Patients' knowledge of patient controlled analgesia (PCA) and their experience of postoperative pain relief: a review of the impact of structured preoperative education

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CRD summary
This review assessed whether structured education regarding the use of patient-controlled analgesia devices before planned surgical procedures improved patients' post-operative pain control. It concluded that although the evidence suggests no effect on post-operative pain, the results should be treated with caution. The overall reliability of the author's conclusions is uncertain.

Authors' objectives
To examine whether structured preoperative patient education about patient controlled analgesia (PCA) improves postoperative pain management with PCA in comparison with informal brief instruction.

Searching
The databases MEDLINE, CINAHL and the Cochrane Library were searched. Search terms were provided but search years were not given. Only studies published in English were included. Following the selection of eligible studies from the electronic searches, a manual search of the journals in which these studies were published was conducted to identify any additional articles.

Study selection
Studies reporting original research into the effect of structured versus brief routine preoperative patient teaching about PCA therapy for patients undergoing surgery were eligible for inclusion. Only studies where patients were allocated to intervention or control groups were included. The structured intervention had to include detailed teaching for patients regarding the use of PCA which could be delivered verbally, in written form and/or audiovisually. Any adult (aged 16 or over) patient group who would require postoperative PCA was eligible. In most included studies, patients underwent various surgical procedures; however for two studies, patients underwent total knee replacement and gynaecological surgery only. Reported patient ages ranged from 16 to 86 years. Studies published before 1992 or with sample sizes of less than 60 were excluded. Included studies were conducted in the UK, USA, Taiwan or Hong Kong.

Outcomes of interest were effect on patient knowledge or effect on postoperative pain relief. In the included studies, postoperative pain relief was considered in terms of pain control or in terms of the patients' pain experience. Data were collected using questionnaires or rating scales.

Studies were selected for the review by one reviewer.

Assessment of study quality
The quality of included studies was assessed using a framework developed by Cormack (2000). This covered areas including: methodology (choice of study design), formal statement of hypotheses, sample selection and randomisation, data collection (and reported reliability or validity of tools used), whether ethical approval had been granted and level of explanation of the interventions.

The author did not state how validity assessment was performed.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
A narrative synthesis was undertaken, giving consideration first to effects of the intervention on knowledge about PCA.
and secondly to effects on pain control.

**Results of the review**

Six eligible studies were retrieved: five randomised controlled trials (RCTs) and one quasi-experimental study. A total of 592 patients were included.

No information was provided on the methods of allocation that were used. Investigators in three RCTs were clearly blinded and not blinded in one. Only the quasi-randomised trial provided details of the intervention used.

Knowledge about PCA (three RCTs and one quasi-experimental study; n=447):
All four studies reported significantly better knowledge about how to use the PCA device to improve pain relief, compared to patients in the control groups.

Pain control (four RCTs and one quasi-experimental study; n=506):
Only the quasi-experimental study showed statistically significantly better pain control (p<0.05; actual P-value not reported) in the intervention group, measured using a visual analogue scale. Pain scores at rest, positional change and rehabilitation were all reportedly significantly lower compared to the control group.

**Authors' conclusions**

The evidence suggests that preoperative education about PCA improved patients' knowledge about managing postoperative pain using PCA devices, but overall no positive effect on postoperative pain scores has been demonstrated. Due to limitations in the evidence, in term of numbers of studies and methodological concerns, no definite conclusions could be drawn.

**CRD commentary**

The review objective was clear and inclusion criteria well set out. The literature search was adequate and included both electronic and hand searching, but the search years were not reported. Language bias could have been introduced by limiting the included studies to English only and publication bias introduced by not searching for unpublished studies. Comprehensive study details were provided, including aspects relating to methodological quality, such as use of randomisation and blinding. However, the overall approach to quality assessment was not adequate. Relevant aspects of bias, such as the need for randomisation and adequate sample sizes, were discussed but the actual methods used in the studies were not documented or commented on. Other aspects of the studies, such as reporting of ethical approval or reporting of formal hypotheses, were used to critique the studies, but these are not necessarily critical to the internal validity of the studies. This leaves open the possibility that the included studies could have been subject to sources of bias not discussed by the author. The methods used to undertake the review were not directly reported, but the implication was that each stage was conducted by the single author of the review, which could give rise to selection bias and/or reviewer bias. The narrative approach to synthesis was appropriate. The author's conclusions, although in line with the evidence presented, should be treated with some degree of caution as the validity of the included studies was not fully assessed and the methodological concerns raised would not necessarily negate the studies’ findings. The overall reliability of the conclusions is uncertain.

**Implications of the review for practice and research**

**Practice:** The author did not state any implications for practice.

**Research:** The author stated that further research (using experimental controlled trials) to investigate the most appropriate method for delivering a preoperative PCA programme and its effect on postoperative outcomes is needed. The effect of planned postoperative teaching and support by acute pain teams on the need for structured preoperative PCA education on an individual basis could be investigated. The author suggested that better reporting of the actual control and experimental conditions is needed.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.