Effectiveness of pain management educational interventions on nurses’ knowledge and attitudes regarding postoperative pain management: a systematic review protocol

Doina Carmen Mazilu¹,² • Mariana Zazu¹,³ • Viorica Nedelcu¹ • Raluca Sfetcu¹,⁴

¹The Romanian Centre for Evidence Based Nursing: a Joanna Briggs Centre of Excellence, ²School of Nursing, Faculty of Nursing and Midwifery, Carol Davila University, Bucharest, Romania, ³School of Biology, Faculty of Natural and Agricultural Sciences, Ovidius University, Constanța, Romania, and ⁴School of Psychology, Faculty of Psychology and Educational Sciences, Spiru Haret University, Bucharest, Romania

Review question/objective: The objective of this review is to identify the effectiveness of pain management education programs (PMEPs) in improving the level of knowledge and the attitudes of nurses working in adult surgical departments and intensive care units on postoperative pain management.

Keywords adult inpatients; nurses; pain management education programs; postoperative pain management

Introduction

Pain is defined by the International Association for the Study of Pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.¹

Despite abundant research conducted in this area and evidence implementation efforts to improve acute postoperative pain management, a high number of patients still experience pain during the immediate postsurgical period.²

Seventy-three million patients undergo surgical procedures each year in the United States. Of these, 80% experience acute postoperative pain, and approximately 20% experience severe pain.³ In Europe, in a study by Sommer et al., 1490 surgical inpatients (head/neck, upper extremity, thorax non-cardiac, upper abdomen, lower abdomen/pelvis, lower extremity and back/spinal) were assessed three times a day using a visual analogue scale (VAS). The study found that one day after surgery, 30% of the patients reported moderate or severe pain at rest and that on postoperative days 2, 3 and 4, these percentages were 19%, 16% and 14%, respectively.⁴ Also, acute postoperative pain is followed by persistent pain in 10–50% of individuals after common operations, and it increases the risk of developing chronic pain.⁵ Overall, chronic postsurgical pain is found in 20–50% postsurgical cases with very high economic costs.⁶ Cousins et al. have estimated that the cost of treating acute pain that transforms into chronic pain in a 30-year-old individual over a lifetime could be as much as $1 million.⁷

However, several studies have demonstrated that postoperative pain management often fails. In accordance with the International Association for the Study of Pain, the principal goal of postoperative pain management is to reduce or eradicate discomfort, prevent complications, facilitate the recovery process and attain a pain-free status, whenever possible.⁸

Inadequate assessment and management of postoperative pain can lead to both psychological and physiological effects such as coronary ischemia, deep vein thrombosis, pulmonary embolism, pneumonia, myocardial infarction, insomnia, poor wound healing, demoralization on patients which may lead to delayed discharge,⁹ increased morbidity and mortality, and decreased quality of life.¹⁰

Nurses are usually the vital care component of the management of postoperative pain¹¹–¹³ who provide 24-hour care and work closest with the patients.¹⁴,¹⁵ The nurse’s role in the management of patients’ postoperative pain includes the following:
assessment of the patients’ pain, considering the patients’ self-report of pain where possible, and utilizing a pain assessment tool (PAT) to determine the intensity of their pain; documentation of pain assessment and management; selection of the medication and route of administration as ordered by the physician; administration of fixed-schedule analgesics; administration of pro re nata (PRN) analgesics as ordered by the physician; implementation of non-pharmacological interventions; regular evaluation of the effectiveness of interventions provided; and monitoring of any side effects associated with interventions.16-20

Numerous studies have shown that the main cause of ineffective postoperative pain management is the lack of knowledge and proper training of nurses.21 Several authors have identified gaps in the knowledge and attitudes of nurses in the area of postoperative pain management such as: overestimating the risk of addiction of opioid analgesics,22 mixed attitudes regarding postoperative pain management,23,24 not knowing the most appropriate time to re-medicate the patients,12 underdosage,22,23,25,26 or PRN drug administration instead of the fixed dose prescribed by the physician.27 Additionally, the constant fear of unwanted side effects (respiratory depression and addiction) was shown to have a significant clinical impact, compromising the adequate management of acute pain.26-28

In this context, the effects of different PMEPs on the nurses’ level of knowledge and attitudes have been studied by different researchers,29,30-36 who concluded that either pain management training can be beneficial,11 or educational programs designed to change knowledge in order to change pain management practices and patient outcomes do not lead to the expected results. For example, the study by McNamara et al. in Ireland noted that PMEPs improved the knowledge and attitudes of nurses regarding pain assessment,37 while Wickström in Sweden revealed that pain management did not improve much after an educational program on pain management.38 In their study, 40% of the nurses reported that they did not use a validated tool for pain assessment and 25% did not evaluate the effects of given analgesics.38 However, to this date a systematic review on the effectiveness of PMEPs has not been conducted, to our knowledge. Preliminary searches in MEDLINE, the JBI Database of Systematic Reviews and Implementation Reports, the Cochrane Library, and PROSPERO were conducted to ensure that no systematic review has previously been published on the following topic.

### Inclusion criteria

#### Participants

This review will consider studies that include nurses working with adult inpatients in surgical departments and intensive care units. Studies including undergraduate nursing students will be excluded. Other professional categories (e.g. medical doctors, physiotherapists, etc.) will also be excluded.

#### Intervention

This review will consider studies that evaluate all types of PMEPs, regardless of their duration, methods or curricula, in relation to the level of nurses’ knowledge and attitudes toward postoperative pain management in adult surgical departments and intensive care units. These will not be limited by the type of training delivery (face-to-face, online, blended programs, etc.). The duration of the PMEPs will also not be a limiting criterion as the intervention may range from short lectures to continuing education or lengthier training programs.

#### Comparator

The review will consider comparisons of the intervention group with control groups for RCTs, non-equivalent control groups for quasi-experimental designs and baseline scores of the intervention group for pre-post designs.

#### Outcomes

This review will consider studies that include as the main outcomes the level of nurses’ knowledge and attitudes toward postoperative pain management as measured by scores obtained on specific and validated knowledge and attitudes questionnaires, such as: Knowledge and attitudes Survey Regarding Pain (KSRP),39 Nurses’ Care Activity Regarding Postoperative Pain Management (NCARPPM),40 Nurses’ Self-Efficacy in Postoperative Pain Management (NSPPM),41 Nurses’ Attitude Regarding Postoperative Pain Management (NARPPM),42 and other validated questionnaires or methods of knowledge assessment (e.g. test/exam scores). Where available, patient level outcomes such as knowledge and attitudes, pain prevalence, duration, severity or intensity, effects of pain on sleep, state anxiety,
mood disturbances and length of stay will also be included.

**Types of studies**
This review will consider experimental study designs including randomized controlled trials, non-randomized controlled trials, quasi-experimental, before and after studies for inclusion.

**Methods**

**Search strategy**
The search strategy aims to find both published and unpublished. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe article. The keywords to be used in this step are: pain management, nurses, PMEPs, adults, pain education. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies. All studies published in English will be considered for inclusion in this review, regardless of their publication year.

**Information sources**
The databases/sources to be searched include: MEDLINE [PubMed interface], CINAHL, PsycINFO [Ovid interface], Embase, Scopus, Google Academic, JBI Database of Systematic Reviews and Implementation Reports, Cochrane Library, Web of Science.

For unpublished literature, the following will be searched: ProQuest Dissertations and Theses, Google Scholar and Center for Research Libraries.

**Assessment of methodological quality**
Quantitative papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute System for the Unified Management, Assessment and Review of Information (JBI SUMARI). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. No studies will be excluded based on the assessment of methodological quality. A table will be used to document scores for methodological quality, with supporting comments to explain and justify scores. Scores will be presented and analyzed in the results section of the final publication.

**Data extraction**
Quantitative data will be extracted independently by two reviewers from papers included in the review using the standardized data extraction tool from JBI SUMARI. The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives. When the reported data is unclear or insufficient (e.g. substantial outcomes of interest are not reported or are reported only in an aggregated form), the authors of the original studies will be contacted.

**Data synthesis**
Quantitative papers will, where possible be pooled in statistical meta-analysis using JBI SUMARI. All results will be subject to double data entry. Effect sizes will be expressed as weighted mean differences (for continuous data), and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard Chi-square and also explored using subgroup analyses based on the different quantitative study designs included in this review. Where statistical pooling is not possible the findings will be presented in narrative form including tables and figures to aid in data presentation where appropriate.

**Acknowledgements**
This review is to contribute towards a Doctor of Social Medicine degree for DCM.

**References**
21. Taylor C Y. Predictors of nurses intentions to administer PRN opioid analgesics for pain relief to postoperative orthopedic patients in the acute care setting. Theses and Dissertations. University of Toledo. 2015.


