Preoperative education for orthopaedic patients: systematic review
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CRD summary
This review evaluated the evidence for the effects of pre-operative patient education for orthopaedic patients. The authors concluded that educational interventions have quite positive effects for orthopaedic patients in the pre-operative situation, but well-designed, methodologically sound research is needed. The authors’ conclusion regarding the need for more rigorous studies of patient education would seem appropriate.

Authors’ objectives
To describe the methods and scope of surgical orthopaedic patients' pre-operative education studies and the effects of pre-operative patient education for orthopaedic patients.

Searching
MEDLINE (1966 to 2003), CINAHL (1982 to 2003), ERIC (1966 to 2003), PsycINFO (1872 to 2003), Social Sciences Index (2/83 to 8/02) and the Cochrane Library (Issue 1, 2003) were searched for studies published in the English language; the search terms were stated. Handsearching and reference chasing were also done.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) and clinical trials, including post-test only control group designs and controlled pre-test post-test designs, were eligible for inclusion.

Specific interventions included in the review
Studies of pre-operative patient education as a nursing intervention were eligible for inclusion. Nursing interventions other than pre-operative patient education, counselling, teaching or learning were all excluded. Educational interventions in the majority of included studies used written materials alone or in combination with other teaching methods. The content of the interventions ranged from biophysiological and routine information to teaching that emphasises the patient's own learning needs and situation. Most of the interventions were compared with usual, routine or traditional education, or post-admission patient education only. Others compared additional written material between two groups without a usual patient education group; pain intensity scales with teaching versus those without teaching; or information and relaxation training, both together and alone, and a control group.

Participants included in the review
Studies of adult (aged 18 years or older) surgical orthopaedic patients were eligible for inclusion. Most of the participants in the included studies were female with a mean age of 62.5 years and were artificial joint patients.

Outcomes assessed in the review
The authors did not state any inclusion criteria for the outcomes. The most common outcome measures in the included studies related to pain and knowledge. Other outcome measures related to anxiety, recovery (including performance of exercises or complications), self-efficacy, compliance, adherence and empowerment of learning.

How were decisions on the relevance of primary studies made?
Two reviewers selected studies for inclusion.

Assessment of study quality
The quality of the including studies was assessed according to use of power analysis, recruitment, hypothesis, randomisation-related issues, blinding, adjustments for imbalances of groups, drop-outs, missing data and statistics. The authors did not state how the quality assessment was performed.
Data extraction
Three reviewers extracted the data independently and then extracted collectively. Any discrepancies were resolved through discussion and consensus. Information about the population groups, interventions and outcome measures were extracted for each study. Outcomes in each study were classed as either a statistically significant effect of the intervention or not. The standard mean difference (SMD) was calculated for the most frequently used measures of effect in each study. When the studies reported more than one measure the effect sizes were averaged. The effect sizes were classified as small (0.2 to 0.49), moderate (0.5 to 0.79) or large (greater than 0.8).

Methods of synthesis
How were the studies combined?
The effects of the interventions were analysed using content analysis for statistically significant findings and, where appropriate, the studies were combined in a meta-analysis. When an outcome was measured using the same or a similar scale, an SMD with 95% confidence interval (CI) was calculated.

How were differences between studies investigated?
Differences between the studies were discussed in the text and evident in the tables.

Results of the review
Eleven studies (n=963) were included in the review: 4 RCTs (n=450), 1 RCT with a post-test design (n=98), 1 RCT with repeated measures post-operatively (n=31), 2 control group post-test only studies (n=160), and 3 quasi-experimental pre-test post-test studies with experimental and control groups (n=224).

The methodological quality of the studies varied. Two studies presented a power analysis. Patient recruitment was done by researchers in 4 studies, by surgery schedules without other information in 3 studies, by surgery in 1 study, by physicians and researchers together in 1 study, and was unclear in 2 studies. Seven studies reported the primary outcome as an a priori hypothesis, but only one provided a clear definition of the primary outcome. Four studies did not describe methods of randomisation, only one included all randomised patients, and studies generally did not provide clear descriptions of the randomisation process. Blinding was not always clearly described, 2 studies made adjustment for baseline imbalance by stratified randomisation, and 8 studies described clearly drop-out rates and imputation of missing data.

All studies except one found one or more statistically significant findings. The effect sizes ranged from 0.02 to 1.26 across studies. In studies with recovery-related outcomes, complications did not decrease in the intervention groups (3 studies), and performance of exercises was significantly better in all-educational groups (5 studies). Meta-analyses revealed a statistically significant benefit of the intervention on knowledge, relative to the control group (SMD 0.69, 95% CI: 0.19, 1.17; 3 studies), but no significant benefit of the intervention on anxiety (SMD -0.29, 95% CI: -0.78, 0.21; 2 studies).

Effects of the intervention on pain were inconsistent across studies. Decreased post-operative pain medication was reported in 2 studies, but appearance of pain varied from no effects (2 studies) to demonstrable effects (1 study). Patients in educational groups showed better knowledge or less cognitive errors (2 studies). Experiences of teaching varied from positive effect (1 study) to no effect (1 study).

Educational interventions were found to reduce length of stay in 2 studies, but had no such effects in 3 studies. In recovery-related studies, patients in the educational group showed better performance of exercises and mobilisation (1 study), better adherence to rehabilitation instructions (1 study), and better accuracy, regularity and willingness to perform exercises (2 studies) than control group patients. Patients receiving the educational intervention needed less physical and occupational therapy (1 study), had higher self-efficacy and felt more empowered (1 study), appreciated the positive effects of empowerment through learning (1 study), expressed better coping (2 studies) and sense of control and higher self esteem, (1 study), and showed better compliance (1 study) and better adherence (1 study) than control group patients.
Authors' conclusions
Educational interventions have quite positive effects for orthopaedic patients in the pre-operative situation. There is a need for well-designed, methodologically sound research into the outcomes of patient education and to study patient education from the point of view of empowerment.

CRD commentary
The authors set out a clear objective and inclusion criteria were defined for the participants, interventions and study design. Several relevant sources were searched, but the search was limited to articles published in English, which means that relevant studies might have been missed. Two reviewers selected studies for inclusion, although it was not clear whether the papers were checked in duplicate. Measures were taken to reduce the risk of reviewer error and bias during the data extraction process, but it was unclear whether the same methods were applied to the validity assessment. Validity was assessed using appropriate criteria.

While some details of the individual studies were presented, only limited results were reported. Combining the studies in a narrative and only using meta-analysis for the few studies that had suitable data seems appropriate. However, the number of studies that could be pooled was small and between-study differences were not investigated. The authors’ conclusion about the need for more rigorous studies of patient education would seem appropriate.

Implications of the review for practice and research
Practice: The authors stated that future pre-operative orthopaedic patient education should show a more innovative approach, with closer attention to the patient's own participation needs. The importance of empowerment by education in patient counselling and education should be recognised.

Research: The authors stated that there is a need to develop the content and methodology of pre-operative education studies for orthopaedic patients. Strong study designs, such as RCTs, are needed to demonstrate impacts. Patient education should also be studied from the point of view of empowerment.

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