Research Article

Effect of Evidence-based Postoperative Pain Guidelines via Web for Patients undergoing Abdominal Surgery in South Korea

Sung-Jung Hong, RN, PhD, [1] Eunjoo Lee, RN, PhD [2, *]

[1] Department of Nursing, Semyung University, Chungcheongbuk-do, South Korea
[2] Department of Nursing, College of Nursing, Kyungpook National University, Daegu, South Korea

CrossMark

ARTICLE INFO

SUMMARY

Purpose: The purpose of this study was to develop evidence-based guidelines on postoperative pain management via the web and to examine the effects in terms of pain level of patients undergoing abdominal surgery and nurses' knowledge of postoperative pain management.
Methods: First, evidence-based pain guidelines were developed via the web in a tertiary hospital. Second, a special educational program on evidence-based pain guidelines for nurses was developed after validation of content by experts. Third, diverse strategies were adopted in order to facilitate incorporation of evidence-based pain guidelines in practice. Fourth, nurses in the study units were educated on evidence-based guidelines using the developed educational program for 3 weeks before their implementation of evidence-based pain guidelines to patients. Patients were assigned to the control group (from July 29 to August 20, 2011) and the experimental group (from September 24 to October 25, 2011) according to interrupted time interval. The data were analyzed using chi-square test, analysis of variance test with Scheffé's test as a post hoc and repeated measure of analysis of variance.
Results: Patients in the experimental group showed a significantly lower level of pain. Nurses' knowledge of management of postoperative pain showed a significant increase after installation of evidence-based guidelines.
Conclusion: Evidence-based pain guidelines were effective in reducing the pain level of patients as well as improving nurses' knowledge of pain management.

Copyright © 2014, Korean Society of Nursing Science. Published by Elsevier. All rights reserved.

Introduction

In recent years, an increase in the number of patients with gastrointestinal problems and remarkable technological progress in abdominal surgery have led to an increase in the numbers of patients undergoing abdominal surgery (Jeong et al., 2009). According to the National Health Insurance Corporation (2009), 66% of patients in Korea who underwent surgery underwent abdominal surgery; these numbers were expected to continue to increase in the future (National Cancer Information Center, 2008).

However, according to research findings, approximative 80% of patients experienced acute pain, and among these, 86% had more to extreme pain after surgery (Apfelbaum, Chen, Mehta, & Gan, 2003). In addition to the suffering caused by pain, postoperative pain also leads to occurrence of adverse events, such as difficulty in sleeping, decreased mobility, and atelectasis (Lee & Lee, 2006; Rudolph & Marcantonio, 2011). These adverse events result in increased health care cost through delayed hospital discharge (Hughes, 2008). Thus, appropriate management of postoperative pain for abdominal surgery patients has been seen as an important nursing intervention (Hutchinson, 2007).

Evidence-based practice (EBP) is the conscientious and judicious use of current best evidence, including research results, expert opinion, in conjunction with patient preference to guide health care decisions (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). There are strong incentives to making health care much more evidence-based and cost effective (Majid et al., 2011) in every healthcare setting. However, EBP is still not well adapted in nursing practice worldwide.

According to previous research (Olade, 2004; Ross, 2010; Upton & Upton, 2006), nurses are challenged to integrate research-based evidence into clinical practice. Olade reported that only 20.8% of nurses incorporate research-based evidence into their practice, while 76.4% of nurses responded that they would utilize research

* Correspondence to: Eunjoo Lee, RN, PhD, Department of Nursing, College of Nursing, Kyungpook National University, 101 Dongin-dong, Jung-gu, Daegu 700-422, South Korea.
E-mail address: jewelee@knu.ac.kr

results in their practice in the future, if they were provided the opportunity and support. According to Ross, 33% of nurses did not use research findings in clinical practice at all and only 17% of nurses used research findings more than three times per year. Therefore, development and testing of various strategies is needed in order to increase application of EBP by nurses in clinical practice.

One easy way to increase applicability of evidence in clinical practice may be the utilization of EBP guidelines (Specht, 2013; Tolson, Bennett, Currie, Mohammed, & Middleton, 2009), which are comprehensive and allow nurses easy access to the latest evidence, making it possible to improve patient outcomes. In addition, discovery and development of evidence that can be applied to match the needs of each patient by individual nurses in their practice is not easy. According to previous studies, when EBP guidelines were applied to clinical practice, not only did the nurses' knowledge and skills show improvement, but patients' satisfaction with nursing services also showed an increase and the patients showed rapid recovery from their illnesses (Specht; Newhouse, Dearholt, Poe, Pugh, & White, 2005). However, in paper format, the EBP guidelines contain many algorithms that are not easily accessible whenever nurses need them, making their application to clinical practice difficult (Doebbeling, Chou & Tierney, 2006; Jha et al., 2006).

To overcome these limitations, an electronic system that includes EBP guidelines should be developed and utilized in order to increase utilization in clinical practice. According to previous studies, when EBP guidelines were computerized, their rate of utilization, as well as positive patient outcomes showed an increase (Wensing, Wollersheim, & Grol, 2006). Implementation of EBP guidelines in an electronic system would provide easy and low-cost accessibility to evidence anytime and anywhere (Titler, 2006), allowing nurses to easily obtain assistance with complicated clinical problems and to readily apply scientific evidence to clinical practice.

Therefore, the purpose of this study was to evaluate the effectiveness of EBP guidelines in terms of pain level of patients who underwent abdominal surgery and level of knowledge on pain management of nurses caring for patients undergoing abdominal surgery.

Method

Study design

Two different study designs were used to determine the effect of use of EBP for management of pain in patients who underwent abdominal surgery. A simple interrupted time series design was used for nurses in order to test their level of knowledge of pain management. A posttest-only control group design was used for patients.

Setting and sample

The study included two types of participants: nurses and patients. First, nurses who have worked for more than 1 year in a perioperative anesthesia care unit (PACU) or two surgical units in a tertiary hospital were asked to participate in the study. Nurses who were willing to participate in the study were recruited. Second, patients who underwent abdominal surgery under general anesthesia in the same hospital were recruited. Patients who met the inclusion criteria were asked to participate in the study. The specific criteria for selection of patients were as follows, that they (a) understood the purpose of the study, and agreed to participate in it; (b) were aged over 19 years; (c) their surgery took at least more than 1 hour; (d) fell under the body grade classification 1 or 2 of the

American Society of Anesthesiologists, that means normal healthy patients and patients with mild systemic disease (American Society of Anesthesiologists Task Force on Acute Pain Management, 2003); (e) were conscious, able to communicate, and oriented to person, place, and time and (f) their vital signs were within normal limits before the operation.

Before data collection, in order to obtain an appropriate power of analysis, the number of participants was calculated using G-power analysis. For the repeated analysis of variance (ANOVA) test, alpha at .05, effect size of .25, power (1−β) at .80, numbers of measurement at 5, and correlation among repeated measure at .70 were adapted and the total number of patient subjects needed was 123 for three groups. For nurses, alpha at .05, effect size of .25, power (1−β) at .80, and numbers of measurements at 3 were adopted for repeated measure of ANOVA and the total number of nurses needed was 28. Of a total of 35 eligible nurses working in the PACU and surgical units, 27 (77%) nurses were willing to participate in the study, which was considered appropriate for the study.

Ethical consideration

All procedures were approved by the institutional review board of the Kyungpook National University hospital with which the author was affiliated. As clearly stated in the written consent form, subjects could freely decide to participate in the study and were not compelled to do so in any way or by anyone. The participants were informed of their right to withdraw from the research at any time. The final sample reflected those who went on to complete the study materials.

Instruments

Postoperative pain level of patients

To test the effects of the EBP guidelines, pain level of patients who underwent abdominal surgery was measured. Postoperative pain level was measured using a numerical rating score, from 0 (no pain) to 10 (maximum pain). Postoperative pain level was measured at 1 hour, 6 hours, 12 hours, 18 hours, and 24 hours after abdominal surgery in both the control and experimental groups.

In order to increase inter-rater reliability among nurses measuring the pain level of patients, before measuring the postoperative pain level of patients, each nurse received instruction on how to assess the pain level of patients. Each nurse was trained to use the same question for all patients who participated in the research "How would you describe the level of pain you are currently experiencing on a 10 point scale, 0 means no pain and 10 means extreme pain which is not bearable?" Only 27 nurses who were trained in interpretation of clinically relevant indicators of pain intensity of patients performed measurements of patients' postoperative pain.

Nurses' knowledge of postoperative pain management

To measure nurses' knowledge of pain management of postoperative patients, the questionnaire originally developed by Watt-Watson (1987) and then revised and supplemented by Hyun and Park (2000) into Korean was used after minor revision. Of a total of 49 items on the questionnaire, 24 items are on knowledge of pain and 25 items are on use of analgesics. These items were answered with "yes," "no," or "don't know". One point was given for a correct answer and 0 for a wrong or "don't know" answer, thus, the higher the score, the higher the level of knowledge of postoperative pain management. The range of scores was 0–49. In a previous study conducted by Hyun and Park, reliability as measured by Cronbach's alpha was .87, while, in this study, Cronbach's alpha was .85. Nurses' knowledge of postoperative pain management was measured three