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Use of hip and knee clinical scoring systems in prosthesis surgery in Norwegian hospitals

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Abstract In a postal survey of all orthopaedic surgery departments performing total hip or knee replacements in Norway, we inquired about the use of hip or knee scoring systems and their impact. All 63 eligible hospitals responded to the questionnaire. Thirteen (21%) reported routine use of hip clinical scoring systems, and five (9%) used knee clinical scoring systems. The Harris hip score and The Knee Society clinical rating system were the most prevalent. We received five different versions of the Harris hip score. The regional/university hospitals most commonly used clinical scoring systems. The adoption of clinical scoring systems did not differ with the annual procedure volumes of the hospitals.

Résumé Dans une étude postale auprès de tous les départements de chirurgie orthopédiques qui font des remplacements de la hanche ou du genou en Norvège, nous nous sommes renseignés sur l'usage des échelles d'évaluation de la hanche et du genou et leur impact. Les 63 hôpitaux éligibles ont répondu au questionnaire. Treize (21%) ont rapporté l'usage régulier de systèmes d'évaluation clinique par points de la hanche, et cinq (9%) l'usage de tels systèmes au niveau du genou. Le score de hanche de Harris et le système d'estimation clinique de la Knee Society étaient les plus employés. Nous avons reçu cinq versions différentes du score de Harris. Les hôpitaux

régionaux ou universitaires ont utilisé plus volontiers des systèmes d'évaluation par points. L'adoption de systèmes avec évaluation par points n'est pas en relation avec les volumes d'interventions annuels des hôpitaux.

Introduction

In the past few decades, a large number of clinical instruments for outcome measurements and severity ratings of hip or knee osteoarthritis have been introduced [11]. Many of these instruments have well-documented reliability and validity and have been adapted to other languages or cultural settings. Such instruments are used in research, for example, to assess outcomes in randomised clinical trials, observational studies, or for analysis and reporting of clinical practice in orthopaedic surgery. With increasing focus on reporting quality of care, there is considerable interest in the use of such clinical rating systems. There is, however, limited knowledge about how widespread the use of such instruments is in clinical practice.

The object of this study was to assess the prevalence of the use of instruments for measuring outcome or severity rating of patients scheduled for hip or knee surgery. In a postal survey of all orthopaedic surgery departments in Norway, we asked whether such instruments were used, what instruments were used, and if the use of such instruments had an impact on the decision whether to operate or on the anticipated waiting time before surgery.

Materials and methods

The Norwegian health care system has publicly owned hospitals at three levels: local (district) hospitals, central hospitals, and regional/university hospitals. In addition, a few private, freestanding, small clinics perform orthopaedic surgery. For this survey, we identified all departments and units at all levels that reported knee and hip surgery to the Norwegian Arthroplasty Register [5] that comprises about 95% of all knee replacements from all 59 hospitals

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Table 1 Hospital characteristics

	Hip replacements			Knee replacements		
	No. of hospitals	Percent	Procedures per year median (range)	No. of hospitals	Percent	Procedures per year median (range)
Type of hospital						
Regional/university hospital	7	11	150 (20–30)	7	13	50 (20–100)
Central hospital	11	18	180 (100–400)	11	20	75 (50–400)
Local/district hospital	38	60	100 (15–350)	31	55	40 (5–150)
Specialized orthopaedic hospital	5	8	100 (25–400)	5	9	50 (40–150)
Private clinics	2	3	65 (30–100)	2	4	35 (30–40)
Total	63	100	110 (60–200)*	56	101	50 (30–79)*

*Median (interquartile range)

operating on knee prostheses in Norway. In total, we identified 71 departments performing hip or knee replacement surgery. In April 2002, we mailed a questionnaire to the head of these departments. We sent no reminder but called non-respondents.

The questionnaire contained ten items. We asked if the department evaluated patients for total hip or knee replacements, the number of assessments per year, and about the routine use of hip or knee clinical scoring systems in prosthesis surgery. Additionally, we asked about how often the result of the scoring influences (1) the decision to operate the patient, and (2) the waiting time before surgery, with the following response alternatives: not at all, almost never, sometimes, quite often, very often, always. If they used a clinical scoring system, they were asked to enclose a copy of their form.

We report descriptive statistics with frequencies and cross-tables. The hospitals were categorized according to type of hospital and annual volume of procedures according to tertiles for (1) knee replacement surgery (<71, 71–140, >140) and (2) hip replacement surgery (<36, 36–60, >60). The number of users was considered too small to do meaningful statistical comparisons between groups of hospitals.

Results

We excluded one specialized cancer hospital and seven hospitals that had merged with another hospital or reported that they currently did not perform hip or knee prosthesis surgery. The remaining 63 hospitals all responded—54 to the postal survey and nine to the telephone follow-up. Most of the hospitals had no data on the number of assessments done and instead reported the number of hip and knee replacement operations they performed, which clearly was an underestimation of the number of assessments. The hospitals reported 8,617 hip assessments and 3,710 knee assessments per year, which is about 20% more than the reported national number of procedures. Fewer hospitals reported performing total knee replacements ($n=56$) than total hip replacements ($n=63$) (Table 1). The majority of the procedures were performed in local hospitals while all hospital types were represented in our sample (Table 1).

The use of standardized scoring systems was more common for assessment of the hip (21% of the hospitals) than for the knee (9%) (Table 2). The hospitals using hip clinical scoring systems ($n=13$) accounted for 1,995 assessments of the hip (23% of reported volume), and those using knee clinical scoring systems for 445 assessments of the knee (12%). Use of the clinical scoring systems was most common in university hospitals (Table 2).

Table 2 Use of standardized scoring instruments according to annual procedure volume and type of hospital

	Hip replacement				Knee replacement			
	Annual procedures	Number	No. of users	Percent	Annual procedures	Number	No. of users	Percent
Hospital procedure volume								
1st tertile (lowest)	<71	21	4	19	<36	18	1	6
2nd tertile	71–140	21	3	14	36–60	21	1	5
3rd tertile (highest)	>140	21	6	29	>60	17	3	18
Type of hospital								
Regional/university hospital		7	3	43		7	2	29
Central hospital		11	2	18		11	1	9
Local/district hospital		38	6	16		31	2	6
Specialized orthopaedic hospital		5	2	40		5	0	0
Private clinics		2	0	0		2	0	0

Table 3 Distribution of anticipated impact of using the standardized scoring instrument before joint replacement surgery

	Influence on whether to operate or not (%)		Influence on the anticipated waiting time (%)	
	Hip (n=13)	Knee (n=5)	Hip (n=13)	Knee (n=5)
Not at all	15	40	15	40
Almost never	15	20	31	40
Sometimes	15	20	31	20
Quite often	23	0	23	0
Very often	31	20	0	0
Always	0	0	0	0

There was no evidence of differences in adoption of clinical scoring systems according to annual assessment volume (Table 2). The respondents' judgment of the impact of the scoring tools on the decision to operate or not varied widely, and we could not identify a clear pattern (Table 3). For total knee replacements, there seemed to be less reports of influence on the waiting times than for total hip replacements (Table 3).

The Harris hip score instrument [4] (n=13, or 21%) and The Knee Society clinical rating system [6] (n=4, or 7%) were the most frequently used scoring systems in routine clinical practice. One hospital used two scoring systems for the knee, also including the Hungerford score. We received five different versions or modifications of the Harris hip score with differences in wording or scoring. The hospitals used two marginally different versions of The Knee Society clinical rating system. In addition, some units reported that they had occasionally used another clinical scoring system (Merle d'Aubigné score) [9] or patient-based outcomes, such as the Oxford hip score, Oxford knee score [2], Knee Injury and Osteoarthritis Outcome score [10], WOMAC, or the EQ-5D in different projects.

Discussion

The most notable finding was the low number of hospitals that used hip or knee clinical scoring systems in their daily practice. The hospitals used different instruments and different versions of the same instrument. The majority of clinical scoring system users used either the Harris hip score or The Knee Society clinical rating system.

We are not aware of other surveys describing the prevalence of use of such rating systems to which we can compare our findings. In a systematic literature search, 17% of the English-language studies on primary knee arthroplasty reported on patient outcome following the procedure using a standardized global rating system [3]. In a study of active members of the British Association for Surgery of the Knee, 71 members rated their preferred method of assessing the results of primary knee arthroplasty surgery [1]. About 30% used no scoring system, and 66% used two or more systems. The survey had a low response rate and comprised a highly selected group of respondents in contrast to our more representative sample.

Harris hip score is claimed to be the most widely used hip scoring system [8], in line with our finding in Norwegian orthopaedic departments. In a review of studies on

primary knee arthroplasty [3], only two rating systems were in widespread use: the Hospital for Special Surgery, and The Knee Society clinical rating system [6, 7]. The latter also was the most commonly used knee rating system in our survey.

The scoring systems in use in our survey were adapted from original versions in English. We have not been able to identify published validation studies of the Norwegian versions of any of these instruments. Ideally, the semantic and conceptual equivalence of the translation should be assured through the translation process, for example, by following a recommended procedure for cultural adaptation and testing of questionnaires. The existence of different translations or versions of the same instrument suggests that the use of such instruments in Norway is the result of the initiative of individuals in different institutions rather than a concerted effort. This finding illustrates the diffusion of technology or assessment tools in many other countries.

Some weaknesses of our study should be noted. Some of the questions asked for a subjective answer and should be interpreted cautiously. The sample was small, and formal statistical testing was not considered feasible. However, the sample comprised nearly all orthopaedic units in Norway, and we think it is representative of the total population of orthopaedic departments. We asked the respondents about the number of assessments for prosthesis surgery, however, and clearly, the majority of departments responded with the number of operations performed during the last or current year. We only used the information about volume to stratify the hospitals in tertiles according to annual procedure/assessment volume. The uncertainty about the reported procedure volume could lead to misclassification of a few hospitals; however, we do not think this materially influenced our results.

We were somewhat surprised that only a few units reported routine use of standardized hip or knee scoring systems. With increasing focus on quality in health care, we see the usefulness of such tools as part of the standard procedure. The scoring systems could be used for medical auditing, for routine follow-up, or possibly be included in or linked with the information in national arthroplasty registers. Some arthroplasty registers have included or tested modules for registering scores from clinical scoring systems, for example the Harris hip score and The Knee Society scale in Danish registers, or outcomes reported by the patients in Sweden and New Zealand. In the long term, we think that patients and payers of health care could

benefit from the results of more systematic evaluation of current practice.

In conclusion, only about one of five orthopaedic departments in Norwegian hospitals routinely used standardized scoring systems for assessment of the hip, and even fewer hospitals used similar tools for assessing the knee. There is little reason to believe that the situation is very different in other countries.

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