Identification of health problems in patients with acute inflammatory arthritis, using the International Classification of Functioning, Disability and Health (ICF)

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Abstract

Objectives

To identify the most common health problems experienced by patients with acute inflammatory arthritis using the International Classification of Functioning, Disability and Health (ICF), and to provide empirical data for the development of an ICF Core Set for acute inflammatory arthritis.

Methods

Cross-sectional survey of patients with acute inflammatory arthritis of two or more joints requiring admission to an acute hospital. The second level categories of the ICF were used to collect information on patients' health problems. Relative frequencies of impairments, limitations and restrictions in the study population were reported for the ICF components Body Functions, Body Structures, and Activities and Participations. For the component Environmental Factors absolute and relative frequencies of perceived barriers or facilitators were reported.

Results

In total, 130 patients were included in the survey. The mean age of the population was 59.9 years (median age 63.0 years), 75% of the patients were female. Most had rheumatoid arthritis (57%) or early inflammatory polyarthritis (22%). Fifty-four second-level ICF categories had a prevalence of 30% or more: 3 (8%) belonged to the component Body Structures and 10 (13%) to the component Body Functions. Most categories were identified in the components Activities and Participation (19; 23%) and Environmental Factors (22; 56%).

Conclusion

Patients with acute inflammatory arthritis can be well described by ICF categories and components. This study is the first step towards the development of an ICF Core Set for patients with acute inflammatory arthritis.

Key words

Cross sectional studies, outcome assessment, rheumatoid arthritis, inflammatory arthritis.

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Introduction

Acute joint inflammation, comprising pain, swelling, heat and loss of function, is the cardinal feature of most rheumatic diseases and the most common reason for initial presentation to a rheumatologist. Rheumatoid arthritis (RA) has a prevalence of between 0.3% and 1.0% (1), and is well recognized to progress to chronic disease with associated joint deformity (2), functional impairment (3) and work disability (3-6). Similarly psoriatic arthritis, reactive arthritis, ankylosing spondylitis, and other rheumatic conditions presenting with acute peripheral joint inflammation can be associated with significant longer-term functional disability (7-9).

Irrespective of disease diagnosis or ultimate prognosis, these patients are united by common acute health problems as a result of their joint disease, and it is the impact of this disease on their daily health and function that has led to seeking medical intervention. Optimal management of these patients must therefore not only address accurate diagnosis and prevention of long-term disability, but also be directed at the acute clinical state, functional impairment and current disability. Early identification of functioning and its impairment in acute patients is important both for immediate patient care, and to allow timely intervention for prevention of longer term disability by way of appropriate multi-disciplinary therapies.

The International Classification of Functioning, Disability and Health (ICF) (10) is the newest member of the World Health Organization (WHO) family of international classifications, designed to record and organize a wide range of information about health and health-related states. The ICF categories potentially facilitate the description and classification of all aspects of function and health in individuals independent of disease or specific measurement instrument (11). However, with over 1500 categories, it is unwieldy and impractical for use in clinical practice. It is therefore necessary to identify those components of the ICF which are relevant to specific patient groups, both with respect to disease state and disease activity. ICF Core Sets have already been described for patients with acute (12, 13) and chronic disease (14), in various disease groups (15-17), which sufficiently and specifically describe health problems relevant for each group. Three ICF Core Sets relevant to rheumatology have already been developed: the ICF Core Set for chronic rheumatoid arthritis (18), and the ICF Core Sets for patients with musculoskeletal conditions in the acute hospital (19) and early post-acute rehabilitation facilities (13).

The ICF Core Sets for musculoskeletal conditions cover a broad spectrum of health problems encountered in various musculoskeletal conditions, including only small numbers of patients with arthritis, and are intended for use by health professionals who are generally not specialised in rheumatology or rehabilitation (20). The ICF Core Set for chronic rheumatoid arthritis by definition did not include patients with acute inflammation, and it is not clear if this Core Set is valid in an acute population. As such the existing ICF Core Sets are unlikely to be sufficiently specific to patients with acute inflammatory arthritis, and there is no clear evidence in the literature as to which health problems may be most relevant to this acute patient group (21). There is a need to empirically identify the health problems most relevant for patients with acute inflammatory arthritis in order to have a better understanding of the health problems requiring attention in these patients, and to develop an ICF Core Set for acute inflammatory arthritis which may be useful in this situation.

The objective of this cross sectional study was therefore to identify the most common health problems experienced by patients with acute inflammatory arthritis from the patients' perspective using the items of the ICF, and to provide an important evidence base for the development of an ICF Core Set for acute inflammatory arthritis.

Methods

Study design

The study was a cross-sectional survey of patients with acute inflammatory

arthritis requiring admission to St. Josefs-Krankenhaus, an acute rheumatology hospital situated in the Ruhrgebiet, in north-western Germany. Consecutive patients fulfilling the inclusion criteria were recruited between July and December 2004. Patients were eligible to participate if they had been admitted to hospital for a new-onset arthritis involving two or more peripheral joints (not including hips, sacroiliac or axial joints), or for an acute flare of known arthritis involving new inflammation of two or more peripheral joints. Admission to hospital was determined by the attending senior rheumatologist, in line with standard clinical practice. Symptom duration was required to be less than 12 weeks, and acute inflammation was verified by the attending rheumatologist prior to inclusion in the study. Patients were at least 18 years of age, and gave informed consent to participate in the study. The study was approved by the medical ethics committee of Westfalen-Lippe and the University of Munster. Patients were ineligible to participate if they had only one inflamed joint, had only axial joint involvement, had been admitted to hospital for other reasons or were non-German speaking (and therefore unable to understand the questionnaire).

Measures

The ICF has two parts, each containing separate components. Part 1 covers functioning and disability, and includes the components Body Functions (b), Body Structures (s), and Activities and Participation (d). Part 2 covers contextual factors and includes the components Environmental Factors (e) and Personal Factors. In the ICF classification, the letters b, s, d and e, which refer to the components of the classification, are followed by a numeric code starting with the chapter number (one digit) followed by the second level (two digits) and the third and fourth levels (one digit each). For this study, the second level categories of the ICF were used.

The questionnaire was made up of 266 second level ICF categories. All health concepts were included at this level, with the exception of the categories representing 'not specified' or 'other'. In this way, the entire spectrum of health and functioning concepts was included and no relevant components could be overlooked. Dichotomous responses (1 = yes, I have health problems in this area, and 0 = no, I have no health problems in this area) were used for each of the categories of the components Body Functions, Body Structures and Activities and Participation. The categories of the component Environmental Factors were graded as +0 or -0 for 'no facilitator/no barrier', as +1 for 'this is a facilitator' and as -1 for 'this is a barrier'. The additional responses 'I am not able to answer that question due to insufficient information' and 'that question is not relevant for me' (for example, problems with pregnancy in a male) were recorded when necessary. When the meaning of a question was not immediately obvious from the ICF wording, the accompanying description for the item was also read to the patient. For example, the category 'caring for body parts (d520)' is not particularly straightforward, and so the accompanying explanation 'Looking after those parts of the body, such as skin, face, teeth, scalp, nails and genitals, that require more than washing and drying' would also be presented to the patient. The questions were directed at health problems due to acute inflammatory arthritis; when a patient indicated that the problem was not due to their current arthritis, but to another medical condition or to chronic disease, the response was marked as a 'comorbidity' response and not included in the prevalence calculations.

Interviewers had the opportunity to add extra items identified as problems by the patients which had not been covered by the questionnaire, and patients were encouraged to add any health problems they experienced as a result of their acute arthritis which were not contained in the preset ICF categories. Main diagnoses, socio-demographic variables and comorbidities were collected. Patients were also asked to independently complete validated paper-based physical function and health-related quality of life questionnaires prior to the interview, including the Hannover Functional Capacity Questionnaire (Funktionsfragebogen Hannover, FFbH) (22), the German validated translation of the Stanford Health Assessment Questionnaire (HAQ) (23) and visual analogue scales for arthritis pain and for general health (measured on a 0-100mm scale). Treating physicians were asked to perform tender and swollen joint counts, to enable the calculation of a Disease Activity Score (DAS28) (24). Interviewers were blinded to the results of the supplementary questionnaires.

Data collection procedures

Patients were recruited and interviewed by health professionals trained in the application and principles of the ICF. The questionnaire was administered by the health professional. Each ICF item was read from a laptop computer, clarifying the meaning of the item if necessary, and the patient then asked if their acute arthritis caused problems with the item. For example, item d560 from Activities and Participation is 'walking', and includes walking short or long distances, on different surfaces and around obstacles; the patient would be asked if he/she had problems or difficulty walking due to the current acute episode of arthritis. Each response was then entered directly into the study database. Drop-down menus limited the response options to valid responses. Data collection was anonymous, using consecutive numbers as patient identifiers. A checking feature was incorporated into the database to identify missing data at the time of the patient interview, enabling interviewers to check for missing responses whilst still at the bedside and to ask any questions which might have been overlooked. Interviewers were trained in the ICF and in the use of the electronic database prior to commencement of the study. Interviews were carried out within a median of 7 days of admission; when longer, the patient was asked to answer the questions with regards to the time of initial admission. In-patient stays at this hospital are generally between 1 and 2 weeks in length. Before an interview started, each patient's medical

chart was checked and relevant information on socio-demographic variables and diagnoses was extracted. If information was not obtainable from the patient, health professionals of the relevant wards were asked. The source of information was recorded.

The final 10 patients enrolled in the study and all interviewers were asked to complete a short series of questions regarding the use of the computer-based questionnaire, recording responses on a 0-100mm visual analogue scale (VAS).

Data analysis

For the ICF components Body Functions, Body Structures and Activities and Participation, absolute frequencies and relative frequencies (prevalences) of health problems in the study population were calculated along with their 95% confidence intervals (CI). For Environmental Factors, absolute frequencies and relative frequencies (prevalences) of persons who regarded a specific category as either a barrier or a facilitator were calculated.

Results

One hundred and thirty patients were included: 103 (79.2%) with rheumatoid arthritis (56.9%) or early inflammatory polyarthritis (22.3%), 13 (10.0%) with psoriatic arthritis, 7 (5.4%) with ankylosing spondylitis with peripheral joint involvement and 7 (5.4%) with other rheumatological conditions causing peripheral arthritis (e.g. systemic lupus erythematosis, connective tissue disease). All demographic characteristics are given in Table I. Three additional patients withdrew consent during the interview; all were female, over 60 years of age, were admitted for acute flare of rheumatoid arthritis and had multiple comorbidities.

The mean age of the population was 59.9 years (standard deviation 14.4 years), the median disease duration was 2 years and there was a wide range of 'functional impairment' as measured by the FFbH and HAQ (Table I). Patients with rheumatoid arthritis had high levels of disease activity as measured by the DAS28 (median 5.58, mean 5.69). The patients with RA were rheumatoid factor positive in 83% of the cases.

Table I. Patient characteristics (N = 130).

Characteristics	
Female (N, %)	98 (75.0%)
Age (mean ± standard deviation, median), years	59.9 ± 14.4, 63
Disease duration (median, range), years	2.0 (0.1 – 51)
Diagnosis (N, %):	
Rheumatoid arthritis (fulfilling ACR diagnostic criteria)	74 (56.9%)
Early inflammatory polyarthritis	39 (22.3%)
Psoriatic arthritis	13 (10.0%)
Other	14 (10.8%)
Hannover Functional Questionnaire (FFbH) (median, range)**	51 (6 – 100)
Health Assessment Questionnaire (HAQ-DI) (median, range)†	1.25 (0 – 3)
Disease Activity Score (DAS28), n = 93 (median, range)#	5.58 (2.53 – 8.11)

** The FFbH scores 0-100%, higher scores reflecting better functional health, i.e. lower disability
† The HAQ-DI scores 0-3, higher scores reflecting higher disability.
# In the DAS28, higher scores reflect higher disease activity.

Table II. International Classification of Functioning, Disability and Health (ICF) – categories of the components Body Functions (b) and Body Structures (s) considered as relevant by patients with acute peripheral arthritis (N = 130).

ICF Code	ICF category title	n/N	% (95% CI)
b130	Energy and drive functions	39/130	30.0 (22.8, 38.4)
b134	Sleep functions	80/130	61.5 (53.0, 69.5)
b280	Sensation of pain	111/130	85.4 (78.3, 90.4)
b710	Mobility of joint functions	112/130	86.2 (79.2, 91.1)
b715	Stability of joint functions	84/130	64.6 (56.1, 72.3)
b720	Mobility of bone functions	88/130	67.7 (59.2, 75.1)
b730	Muscle power functions	73/130	56.2 (47.6, 64.4)
b740	Muscle endurance functions	79/130	60.8 (52.2, 68.7)
b770	Gait pattern functions	83/130	63.8 (55.3, 71.6)
b780	Sensations related to muscles and movement functions	42/130	32.3 (24.9, 40.8)
s720	Structure of shoulder region	79/129	61.2 (52.6, 69.2)
s730	Structure of upper extremity	102/130	78.5 (70.6, 84.7)
s750	Structure of lower extremity	89/130	68.5 (60.0, 75.8)

Tables II-IV give the ICF categories for the four ICF components. In total, 54 categories had a prevalence of 30% and above: 10 categories (13%) of Body Functions, 3 categories (8%) of Body Structures, 19 categories (23%) of Activities and Participation and 22 categories (56%) of Environmental Factors. Within the Environmental Factors, 2 categories were considered by 30% or more of the patients to be barriers to functioning, and 19 categories were considered as facilitators to functioning. There were no additional items (items not included in the ICF second level categories) identified by more than 5 patients.

Although the length of the interviews ranged from 45 to 90 minutes, patients' acceptance of the interview was good. The subgroup of patients asked to rate their opinion of the use of a laptop computer instead of a paper-based questionnaire did not feel that the computer influenced their responses or their interaction with the interviewer (Table V). The interviewers expressed more dissatisfaction with the use of the computer than did the patients.

Discussion

This cross-sectional study identifies the most common health problems experienced by patients with acute inflammatory arthritis at the time of admission to an acute hospital using the ICF. Categories from all four ICF components, Body Functions, Body Structures, Activities and Participation and Environmental Factors, were found to be relevant for patients with acute rheumatic diseases.

A wide range of health problems was reported. The most common limitations

Table III. International Classification of Functioning, Disability and Health (ICF) – categories of the component Activities and Participation considered as relevant by patients with acute arthritis (N=130).

ICF Code	ICF category title	N	% (95% CI)
d170	Writing	44/129	34.1 (26.5, 42.6)
d410	Changing basic body position	72/130	55.4 (46.8, 63.7)
d415	Maintaining a body position	64/129	49.6 (41.1, 58.1)
d420	Transferring oneself	66/130	50.8 (42.3, 59.2)
d430	Lifting and carrying objects	102/130	78.5 (70.6, 84.7)
d435	Moving objects with lower extremities	67/130	51.5 (43.0, 60.0)
d440	Fine hand use (picking up, grasping)	74/130	56.9 (48.3, 65.1)
d445	Hand and arm use	81/130	62.3 (53.7, 70.2)
d450	Walking	74/130	56.9 (48.3, 65.1)
d455	Moving around	106/127	83.5 (76.0, 88.9)
d475	Driving	34/109	31.2 (23.3, 40.4)
d480	Riding animals for transportation	16/39	41.0 (27.1, 56.6)
d510	Washing oneself	59/130	45.4 (37.1, 54.0)
d520	Caring for body parts	50/130	38.5 (30.5, 47.0)
d540	Dressing	58/130	44.6 (36.3, 53.2)
d620	Acquisition of goods and services	44/129	34.1 (26.5, 42.6)
d630	Preparing meals	45/116	38.8 (30.4, 47.9)
d640	Doing housework	84/120	70.0 (61.3, 77.5)
d650	Caring for household objects	65/120	54.2 (46.3, 62.8)

Table IV. International Classification of Functioning, Disability and Health (ICF) – categories of the component Environmental Factors considered as relevant for patients with acute arthritis (N = 130).

ICF Code	ICF category title	N	% (95% CI)
e110	Products or substances for personal consumption	75/130	57.7 (49.1, 65.8)
e115	Products and technology for personal use in daily living	79/125	63.2 (54.5, 71.1)
e120	Products and technology for personal indoor and outdoor mobility and transportation	56/121	46.3 (37.6, 55.1)
e125	Products and technology for communication	56/129	43.4 (35.2, 52.0)
e150	Design, construction and building products and technology of buildings for public use	44/118	37.3 (29.1, 46.3)
e225	Climate	95/130	73.1 (64.9, 80.0)
e255	Vibration	39/130	30.0 (22.8, 38.4)
e310	Immediate family	98/128	76.6 (68.5, 83.1)
e315	Extended family	72/123	58.5 (49.7, 66.9)
e320	Friends	88/127	69.3 (60.8, 76.6)
e325	Acquaintances, peers, colleagues, neighbours and community members	60/127	47.2 (38.8, 55.9)
e330	People in position of authority	21/105	20.0 (13.5, 28.6)
e335	People in subordinate positions	10/91	11.0 (6.1, 19.1)
e340	Personal care providers and personal assistants	27/61	44.3 (32.5, 56.7)
e345	Strangers	14/124	11.3 (6.8, 18.1)
e350	Domesticated animals	25/72	34.7 (23.8, 46.2)
e355	Health professionals	94/123	76.4 (68.2, 83.1)
e360	Other professionals	41/125	32.8 (25.2, 41.4)
e410	Individual attitudes of immediate family members	76/127	59.8 (51.1, 68.0)
e415	Individual attitudes of extended family members	41/123	33.3 (25.6, 42.1)
e420	Individual attitudes of friends	55/126	43.7 (35.3, 52.4)
e440	Individual attitudes of personal care providers and personal assistants	24/65	36.9 (26.2, 49.1)
e450	Individual attitudes of health professionals	67/130	51.5 (43.0, 60.0)
e570	Social security, services, systems and policies	40/128	31.3 (23.9, 39.7)
e580	Health services, systems and policies	59/129	45.7 (37.4, 54.3)

were in pain and sleep functions, musculoskeletal functions, structures related to movement, mobility, self-care and activities of daily living. The finding that most individuals with joint disease reported problems with pain and mobility supports the face validity of the study.

In the component Environmental Factors, social supports including family, friends, health professionals and their attitudes were perceived as important facilitators or barriers for most patients. In addition to human interactions, climate was indicated as important by more than 70% of patients, products and technologies for use in daily life by up to 60% of patients and health-related services and policies in 45%. The wide range of environmental factors identified as important by patients at the time of their acute inflammatory arthritis is noteworthy, particularly as many may not be specifically addressed as a part of acute medical and rehabilitation care. Although most environmental factors are not amenable to alteration by therapy, an awareness of the problems commonly encountered by patients is important if strategies are to be developed which might alleviate the effects of poor social supports or life circumstances.

Our patient population consisted of patients with RA, early inflammatory arthritis, and other diagnoses including psoriatic arthritis and ankylosing spondylitis, the unifying feature being the presence of acute inflammatory joint disease in at least 2 joints. The majority had RA or early rheumatoid-like disease, and thus polyarticular involvement. The inclusion of a broader range of diagnoses is important to identify which problems are associated with acute joint inflammation, not with any specific diagnosis, and to be relevant for any patient presenting acutely with joint disease, particularly those in whom it is too early to make a definitive diagnosis. This approach is also much closer to daily practice. There is a possibility that responses may have varied between patients with new onset disease and those with an acute flare of long-standing disease, as the latter group has a prior knowledge and expe-

Table V. Acceptance of a computer-based data collection system by patients and interviewers (translated from German).

Item	Median	Range
Patient questionnaire (N = 10)		
1 Was it difficult to understand the questions? (0 = very easy, 100 = very difficult)	11	0 - 87
2 Do you feel the computer made the interview more difficult? (0 = no, not at all, 100 = yes, completely)	4.5	0 - 63
3 Do you feel the computer interfered with the interview? (0 = no, not at all, 100 = yes, completely)	5.5	0 - 31
4 Do you feel the computer influenced your answers? (0 = no, not at all, 100 = yes, completely)	3.5	0 - 19
5 Do you feel the use of a computer for this type of study is sensible? (0 = no, not at all, 100 = yes, completely)	91	52 - 100
Interviewer questionnaire (N = 5)		
1 Was it difficult to explain the questions? (0 = very easy, 100 = very difficult)	47	38 – 55
2 Do you feel the computer made the interview more difficult? (0 = no, not at all, 100 = yes, completely)	19	0 – 75
3 Do you feel the computer interfered with the interview? (0 = no, not at all, 100 = yes, completely)	20	2 – 63
4 Do you feel the computer influenced the patients' participation in the study? (0 = no, not at all, 100 = yes, completely)	59	0 – 73
5 Do you feel the use of a computer for this type of study is sensible? (0 = no, not at all, 100 = yes, completely)	99	7 – 100
6 Do you feel the computer took longer than a paper questionnaire would? (0 = no, not at all, 100 = yes, completely)	85	0 – 93
7 Considering your answers for questions 5 and 6, would you prefer to use a computer or a paper questionnaire for the next study? (0 = computer, 100 = paper)	3	0 - 95

rience of arthritis, and it is known that there exists a continuum of resettling of functional and health priorities in inflammatory arthritis with disease duration (25). Nevertheless, in a focus group setting, patients in that study identified particular priorities with acute flare as distinct from long-standing daily functional problems, reinforcing the need for definition of patient-based health concerns in our acute population.

A limitation of this study is that it was carried out at only one centre, and therefore reflects the health problems of patients from a well-defined geographical area. This raises the question of generalizability of results to patients from other regions or countries. The centre was a specialized acute rheumatology hospital with 130 beds and a busy outpatient department, enabling early identification of patients in need of admission and rapid inpatient care. It is possible that centres with more pressure on acute beds would see a different spectrum of disease, although the most likely scenario is that such centres would see only the more severe end of the disease spectrum, which has been included in our cohort.

All patients included in this study had acute disease requiring hospital care, as documented by a general practitioner, an orthopaedic surgeon or a rheumatologist in private practice, and by the rheumatologist in charge in the hospital. Since these are patients with acute disease states it can be expected that they differ from patients with chronic rheumatic disease in the range and severity of health problems they experience. The German health system allows intensive care for patients with acute and/or unclear symptoms of the musculoskeletal system in specialised hospitals and departments equipped with experienced rheumatologists and a multidisciplinary team. Ewert *et al.* (26) have recently published the results of their cross-sectional survey of patients with chronic diseases, including RA, using the ICF framework. The results for patients with RA were similar to those identified in our study of acute inflammatory arthritis, particularly in the categories Body Structures. Of interest, fewer patients with acute disease described problems with Body Functions such as muscle power and tone and haematological functions, which would be expected as these are symptoms of more chronic disease. Acute patients also described fewer problems in the Activities and Participation category, particularly those activities that are a part of community life such as recreation and leisure and employment, using transport and driving, suggesting that independent living is not as much of an issue for patients dealing with acute disease but more for chronic patients who must live with their disabling disease due to structural damage on a daily basis. Environmental Factors, particularly family and health professionals, were extremely important for patients in both studies, emphasizing the major role individual and societal supports play in our patients' lives. The similarities between the results of Ewert *et al.* and the current study reflect the continuum between acute and chronic joint disease; it is important to recognize that the limitations in functioning described in chronic rheumatic diseases begin early, and that acute anti-rheumatic therapy must include early physiotherapy and rehabilitation to address these disabilities at disease onset. There is overwhelming evidence that adequate anti-rheumatic therapy needs to be started as early and as intense as possible to prevent early structural damage and disability (27, 28).

The ICF-based approach claims to facilitate comparisons across patients, studies, settings and interventions (11). It provides a common language that can be used by different health professionals to improve communication and understanding in daily clinical practice, incorporating all aspects of patients' functioning, disability and health, including physical, mental and social well-being. This has particular rele-

vance in rheumatic disease, where the importance of a multi-disciplinary approach is well recognized in conditions that have significant impact not only on isolated body systems but also on the way a patient functions in daily life and interacts with others (29, 30).

This study is the first step towards identifying relevant ICF categories which can serve as an ICF Core Set for assessment, management and communication (12) in acute inflammatory arthritis. It is important to remember that the ICF is itself not an outcome measure, but a database of functioning and disability concepts, and the process of developing an ICF Core Set for use in acute rheumatic disease is designed merely to identify which of the entire spectrum of health and disability concepts are relevant to our patients. There are many validated instruments currently used for the assessment of acute arthritis patients, both in clinical research and in daily practice, which are appropriate and effective in the specific situations for which they are designed. For example, the DAS28 (24) is an excellent instrument for assessing disease response to therapy in rheumatoid arthritis, but this instrument is unable to tell us if a patient has difficulty walking or buying groceries. The HAQ may answer these questions and is an excellent tool to describe functioning in daily activities (23), but will not tell us if a patient has structural problems with hands or feet.

The ICF database might, therefore, be used to assess which concepts are covered by an existing instrument and thus aid in the choice of instrument for a given clinical situation, or as a basis to generate new clinical tools directed at specific functional outcomes. For example, the recently validated Recent-Onset Arthritis Disability questionnaire (ROAD) (31) was developed by culling health items from pre-existing specific and generic functional outcome measures, which assumes that the existing measures already comprehensively describe the health and functioning of early arthritis patients. The ICF Core Sets are developed empirically from a complete database of health and functioning concepts, and thus basing a new instrument on the Core Set concepts would avoid missing previously under-recognized health concepts important for patient care.

An ICF Core Set has now been developed relevant for rheumatoid arthritis (18), combining the above cross-sectional study results (26), a systematic literature search describing common instruments used in the assessment of RA in clinical trials and linking these to ICF components, and a Delphi exercise to define components considered relevant by experts in the management of patients with chronic RA. The Brief Core Set is made up of 39 second-level categories which may be relevant for use in clinical trials, and the Comprehensive Core Set contains 96 categories which may guide multidisciplinary assessment in patients with RA. These Core Sets provide a valuable framework on which future patient assessment in many varied situations, including clinical trials and the development of more specific assessment instruments might be based.

Our results are consistent with the other relevant ICF Core Sets for musculoskeletal disease (13, 18, 19), notably in the domains dealing with specific musculoskeletal health problems such as muscle and joint functions, structures of the musculoskeletal system and activities and participations involving movement and mobility. The most striking differences lie in the scope of the identified categories; whereas the ICF Core Sets for musculoskeletal disease in the acute and post-acute hospital settings (13, 19) were broad, including concepts outside the musculoskeletal system, the patients with inflammatory arthritis were less concerned with other body systems. This was more in keeping with the results seen in the chronic RA ICF Core Set (18). The general musculoskeletal core sets are based on a mix of patients, including multi-trauma, fractures of upper and lower limbs, post-surgical and arthropathy patients, and so less likely to be relevant specifically to arthritis patients and more likely to be centred on the acute hospital setting than the particular disease entity.

It is interesting that there are fewer differences between the categories identified by the patients in this study and those included in the ICF Core Set for chronic RA. Patients were less likely to consider they had problems with many of the activities of daily living included in the ICF Core Set for chronic RA (such as eating, toileting and looking after one's own health), and some of the health problems considered a sign of disease chronicity such as haematological functions, exercise tolerance and muscle endurance. Taken together, this would indicate that in RA and similar diseases, it is the disease entity and not the patient setting that determines patient functioning, disability and health.

The ICF categories identified in this study describe those aspects of functioning, disability and health which are perceived to be important by patients with acute inflammatory arthritis, and will be an important resource for the development of ICF core sets for patients with acute inflammatory arthritis in the acute hospital. As in previous studies of patients in acute hospital settings (32, 33), the in-depth knowledge of the typical spectrum of problems encountered by patients with acute inflammatory arthritis can contribute to the optimal management of patients, the teaching of professionals, the planning of studies and the development of assessment instruments. Ongoing studies of expert opinion and the rheumatology literature will add to the information provided by this study, to ultimately develop an ICF Core Set relevant for patients with acute rheumatic disease.

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