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Original Article

Patient-Reported Outcome Measure for Early Postoperative Recovery Following Lower Limb Arthroplasty: A Systematic Review

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ABSTRACT

Background: Lower limb arthroplasty is an effective surgical treatment option for patients with moderate to severe arthritis who have not responded to medical management. However, surgical interventions can lead to postoperative consequences such as limited mobility, pain, and infection. Consequently, improving postoperative recovery holds significant benefits for patients, health care professionals, and health care payers. The purpose of this review is to determine if any recovery tools exist that can effectively measure early postoperative recovery after hip or knee arthroplasty.

Methods: The following databases were searched; PubMed (Ovid), EMBASE (Ovid), Medline (Ovid), Web of Science (ISI Web of Knowledge), PsycINFO, Applied Social Sciences Index and Abstracts, Cochrane library, and SCOPUS. We restricted our search to English language articles and adult respondents. Data were extracted by 2 independent reviewers using a proforma spreadsheet, and existing quality criteria were applied.

Results: Our literature search identified 23 articles relating to development, assessment, and validation of 15 tools. Not all instruments demonstrated the same levels of quality. None of the tools found were specific to both the orthopedic arthroplasty population and early recovery periods.

Conclusion: At the present time, there are no fully validated tools to assess early postoperative recovery during the first week following lower limb arthroplasty. A brief, easy-to-complete, reliable patient-reported tool could be of great use. It could not only aid in assessment of recovery but could also evaluate the efficacy of perioperative interventions such as drugs or surgical technique and provide a foundation for evidence-based care.

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Optimal patient recovery following surgery is critical to improving patient outcomes. Many factors contribute to patient recovery including: motivations, pre-morbid health status, prior operative and anesthetic experience, type of surgery, analgesia, as

well as expectations from surgery [1]. Traditionally, patient recovery has been assessed by the surgeon and allied health care professionals using pain scores and analgesic consumption together with objective measurements including time to achieve set rehabilitation goals, such as knee flexion greater than 90° or hospital discharge [2]. While these objective measurements assess a patient's recovery from the physiological perspective, they fail to assess many of the factors known to influence self-reported outcomes. Due to the limitations of objective measurements in assessing patient outcomes, interest has shifted toward the use of patient-reported outcome measures (PROMs) for assessment of surgical interventions [3]. These focus on patient self-reported functioning and well-being [4]. Their use is instrumental in assisting clinicians and policymakers to take important strides towards optimizing the provision of care through refining modifiable

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factors such as indications for surgery, implant selection, and surgical technique.

In orthopedic surgery, while PROMs are routinely used to assess the functional outcomes of surgery at 6 months and beyond, their use before this time point and, in particular, the immediate postoperative period is rare. Despite this, the ability to measure the multiple facets of patient recovery from their own perspective at this early time point is critical to improving patient care. From the patient perspective, improving recovery will enhance patient experience and satisfaction. From the surgical perspective, it has been demonstrated that improved perioperative patient recovery is associated with improved short- and long-term patient outcomes. From the health care payer perspective, in the context of increasing patient numbers, finite resources and change in patient expectations, optimizing patient recovery, and reducing length of stay (LOS) is more important than ever [5,6].

Such are the benefits to improving the quality of patient recovery that enhanced recovery programs (ERPs) have been introduced across a wide range of surgical interventions [5]. However, there remains a lack of consensus as to what represents the gold standard or indeed which components are critical to enhancing recovery. This has led to a wide range of different ERPs being used both across different specialties and also within specialties themselves. One reason behind the lack of consensus may be the inability of current methods to assess patient recovery during the early postoperative period. This argument is supported by the findings from a recent audit of United Kingdom ERPs for lower limb arthroplasty that demonstrated that patient education was included in over three-quarters of ERPs despite strong evidence that it does not influence standard measures of recovery (LOS) [7]. In addition, the lack of an appropriate measure to assess recovery may be why compliance to local ERPs was as low as 40% in some centers.

The aim of this review is to determine which recovery tools can effectively measure early postoperative recovery after hip or knee arthroplasty.

Materials and Methods

Eligibility Criteria

The number of early recovery tools specifically related to orthopedic patients was anticipated to be small; therefore, a systematic review of all recovery tools in all postoperative populations was carried out to assess whether they could be applied to an orthopedic population. Studies that assessed and/or validated specific postoperative recovery tools were included in the review. Studies were selected with no time restriction, through the most recent search date of January 13, 2016. The search was restricted to English language articles and adult respondents.

Inclusion Criteria

1. Validated postoperative outcome measurements at one week or less after surgery
2. Surgical studies
3. English language
4. Over 18 years of age

Studies were not restricted by sample size or by length of follow-up. There were no exclusion criteria based on the publication status.

Information Sources

Electronic databases (PubMed [Ovid], EMBASE [Ovid], Medline [Ovid], Web of Science [ISI Web of Knowledge], PsycINFO, Applied

Social Sciences Index and Abstracts [ASSIA], The Cochrane library, and SCOPUS) were searched from their inception until January 13, 2016 for prospective studies reporting the development, validation, and use of postsurgical quality of recovery tools. Searches were tailored to individual databases with the search strategy for MEDLINE shown in the following section.

1. postoperative.mp.
2. recovery.mp.
3. quality.mp.
4. 1. AND 2. AND 3.
5. assessment*.mp. OR score*.mp. OR scale*.mp.
6. 4. AND 5.

The search strategy included the use of text words and MESH terms. In addition, reference lists of reviews and retrieved articles were assessed for further studies, and registers of controlled clinical trials (metaRegister of controlled trials [www.controlled-trials.com/mrct], clinicaltrials.gov [www.clinicaltrials.gov], and the World Health Organization International Clinical Trials Registry Platform [http://apps.who.int/trialsearch/]) were searched for ongoing trials. A summary of the search results is presented as a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart [8] Figure 1.

Data Collection

The full texts of eligible studies were retrieved and data extracted into an electronic database. The search, appraisal, and extraction processes were performed in duplicate by 2 independent reviewers (Louise H. Strickland and Thomas W. Hamilton). Items recorded included author, year, country, patient demographics (sex and age), surgical procedure, recovery tool, number of patients, method and timing of administration, outcomes, findings, and validation methodology.

The data were extracted and appraised in line with established criteria [9].

Quality Criteria

For any assessment tool to be effective, one needs to establish its quality, appropriateness, acceptability, precision, reliability, validity, and responsiveness to change over time [9]. The tools identified were assessed against these recognized criteria.

Results

Study Characteristics

Twenty-three studies, relating to 15 unique recovery tools were found (Table 1). The 15 tools found were as follows:

- 9-item Quality of Recovery from anesthesia (QoR 9) survey [10–13],
- 15-item Quality of Recovery from anesthesia (QoR 15) survey [14],
- 40-item Quality of Recovery from anesthesia (QoR 40) survey [15–18],
- Postoperative Recovery Profile (PRP) [19,20],
- 15-item questionnaire (FS-15) [21],
- Postoperative quality of life metric (PQL) [22,23],
- 24-Hour Functional Ability Questionnaire (24hFAQ) [24],
- Convalescence and Recovery Evaluation (CARE) [25],
- Postdischarge surgical recovery scale (PSR) [26],
- Postanesthesia short-term quality of life (PASQOL) [27],
- Surgical Recovery Scale (SRS) [28],

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