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Systematic review

Enhanced education and physiotherapy before knee replacement; is it worth it? A systematic review

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Abstract

Background Around 20% of knee replacement have an unsatisfactory outcome. Pre-operative physiotherapy and education have been proposed to improve post-operative outcomes.
Objectives This systematic review evaluated whether these factors improved length of stay and patient reported outcomes after knee replacement surgery.
Data sources Medline, Embase, CINAHL, Cochrane Central Register of Controlled Trials, PsycINFO and PEDro were searched on the 1st January 2013.
Study selection or eligibility criteria Randomised or quasi-randomised studies assessing either pre-operative education or physiotherapy on patients undergoing a planned total or partial knee replacement were included in the review. Only studies with a control group receiving a defined standard of pre-operative care were included.
Results Eleven studies met the inclusion criteria set. Two studies analysed the effect of pre-operative education, seven pre-operative treatment by a physiotherapist and two studies used both factors. No study found significant differences in validated joint specific patient reported outcome measures. The education studies found a decrease in pre-operative expectation and an improvement in knowledge, flexion and regularity of exercise. Two studies found an improvement in muscle strength in the group treated by a physiotherapist at three months. The combination of education and physiotherapy was shown to reduce patient length of stay and cost in one study.
Conclusion The evidence reviewed is insufficient to support the implementation of either pre-operative education or physiotherapy programmes. The combination of pre-operative education and treatment by a physiotherapist may reduce the medical costs associated with surgery.
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Keywords: Pre-operative; Education; Physiotherapy; Knee arthroplasty; Knee replacement

Introduction

Osteoarthritis (OA) is the most common disabling musculoskeletal disorder worldwide and its prevalence is rising [1]. Knee replacement has revolutionised the care of patients with severe knee OA by relieving pain and improving quality of life [2,3]. In current practice, physiotherapy forms the cornerstone of rehabilitation following total joint replacement [4]. Intensive post-operative treatment by a physiotherapist has been shown to be effective in shortening hospital stay

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and increasing post-operative range of movement [5,6]. The peri-operative involvement of a multidisciplinary rehabilitation team has also been shown to improve outcomes [7,8]. It has therefore been hypothesised that pre-operative treatment by a physiotherapist in patients undergoing a TKR could enhance post-operative rehabilitation and improve functional outcomes.

Ackerman *et al.* performed a systematic review in 2004 into the role of pre-operative treatment by a physiotherapist on outcome following both hip and knee replacement. Three papers assessing knee replacements were reviewed and the authors concluded that treatment by a physiotherapist was not effective in improving outcome [9]. However this review only included papers published before August 2003 and our article aims to provide an updated review of the literature.

Pre-operative education has been proposed as a modality to improve outcomes post-operatively [10,11]. This intervention offers the opportunity to provide patients with adequate information and address realistic expectation of outcome, as patient expectations is known to have an impact both on functional outcome and quality of life after joint replacement [12]. A Cochrane review in 2004 assessing the impact of pre-operative education on both hip and knee replacement concluded that there was insufficient evidence to support or refute its use [13]. Their meta-analysis did reveal that pre-operative education is effective in reducing pre-operative anxiety, however the affects were only small and these findings were not universal. In addition, the Cochrane review included only two studies that reported outcomes after TKRs and recommended cautious application of their conclusions in this patient group [13]. The Cochrane group advise a repeat review of the literature every three years if new evidence is available and as further studies have been published in the intervening period this article intends to provide an up-to-date review of the literature.

The aim of this systematic review was assess whether pre-operative education and treatment by a physiotherapist can improve outcomes following knee replacement in terms of patient reported outcomes compared to standard care.

Methods

The systematic review was conducted in line with the PRISMA statement that is shown in Table S1. Studies assessing education or treatment by a physiotherapist prior to knee replacement were included in this review. Education could be verbal, written or audiovisual and include any information regarding the pre or post-operative period provided by any health care professional. Physiotherapy included any exercise regime provided by a trained physiotherapist which could be either supervised or self-performed, or any physiotherapy treatment modality. The primary outcome measure assessed was any patient reported outcome measure (PROM) and secondary outcome measures included length of stay, discharge destination and medical cost. Previous studies have demonstrated that differences exist between patients' and physicians' evaluations of outcome [14]. An outcome from the patients' perspective is of greater importance and has led to PROM receiving increasing recognition in the assessment of surgical interventions [15]. Therefore PROM were chosen as the primary outcome. An initial scoping search revealed that no universal measure was used in all studies hence any PROM was chosen to ensure all relevant studies were identified.

Inclusion criteria

- Subject undergoing a planned total or partial knee replacement for any indication.
- Randomised or quasi-randomised studies.
- Control group received a defined standard of pre-operative care.
- Intervention group received either pre-operative education or treatment by a physiotherapist or both, delivered by a health professional within 12 weeks of surgery.
- Papers published in the English language.

Exclusion criteria

- Any modification to the post-operative rehabilitation in individual groups within this trial. This is because it would not be possible to determine whether any difference between groups were due to the pre- or post-operative changes.
- The study contained both hip and knee replacement patients and the results of knee replacement patients could not be separately identified for analysis.
- No patient reported outcome measures were reported.

Literature searches were performed on the following computerised databases of all published randomised controlled trials on the1st January 2013; MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials, PsycINFO and PEDro. The MEDLINE search strategy is shown in Table S2 and this was adapted to search the other databases. Two reviewers (RJ and NS) conducted the searches and identified potentially eligible studies. The same reviewers then independently assessed these studies through firstly article title and then abstract, resolving disagreements through discussion. The results from the staged searches are illustrated in Figure S1. Data synthesis was not possible due to the inclusion of various outcome measures and therefore only a narrative synthesis of the data is provided.

Results

Twenty-one papers were retrieved following application of the inclusion and exclusion criteria to the title and abstract.

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