOVE: Assessing Care in Vulnerable Elders; RAND: Research and Development.

TABLE 2 Overview of the contents of six HCQI sets for the management of RA and/or OA (based on published information)

Content of HCQI	Arthritis Foundation quality indicator set, RA/OA (MacLean et al. [25])	Quality indicators for the care of OA in vulnerable elders (ACOVE), OA (MacLean et al. [23])	Quality indicators for treatment of OA in the hip and knee, OA (Jansen [24])	ACR RA quality indicators, RA (ACR [21])	Quality indicators for monitoring the disease course in RA, RA (van Hulst [20])	ARA RA quality Indicators, RA (ARA [22])
Time to referral (early care)	X (RA)					
Assessments (disease activity, function, pain)	X (RA, OA)	X	X	X	X	X
Prognosis/identification of problem areas			X	X		
Structural damage (X-ray)	X (RA, OA)				X	
Follow-up	X (RA)				X	
Pharmacological management	X (RA, OA)	X		X	X	
Reproductive issues/pharmacotherapy	X (RA)					
Vaccines/pharmacotherapy	X (RA)					
Tuberculosis screening				X		
Osteoporosis prophylaxis						
Information provision on risk factors/co-morbidity	X (RA)	X				X
Education	X (OA)					
Exercise	X (RA, OA)	X	X			
Assistive devices	X (RA, OA)	X				
Weight loss/Life style factors	X (OA)	X				
Orthopaedic surgery	X (RA, OA)	X				X

ACOVE: Assessing Care in Vulnerable Elders; X: Subject of the HCQIs in the HCQI sets.

included indicators for exercise and use of assistive devices, for referral to orthopaedic surgery, and for reproductive issues and vaccines in combination with pharmacotherapy [25]. Indicators for delivering information about co-morbidities and treatment risks/benefits were comprised in two sets [22, 25]. HCQIs for education on treatment and self-management of the disease were not included in any of the four documents concerning RA.

Quality of the HCQI sets

Table 3 shows a description of a number of aspects related to the HCQI sets. Five of the HCQI sets included description of their targets [20, 21, 23–25]. In addition, the target groups were fairly clearly described for all sets of HCQIs. The stakeholders involved mostly represented physicians, and in a few cases other health professionals such as occupational therapists or physical therapists. Other potential stakeholders such as purchasers or managers or health policy makers were not included in any of the HCQI sets, nor were the patients' views and preferences. A modified evidence and consensus method was used for the development of four of the HCQI sets [20, 21, 23, 25], whereas a non-systematic development method was used in one case [24]. Description of the development method for the ARA HCQI set [22] was not available on the website. A request to the ARA for further clarification has not been answered. Validity was judged for three of the HCQI sets; in all these cases this was done by experts who in group processes ranked and discussed whether and/or to what extent the HCQI sets were linked to the quality of care.

Discussion

A systematic literature review and targeted search on the internet to identify HCQIs for the management of RA and OA published in English up to December 2010 found that these are scarce, with only six sets of HCQIs (two for OA, three for RA, and one for both RA and OA) being identified.

Concerning the nature of the HCQIs identified, a widely accepted and useful method for categorizing indicators of health care quality is the approach by Donabedian [18] that described indicators as being either structure, process or outcome measures in nature. Structure and process indicators are based on recommendations for practice (i.e. availability of appointments, specialist staff) and intervention (what health providers do in delivering care), while outcome indicators represent the results of care [26, 27]. In the articles found in the present review, four HCQI sets focused on just process indicators [21–23, 25]. Process and outcome indicators were presented in one set of HCQI [24], and just one set included quality indicators from all three aspects of health care [20]. Reasons for the infrequent structure and outcome indicators may be the limited evidence linking structure to outcomes of care and difficulty to find scientific evidence for short-term outcome [19].

Concerning the topics addressed in the HCQI sets, both the sets for RA and OA partly overlapped as well as partly

completed each other. No conflicting indicators between the HCQI sets for one condition were seen.

With respect to the quality of the HCQI sets, no specific assessment tool is currently available. In line with recent publications with respect to the development process [19, 26, 28], five sets of HCQIs were developed from existing sets of guidelines. Usually HCQIs are related to adherence with recommended interventions, except for the physical therapy HCQIs for the management of hip and knee OA, which included treatments (physical modalities and massage therapy) described as not recommended in guidelines, a strategy not found in any of the other HCQI sets.

An important aspect when developing HCQIs is the stakeholder involvement. Different stakeholders have different perspectives of quality of health care. Health professionals most often focus on health outcomes while patients relate quality to good communication skills and understanding attitude, and managers views are often influenced by data on efficiency [19]. The HCQI sets included in the present review mainly represent the views of physicians, although from different disciplines, such as rheumatology, anaesthesiology and primary care. One expert panel included an occupational therapist [21] and one quality indicator set represents just the physical therapy perspective [24]. As far as we could see, none of the quality indicator sets included the patients' perspective on quality of health care, nor were health care managers and purchasers represented. When new sets of HCQIs are developed, there should be a need to include all the potential end users including the patients' views and preferences and different health professionals' perspectives, e.g. measures should be relevant to all stakeholders.

The development of HCQIs includes an evaluation of their validity (Is the indicator underpinned by evidence/consensus, i.e. is the indicator likely to be related to the quality of care?) and reproducibility (If you measure a practice twice with the same set, are similar results obtained with the two measurements?) [19]. Assessment of content validity was reported for four of the six HCQI sets discussed in the present article [20, 21, 23, 25]; however, nothing was described concerning reproducibility.

A limitation of the study may be that only the websites of arthritis organizations from English speaking countries were checked. It is conceivable that professional websites from other countries could have had their documents translated into English. Another limitation was that the evaluation of the quality of the HCQIs was done using a self-selected number of aspects. This weakness clearly demonstrates the need for a formal evaluation tool to assess the quality of sets of HCQIs. This tool could probably be based on papers or protocols for developing HCQI sets [19, 26, 28] and currently available evaluation tools used for sets of guidelines [29], such as the AGREE instrument [30, 31]. In particular, such an assessment tool needs to include elements that are specific for HCQI sets, e.g. evaluate the extent

TABLE 3 Description of HCQI sets for OA and RA

Name of quality/indicator set	First author, reference	Targetcondition, RA/OA	Target defined	Target group defined	Stakeholders	Inclusion of patients' view	Development method	Scientific validity
Arthritis Foundation quality indicator set	MacLean [25]	RA OA	Yes	Patients with OA/RA	Physicians from different disciplines; rheumatology pain and primary care specialists	No	Modified RAND/UCLA appropriateness method	Content validity
Quality indicators for the care of OA invulnerable elders(ACOVE)	MacLean [23]	OA	Yes	Vulnerable elders, ≥75 years	Physicians from different disciplines; generalists, geriatricians, hospitalists, clinical experts	No	Modified RAND/UCLA appropriateness method	Content validity
Quality indicators for treatment of OA in the hip and knee	Jansen [24]	OA	Yes	Patients with OA in hip/knee	Physical therapist	No	Non-systematic development method	Not evaluated
RA quality indicators	ACR [21]	RA	Yes	Patients >18 years with RA	Clinical expert, rheumatologist, occupational therapist	No	Modified RAND/UCLA appropriateness method	Content validity
Quality indicators for monitoring the disease course in RA	van Huist [20]	RA	Yes	Patients with RA	Rheumatologist	No	RAND-modified Delphi method	Content validity
RA quality indicators	ARA [22]	RA	NC	Patients with RA	NC	NC	NC	NC

ACOVE: Assessing Care in Vulnerable Elders; NC: not clear; RAND: Research and Development; UCLA: University of California, Los Angeles.

to which the HCQIs are formulated in such a way that they are indeed measurable.

A HCQI needs to demonstrate potential for improvement of health care. To be able to assess the quality of health care in a credible way, to be able to compare the quality of health care between clinics and between countries, and to understand the differences and learn from them we need HCQIs that measure the factors that can make a difference in all clinical areas, all aspects of care, represent all end user perspectives, are measurable, valid, reliable and easy to implement and attractive to use. As improvement of health care is an ongoing process there is a need for continuous development of HCQIs, as well as updating and adaptation of the existing HCQIs as new treatment strategies are becoming known. One challenge will be to develop and introduce HCQIs for outcomes [32].

Rheumatology key messages

- HCQIs concern the structure, process and/or outcome of health care and aim to improve its quality.
- Few HCQI sets are available for OA and RA management.
- Comprehensive sets of HCQIs for OA and RA, methodologically well developed and widely applicable, are needed.

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Supplementary data

Supplementary data are available at *Rheumatology* Online.

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