

Measurement of patient perceptions of pain and disability in relation to total hip replacement: the place of the Oxford hip score in mixed methods

Robert McMurray, Janet Heaton, Patricia Sloper, Sarah Nettleton

Abstract

Objectives—To describe the practical difficulties experienced by patients when completing the Oxford hip score, and to highlight the need to reconsider aspects of its structure and conceptual base.

Design—Qualitative study incorporating the Oxford hip score in semi-structured interviews with patients before and four months after their operation.

Setting—Two hospitals in the North of England.

Subjects—Osteoarthritic patients undergoing primary elective total hip replacement.

Results—Use of the Oxford hip score provided quantitative data on disability in the sample, particularly about pain and immobility. It also facilitated the collection of qualitative data, serving as a useful starting point for interviews and as a prompt for indepth discussion. Concerns about the clarity, coverage, and content validity of the score were identified, however, raising questions about the measure's conceptual base.

Conclusion—The Oxford hip score was found to be a useful precursor to the semi-structured interviews. However, deficiencies in instruction and lack of clarity in purpose have implications for its ongoing development and future application, both in this type of study and other, more general, contexts.

(Quality in Health Care 1999;8:228–233)

Keywords: total hip replacement; Oxford hip score; patient perceptions; mixed methods

Social Policy Research Unit, University of York, UK

R McMurray, research fellow

J Heaton, research fellow

P Sloper, senior research fellow

Department of Social Policy and Social Work, University of York, UK

S Nettleton, senior lecturer

Correspondence to:
Mr R McMurray, Social Policy Research Unit, University of York, Heslington, York YO10 5DD, UK

Accepted 10 August 1999

As recognition of the value of involving patients in the assessment of the effectiveness of clinical interventions has grown,^{1–6} so the need to evaluate the reliability and validity of measures associated with such activities has increased. This paper evaluates a recently developed health outcomes scale—the Oxford hip score.

Patient completed health outcome scales are used to measure the efficacy of treatments, rating and describing changes in the subjective health status of individuals and populations.^{3 4 6–8} They serve as adjuncts to more traditional methods of clinical and medical review,⁶ highlighting the perceived needs, priorities, and preferences of patients.^{4 6} They are intended to complement existing measures, providing hard, reliable, responsive, and reproducible evidence on the quality of health care from the perspective of patients,^{3 9} who have

been shown to have views which differ from those of clinicians.^{7 10 11}

There are two broad types of health outcome measure: the generic, and the disease or condition specific.⁷ The SF-36 and Nottingham health profile (NHP) are examples of generic scales. They provide summaries of emotional state, physical function, and social wellbeing. Disease specific measures, such as the arthritis impact measurement scales (AIMS), concentrate on a narrow range of issues relating to a specific condition or procedure.¹² The Oxford hip score, also a disease specific scale, was designed to overcome what were seen as the shortcomings of these measures, which have been criticised on one or more of the following grounds: for being too long and difficult to complete, unresponsive, or of limited relevance to hip surgery.^{7 12–14}

A relatively new, standardised rating scale—the Oxford hip score—was originally intended for use in large randomised controlled trials with patients undergoing hip surgery. It seeks to assess levels of, and changes in, pain and function of the hip solely from the viewpoint of the patient. It aims to be short, practical, and sensitive to clinically important change, and, as such, be a more accurate patient based measure than the SF-36 or AIMS.

When compared with other standardised rating scales such as the SF-36 and AIMS, the Oxford hip score has indeed been shown to be a highly reliable, valid, and responsive measure of the outcomes of total hip replacement.^{13 14} It was for these reasons that it was selected for use in a study of patient and carer perspectives on the effectiveness of rehabilitation therapies for total hip replacement.¹⁵

The Oxford hip score was incorporated into the study to provide a standardised measure of levels of pre-operative and post-operative disability, and a quantitative base line against which to judge patients' progress. It formed part of a mix of methods (that is to say, *qualitative* interviews, and *quantitative* scales), used within a single study to assess patients' perspectives on changes in their condition. However, the application of these methods in tandem revealed that the use of the Oxford hip score was not unproblematic. Specifically, in the course of completing the score, patients experienced difficulties which raised questions about the clarity and validity of the scale.

This paper describes the practical difficulties experienced by patients when completing the score. It examines the issues arising from those difficulties, and highlights the need to reconsider aspects of its structure and conceptual

base. In conclusion, it points to the need to review the use and validity of all such outcome scales if quality health care is to be secured.

Methods

SAMPLE

The study took place between July 1997 and February 1999, after the receipt of local ethical committee approval. Patients were recruited from two hospitals in the North of England. They were selected from the elective orthopaedic lists at each site on the basis that they were scheduled to undergo primary elective total hip replacement for the treatment of osteoarthritis of the hip. Patients were excluded from the study if they were: under the age of 18 years, suffering only from rheumatoid arthritis, scheduled for revision surgery, or admitted for total hip replacement on an emergency basis.

All those invited to participate in the study were approached via a letter and information sheets sent from the researchers, which accompanied a hospital letter routinely sent to patients notifying them of the date of their pre-assessment or admission, or both.

PROCEDURES

Patients were interviewed in their own homes, a few weeks before their admission for total hip replacement, and again four months after surgery. At these times patients were asked to complete the Oxford hip score before taking part in a semi-structured interview. Patients' medical notes were reviewed for background information on their operation and rehabilitation. All data were collected with the patients' written consent, which was obtained before the first interview.

As noted earlier, the purpose of incorporating the Oxford hip score in to the study was to provide a standardised view of levels of pre-operative and post-operative disability. The study was not intended as a systematic investigation of the use of the Oxford hip score, and patients were not asked directly about their perceptions of the use of the measure. Rather, their spontaneous comments while completing the measure, and subsequent elaboration of difficulties during interviews, pointed to various difficulties with its use. This paper focuses on the description of the *types* of difficulties encountered, rather than the overall *frequency* of such difficulties because, in the absence of a systematic review, detailed quantification of difficulties would not be reliable.

OXFORD HIP SCORE

The Oxford hip score assesses pain and function of the hip in relation to activities such as dressing, walking, and sleeping (table 2). Comprising 12 questions, it is intended to be filled out by patients either by post and/or with a researcher present. Each question is answered by ticking a position on a five point ordinal scale. Responses are then totalled to obtain a score between 12 and 60. A low score indicates lesser difficulty for pain and function, a high score indicates greater difficulty.

Table 1 Sample demographics

	Women	Men	Total
40-49 years	1	1	2
50-59 years	3	5	8
60-69 years	9	12	21
70-79 years	14	6	20
80+ years	5	1	6
Unknown	1	—	1
Total	33	25	58

SEMI-STRUCTURED INTERVIEWS

The topics covered at the pre-operative stage included: the difficulties experienced by patients as a consequence of their arthritic hip; patients' expectations of surgery, medication, and the associated rehabilitation; and their goals for progress and outcomes in the short and long term after the operation. Similar topics were covered with patients at the post-operative interviews, with particular emphasis on patient evaluations of the effectiveness of the rehabilitative services that they had received.

All interviews were tape recorded, fully transcribed, and entered onto a computer to aid analysis. A coding frame was developed and applied (using NUD-ist computer software) to explore key themes arising from participants' accounts of their experience. Only those themes bearing direct relevance to participants' completion of the Oxford hip score are discussed below, starting with a summary of response rates, followed by description and analysis of the difficulties encountered by patients when completing the scale.

Results

RESPONSE RATES

A total of 58 patients took part in the study, a response rate of 35%. This low rate was not helped by the requirements of local ethical committee approval which required that patients be approached blind, and asked to "opt in" (rather than "opt out") to the study, by contacting the researchers. Fifty seven per cent of the sample were women. The majority of patients (71%) were aged between 60 and 79 years (table 1).

OXFORD HIP SCORE

Patient responses to the Oxford hip score (that is, total scores) were higher at the pre-operative interview when compared with those observed for the same individuals four months after surgery. This suggested that total replacement of the affected joint reduced the levels of pain and functional difficulty experienced by this patient group. These findings were confirmed, in the majority of cases, by interview data showing that total hip replacement had promoted: complete, or almost complete, relief from pain; improved movement; reduced reliance upon others in the conduct of daily living activities; and overall improvement in patients' perceptions of their quality of life.

It was found that by asking patients to complete the measure at the beginning of the research encounter, the Oxford hip score served as a useful means of leading into the semi-structured interviews. Patients completed

Table 2 The Oxford hip score (as used in the present study)

Question	Tick one box for every question
During the past four weeks	
(1) How would you describe the pain you usually have from your hip?	None <input type="checkbox"/> Very mild <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>
During the past four weeks	
(2) Have you had any trouble with washing and drying yourself (all over) because of your hip?	No trouble at all <input type="checkbox"/> Very little trouble <input type="checkbox"/> Moderate trouble <input type="checkbox"/> Extreme difficulty <input type="checkbox"/> Impossible to do <input type="checkbox"/>
During the past four weeks	
(3) Have you had any trouble getting in and out of a car or using public transport because of your hip? (Whichever you tend to use)	No trouble at all <input type="checkbox"/> Very little trouble <input type="checkbox"/> Moderate trouble <input type="checkbox"/> Extreme difficulty <input type="checkbox"/> Impossible to do <input type="checkbox"/>
During the past four weeks	
(4) Have you been able to put on a pair of socks, stockings, or tights?	Yes, easily <input type="checkbox"/> With little difficulty <input type="checkbox"/> With moderate difficulty <input type="checkbox"/> With extreme difficulty <input type="checkbox"/> No, impossible <input type="checkbox"/>
During the past four weeks	
(5) Could you do the household shopping on your own?	Yes, easily <input type="checkbox"/> With little difficulty <input type="checkbox"/> With moderate difficulty <input type="checkbox"/> With extreme difficulty <input type="checkbox"/> No, impossible <input type="checkbox"/>
During the past four weeks	
(6) For how long have you been able to walk before pain from your hip becomes severe? (With or without a stick)	No pain/more than 30 minutes <input type="checkbox"/> 16 to 30 minutes <input type="checkbox"/> 5 to 15 minutes <input type="checkbox"/> Around the house only <input type="checkbox"/> Not at all—pain severe on walking <input type="checkbox"/>
During the past four weeks	
(7) Have you been able to climb a flight of stairs?	Yes, easily <input type="checkbox"/> With little difficulty <input type="checkbox"/> With moderate difficulty <input type="checkbox"/> With extreme difficulty <input type="checkbox"/> No, impossible <input type="checkbox"/>
During the past four weeks	
(8) After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your hip?	Not at all painful <input type="checkbox"/> Slightly painful <input type="checkbox"/> Moderately painful <input type="checkbox"/> Very painful <input type="checkbox"/> Unbearable <input type="checkbox"/>
During the past four weeks	
(9) Have you been limping when walking because of your hip?	Rarely/never <input type="checkbox"/> Sometimes or just at first <input type="checkbox"/> Often, not just at first <input type="checkbox"/> Most of the time <input type="checkbox"/> All of the time <input type="checkbox"/>
During the past four weeks	
(10) Have you had any sudden, severe pain—"shooting", "stabbing", or "spasms"—from the affected hip?	No days <input type="checkbox"/> Only 1 or 2 days <input type="checkbox"/> Some days <input type="checkbox"/> Most days <input type="checkbox"/> Every day <input type="checkbox"/>
During the past four weeks	
(11) How much has pain from your hip interfered with your usual work (including housework)?	Not at all <input type="checkbox"/> A little bit <input type="checkbox"/> Moderately <input type="checkbox"/> Greatly <input type="checkbox"/> Totally <input type="checkbox"/>
During the past four weeks	
(12) Have you been troubled by pain from your hip in bed at night?	No nights <input type="checkbox"/> Only 1 or 2 nights <input type="checkbox"/> Some nights <input type="checkbox"/> Most nights <input type="checkbox"/> Every night <input type="checkbox"/>

the hip score in times ranging from two to 15 minutes. Although all patients completed the score, they did so with varying levels of ease, and required different amounts of assistance from family and/or the researcher present. Difficulties and differences in the completion of the score were observed in relation to various factors.

Question specificity

Statements of difficulty about the completion of the score arose where patients felt that they

could reasonably tick at least two points on the ordinal scale of a particular question. This occurred in relation to questions 2 and 4: *Have you had any trouble with washing and drying yourself (all over) because of your hip?* And *Have you been able to put on a pair of socks, stockings, or tights?* Difficulties here related to lack of specificity in the instructions which accompanied the questions. Neither of the two questions accounted for the possibility of patients using specialised equipment in the completion of certain daily tasks (for example, a long han-

dled bathbrush, and a sock or tight gutter). As a consequence, no indication was given as to whether patients should respond to the questions in terms of the difficulties they encountered completing tasks when using an aid, or as if they were attempting the activity without the assistance of such equipment.

This lack of specificity in the two questions was referred to by different patients on 14 occasions. Patients observed that their response would differ according to which approach they took. The result was that on five occasions patients chose to answer in terms of the difficulty they would encounter if they had not used the aid (so commenting upon their actual or absolute level of impairment) and rated their difficulties at the higher end of the scale, as a 4 or 5 (though it was not always clear whether they had actually tried the activity without aids). On the other nine occasions they responded to the question in terms of the difficulties they had encountered when they used an aid (thereby commenting upon their relative level of disability) and rated their difficulties at the lower end of the scale, as a 1 or 2.

Response difficulty, as a result of lack of specificity about the use of aids, was also found to relate to question 9, which covered the degree to which patients limped since the operation. Two patients ticked the response which stated that they had rarely or never limped in the previous four weeks. It then emerged in the course of the semi-structured interviews which followed that the absence of limping was a consequence of their having had one of their shoes raised (rather than as a result of surgery or rehabilitation). Although it is not certain, it is possible that the answer provided by the patients would have been different had they been instructed to discount the use of this aid.

Response category clarity

Difficulty with the completion of the measure was also observed in relation to question 6: *For how long have you been able to walk before pain from your hip becomes severe? (With or without a stick.)* Problems here centred around lack of clarity in the response categories which accompanied the question. Several patients were confused by the first response category: “no pain/more than 30 minutes” finding it difficult to comprehend how having “no pain” and being able to walk “more than 30 minutes” could be presented as the same thing. Other patients were confused (on first reading) as to whether response 1, “no pain/more than 30 minutes”, or response 5, “not at all—pain severe on walking” inferred the greater difficulty when walking. A few found it difficult to conceptualise their walking ability in terms of the passing of time.

At its most extreme, this lack of clarity in the construct of response categories resulted in a patient ticking a response option which apparently described her situation least well (that is, ticked response 1 instead of 5). More usual was an increase in the time it took patients to understand and complete the question (that is, patients generally spending the most time in consideration of the completion of this ques-

tion when compared with all others on the measure), along with requesting that the researcher present provide clarification.

Experience of pain

Difficulties were also expressed by patients when completing questions 1 and 2 relating to the experience of pain: *How would you describe the pain you usually have from your hip?* and *Have you been troubled by pain from your hip at night?* Patients doubted the ability of these questions to accurately record, and provide valid comparisons of, their experience of pain.

Patients' doubts related to both the subjective nature of pain and the ways in which pain could be masked. For example, some patients felt that with the passing of time they had learnt to “live with” or “ignore” the constant pain that they usually experienced from their affected hip. Hence they suggested that their answer to question 1 would be different to that of people who coped less well with pain, or who thought of pain in a different way. As a patient commented, this would make comparisons of pain problematic as “...that which one person may describe as severe another would say is limited”. Other patients described how the use of an analgesic such as co-proxamol could mask pain. Such drugs enabled them to sleep without being troubled by their hip in bed at night to a degree that had not been possible previously. Patients often went on to note that these modifiers of the experience of pain, be it in terms of attitude adjustment or drug use, were not accounted for by the measure (just as the use of aids was not accounted for by questions 2 and 4). Accordingly, they felt it necessary to supplement their written (ticked) responses to the questions with verbal caveats. These caveats centred around the dynamic nature of, and the different approaches to coping with, the experience of pain. From patients' perspectives the measure was felt unlikely to give a full and comparable account of their experience over time.

Exclusion of comorbidities

The final observed difficulty arose where patients felt unable, or unwilling, to distinguish between those difficulties which resulted from their osteoarthritic hip and those problems which arose from comorbidities. This issue related to the completion of the score as a whole, rather than any single or specific question.

Described variously as a “disease” and “site” specific measure,^{13, 16} the Oxford hip score is designed with a view to distinguish more ably between symptoms and functional impairment produced by the index joint, as compared with other joints and conditions.¹⁶ As such, it is intended to overcome the failings of more generic measures, such as the SF-36, which have been characterised as being less precise in focus, greater in length, and less responsive to changes in the condition of a single joint over time.¹⁶ Although the majority of patients expressed no or little difficulty with the score in this respect, 10 patients questioned either their own ability to exclude consideration of their

comorbidities (or “noise”¹⁶) from accounts of the difficulties they encountered in the activities described by the measure, or the validity of doing so.

For example, some patients found it difficult to speculate as to the pain or problems they encountered solely in terms of the index or hip joint because of factors such as angina, muscle spasms, or problems arising from other joints. Thus, one patient found it difficult to distinguish between the pain felt from the index joint and the pain that emanated from the opposing hip. Another could only speculate as to the impact of an osteoarthritic hip upon her ability to climb a flight of stairs or do the weekly shopping because angina had prevented attempts at either activity for several years.

Where patients could disentangle problems arising from the index joint from that which resulted from the effects of comorbidities, some questioned the value of doing so. For instance, a relative who was present while a patient was completing the measure observed that the score did not account for the limitations placed on her partner’s life by the arthrodises of his opposing hip. She felt, and the patient agreed, that the measure failed to reflect his true level of disability and, as such, its results needed to be qualified:

“It’s a bit, it’s a bit qualified isn’t it, ‘cos it’s his other hip, the fixed, fused one, that causes him trouble... you’re gonna have to qualify your data really aren’t you... [because] he still can’t do things, can you, so you’re not gonna get a very accurate picture are you [referring to the results of the Oxford hip score].”

Thus, the score lacked the scope and sophistication necessary to account for the multiple and interrelated nature of some patients’ problems. In attempting, quite deliberately, to exclude the noise that arises from comorbidities, the measure asked patients about, yet failed to fully record, the difficulties they experienced throughout their daily lives. Such deliberate exclusion was, from the perspective of some patients, neither possible nor valid.

Discussion

The Oxford hip score is a useful, disease specific addition to the measures available for the subjective assessment of health outcomes. In common with other health outcomes scales, however, patients experience practical difficulties during its completion, which raise questions about its validity.

The sample on which this paper and the wider study of rehabilitation effectiveness are based is small. However, although this may prohibit probabilistic generalisation to a population, small scale qualitative research can help us to understand *why* patients found the completion of this and similar scales difficult, and *how* this may impact on the future provision of quality care.¹⁷ Indeed, Donovan *et al* contend that this approach offers a “pertinent method for studying the validity of structured instruments from the perspective of the respondent”, allowing “insight in to the extent that individuals’ scores truly represent their views concerning their own health”.¹²

Our own use of the Oxford hip score has shown it to be a useful addition to qualitative and quantitative approaches to outcome measurement. When used at the start of interviews it served to concentrate the minds of patients, highlighting various topics which were subsequently to be discussed in depth. The score proved quick to calculate, and its outputs were easily analysed. The results of the analysis provided a quantitative base line against which patients’ progress was assessed. Yet these attributes—that is, simplicity, brevity, and singularity of focus—also serve to describe the limitations of the Oxford hip score.

Singularity of focus prevents any account of the comorbidities perceived by patients as having a significant impact on their levels of pain and disability. In common with other rating methods which omit or limit reference to individual patient concerns, the Oxford hip score may fail to measure outcomes (or account for determinants of outcomes) which are important to the patient.¹⁸

Simplicity and brevity are achieved at the cost of clarity. In question 6, for instance, the collapsing of two categories into one (for example, “no pain/more than 30 minutes”) caused hesitation and confusion among patients. Equally, paucity of instruction about how the use of aids and analgesics should be accounted for (that is, questions 1, 2, 4, 9, and 12) led to variation in patient response. Such findings raise questions about the content validity of the measure and, as a consequence, the comparability of its results across patients.

These limitations suggest the need for some reconsideration and reformulation of the scale’s questions, response categories, and instructions. The measure requires, as in the case of question 6, a clear separation of its ordinal scale categories. It requires, as with many other outcome measures, clear advice on how the use of aids is to be considered (be it directly to the patient through a reconstruction of the questionnaire, or through guidance to the researcher employing it).¹⁹ It would also benefit from a clear account, to be provided to the patient, as to why the noise from comorbidities is excluded by the measure. Yet, these moves will not fully tackle the limitations of the Oxford hip score. Their root lies not only in the manner of the measure’s construction but also its conceptualisation.

It is unclear whether the tool is intended as a measure of disability solely from a medical perspective or in accordance with social models of disablement. Attention to this one issue would serve to clarify much of the confusion that surrounds the use of the tool, and inform the manner of its revision. If it is concerned with the medical perspective, then patients can be instructed to complete the measure in a manner which seeks to determine their *absolute* ability to complete specified tasks when excluding the use of aids. If the concern is with the social nature of disablement, then patients may be instructed to describe their *relative* ability to complete tasks in terms of the manner in which they usually attempt them, so allowing for the fact that this may involve assistance

through the use of certain equipment, prosthetics, or medication. Attention to this issue would ensure that the measure is applied consistently. It would permit useful and valid comparison within and across patient groups in the knowledge that like is being compared with like.

Overall, the Oxford hip score is a useful addition to the array of existing measures of the outcome of total hip replacement. Within the limitations that have been described it proves to be a valuable tool when used, in the context of mixed methods, for the assessment of changes in the pain and function of the hip as experienced by patients over time. It has the potential, as with all such outcome scales, to help clinicians, researchers, and service planners to understand and address what it is that patients need and receive from health interventions.²⁰ Yet, it is precisely because of the potential (albeit implicit) that exists within such scales to influence decisions about the welfare of individual patients or the allocation of resources, that more attention must be paid to their testing and revision.²⁰

Outcome measure construction, testing, and revision must include the perspective of the patient. Only by considering what patients think of the questions posed by structured measures such as the Oxford hip score can we be sure that health outcome scales are a valid reflection of their perspectives on the efficacy of a particular health treatment, and it is only through the accurate assessment of the effectiveness of interventions that we can hope to improve the quality of care.

- 1 Segovia J, Bartlett R, Edwards A. An empirical analysis of the dimensions of health status measures. *Soc Sci Med* 1989;6:761-8.
- 2 Johanson N, Charlson M, Szatrowski T, et al. A self-administered hip-rating questionnaire for the assessment of

- outcome after total hip replacement. *J Bone Joint Surg* 1992;4:587-97.
- 3 Cleary P, Reilly D, Greenfield S, et al. Using patient reports to assess health-related quality of life after total hip replacement. *Quality of Life Research* 1993;2:3-11.
- 4 Levine D, Simmons B, Koris M, et al. A self-administered questionnaire for the assessment of severity of symptoms and functional status in carpal tunnel syndrome. *J Bone Joint Surg Br* 1993;11:1585-91.
- 5 Department of Health. *The new NHS*. London: DoH, 1997.
- 6 Jenkinson C, McGee H. Patient assessed outcomes: measuring health status and quality of life. In: *Assessment and evaluation of health and medical care—a methods text*. Buckingham: Open University Press, 1997.
- 7 Fitzpatrick R, Fletcher A, Gore S, et al. Quality of life measures in health care. I: applications and issues in assessment. *BMJ* 1992;305:1074-7.
- 8 Jette A. How measurement techniques influence estimates of disability in older populations. *Soc Sci Med* 1994;7:937-42.
- 9 Jenkinson C. Assessment and evaluation of health and medical care: an introduction and overview. In: *Assessment and evaluation of health and medical care—a methods text*. Buckingham: Open University Press, 1997.
- 10 Summers A, Mckeown K. Local voices: evolving a realistic strategy on public consultation. *Public Health* 1996;110:145-50.
- 11 Brooker J, Dinshaw C. Staff and patient feedback in mental health services for older people. *Quality in Health Care* 1998;7:70-6.
- 12 Donovan JL, Frankel SJ, Eyles JD. Assessing the need for health status measures. *J Epidemiol Community Health* 1993;47:158-62.
- 13 Dawson J, Fitzpatrick R, Carr A, et al. Questions on the perceptions of patients about total hip replacement. *J Bone Joint Surg Br* 1996;2:185-90.
- 14 Dawson J, Fitzpatrick R, Murray D, et al. Comparison of measures to assess outcomes in total hip replacement surgery. *Quality in Health Care* 1996;5:81-8.
- 15 Heaton J, McMurray R, Sloper P, et al. *The effectiveness of rehabilitation therapies for total hip replacement—patient and carer perspectives*. York: SPRU publications, University of York; in press.
- 16 Dawson J, Fitzpatrick R, Murray D, et al. The problem of “noise” in monitoring patient-based outcomes: generic, disease-specific and site-specific instruments for total hip replacement. *Journal of Health Services Research and Policy* 1996;1:225-31.
- 17 Popay J, Rogers A, Williams G. Rationale and standards for the systematic review of qualitative literature in health services researched. *Qualitative Health Research* 1998;8:329-40.
- 18 Wright JG, Rudicel S, Feinstein AR. Ask patients what they want: evaluation of individual complaints before total hip replacement. *J Bone Joint Surg Br* 1995;76-B:229-35.
- 19 McDowell I, Newell C. *Measuring health: a guide to rating scales and questionnaires*. Oxford: Oxford University Press; 1987.
- 20 Amadio P. Outcome measurements. *J Bone Joint Surg Br* 1993;11:1583-4.