Effectiveness of an Intervention For Disseminating Cochrane Reviews to Nurses

Marilyn H. Oermann
Janna C. Roop
Cheryl K. Nordstrom
Elizabeth A. Galvin
Judith A. Floyd

Disseminating research findings to clinicians can be a challenging task. In this study, researchers tested the effectiveness of disseminating summaries of systematic reviews to clinicians. The findings suggest that these summaries are well-accepted by nurses and increase their knowledge of research findings.

Key Words: Cochrane Collaboration, disseminating research, systematic reviews, evidence-based practice (EBP), Cochrane Database of Systemic Reviews (CDSR).

Introduction
Many bedside nurses lack the time and skills needed to review research that can be used to improve practice.

Objective
The goal of this study was to determine if short summaries of a systematic review were effective in increasing nurses’ awareness of research results, and compare the effectiveness of mail and e-mail distribution of summaries to nurses in clinical settings.

Method
An experimental design was used to randomly assign two types of delivery (mail or e-mail) to nurses in the intervention groups or no delivery of summaries to nurses in the comparison group. Posttest questionnaires were sent to the intervention and comparison groups of nurses.

Results
Nurses who received the summaries had a better understanding PCA and CEA strategies for pain control. There was no difference in whether the summaries were delivered via mail or e-mail.

Conclusions
Summaries of systematic reviews of research offer a promising approach to disseminating research results to nurses and strengthening the evidence base for nursing practice.

Level of Evidence – II

Acknowledgment: Support was provided by the Detroit Medical Center Faculty Scholar Award.

Note: Reprinted from MEDSURG Nursing, 2007, Volume 16, Number 6, pp. 373-377. Reprinted with permission of the publisher, Jannetti Publications, Inc., East Holly Avenue, Box 56, PIttnan, NJ 08071-0056; Phone (856) 256-2300; Fax (856) 589-7403. (For a sample issue of the journal, visit www.medsurgnursing.net.)
indicated, heavy workload, and other organizational factors (Carroll et al., 1997; Graham & Logan, 2004; Hutchinson & Johnston, 2004; Larrabee, 2004; Luby, Riley, & Towne, 2006; Parahoo, 2000; Pettengill, Gillies, & Clark, 1994; Pravikoff, Tanner, & Pierce, 2003; Stetler, 2003). Embracing the concept of EBP is easy, but implementing it in practice presents many challenges.

A project that was developed and implemented in a medical center to improve nurses’ awareness of research results is described. The goal was to disseminate short summaries of a systematic review that presented the research findings but did not require a background in research and statistics to understand. The authors also discuss problems encountered in disseminating this information to nurses.

**Background**

Models of EBP in nursing suggest a logical process beginning with the nurse reflecting on clinical practice, identifying areas of uncertainty, and then refining those areas into questions that are both specific and searchable (Cullum, 2000; Yoder, 2005). These questions provide a framework for searching the literature for evidence of best practice, critically appraising the research, and changing or maintaining current practice as indicated. In reality, however, this process requires significant cognitive work to translate research evidence into actual patient care (French, 2005). It involves four stages of thinking: identifying the research evidence; confirming or disputing it based on the nurse’s prior knowledge and current practice; evaluating the risks, benefits, and costs of implementing the research versus other alternatives; and considering the likelihood of successful implementation (French, 2005). It is not known how many bedside nurses have the ability to engage in this process to translate research into practice; however, studies on barriers to EBP in nursing suggest that many nurses need instruction and guidance from expert clinicians and colleagues with research expertise (Hutchinson & Johnston, 2004; Oermann, Floyd, Galvin, & Roop, 2006; Pravikoff et al., 2005).

Ciliska, Pinelli, DiCenso, and Cullum (2001) suggested two types of strategies for implementing EBP in nursing based on their review of research on barriers to and promoters of EBP. One set of strategies related to what individual nurses could do to develop a clinical practice that was evidence based. Those strategies involved asking questions about current practices and any better alternatives, consulting with experts in research in the clinical setting, searching for findings from studies conducted in comparable settings, seeking assistance with critical appraisal, and adopting evidence-based guidelines. The other set of strategies was organizational, such as allowing time for nurses to engage in EBP and making an institutional commitment to it.

Instead of searching for individual research studies to answer questions about clinical practice, nurses can use systematic reviews and other sources of evidence based on research that has already been critiqued and summarized. Cullum (2000) recommended that nurses always look first for systematic reviews on a topic, such as those produced by the Cochrane Collaboration (2007), or for other evidence sources with pre-appraised and summarized research. In addition to the Cochrane Database of Systematic Reviews (CDSR), nurses can locate systematic reviews, meta-analyses, and other sources of pre-appraised evidence by searching PubMed’s Clinical Queries (“find systematic reviews”).

Systematic reviews are rigorous reviews of research that address the same clinical question. Experts identify criteria for including studies, locate and evaluate them, and synthesize the evidence. By using rigorous research methods and summarizing the findings of methodologically sound studies, systematic reviews provide the best available evidence on a topic (Montori, Wilczynski, Morgan, Haynes, & Hedges Team, 2003).

Systematic reviews potentially overcome many of the barriers to EBP: nurses’ lack of time and resources to search for studies, limited skill in reading and understanding research reports, and lack of critical appraisal and synthesis skills (Ciliska et al., 2001; Oermann et al., 2006). Systematic reviews provide stronger evidence on the effectiveness of interventions than individual research studies and integrated literature reviews, and they have less chance of author bias. As such, they are a good starting point when nurses are looking for evidence to guide their clinical decisions. Melnyk and colleagues (2004) surveyed 160 nurses attending EBP conferences and found a significant positive relationship between the extent that nurses used EBP and their use of the CDSR and National Guideline Clearinghouse. Disseminating systematic reviews, rather than individual study results, potentially could lighten the cognitive work of evaluating the strength of the evidence. It also may allow nurses to concentrate on deciding if the evidence suggests better approaches than their current ones; weighing the risks, benefits, and costs of implementing the evidence; and evaluating the ease of implementation in their workplaces.

**Purposes**

Systematic reviews such as those in the CDSR require an understanding of research and statistics that many bedside nurses do not have. The goal of this study was to determine if short summaries of a systematic review that presented the findings without requiring a background in research and statistics were effective in increasing nurses’ awareness of research results and
understanding of the evidence. The study had three specific purposes: (a) to determine if short summaries of a Cochrane review were effective in increasing nurses’ awareness and understanding of the research evidence; (b) to examine the usefulness of the disseminated information to nurses; and (c) to compare the effectiveness of email versus mail for delivering the summaries to nurses in clinical settings.

**Method**

**Design and Setting**

An experimental design (posttest only) was used with two types of delivery (mail versus email) assigned randomly within the treatment group. Seven hospitals that were part of a large medical center in the Midwest provided the setting. Following institutional review board (IRB) approval and with manager consent, units in those hospitals were assigned randomly to receive the short summaries of the Cochrane review or to serve as the comparison unit; nurses who worked on those units either received the intervention or were in the comparison group. The intervention groups were then assigned randomly to receive the short summaries by email or mail. In the comparison groups, the nurses received only the posttest questionnaire, but not the summaries, by mail.

**Sample**

Subjects were 178 staff nurses and advanced practice nurses who were invited to participate in the study on medical and surgical units at the seven hospitals. Of that group, 155 nurses were on units that received the intervention; four short summaries of the Cochrane review, each presenting evidence about a different outcome in the review, were emailed or mailed to them at weekly intervals. Of those, 38 (24.5%) completed the intervention and posttest. Another 23 nurses were in the comparison group, and 12 (52.2%) returned the posttest.

The sample comprised 17 (34%) staff nurses and 33 (66%) advanced practice nurses (APNs). All the APNs had master’s degrees in nursing; among the staff nurse participants, 11 had associate degrees or diplomas and 6 had bachelor’s degrees in nursing. Nearly 70% (n=34, 68%) of the nurses were over age 46. The majority of the nurses (n=33, 66%) had 1-15 years of experience as a registered nurse (RN); 5 (10%) had 16-20 years; and 12 (24%) had 21 years of experience or more. About half of the APNs (n=15, 46.9%) had heard of Cochrane and knew what a systematic review was; however, none of the staff nurses were familiar with Cochrane reviews.

**Intervention**

Because Cochrane reviews are long and require an understanding of research methods and statistics that many bedside nurses may not have, the researchers developed an intervention that disseminated short one-page summaries of a systematic review that did not require a background in research and statistics. For this study, the selected Cochrane review compared patient-controlled analgesia (PCA) to continuous epidural analgesia (CEA) for relief of postoperative pain. The review examined four outcomes, lending itself to a 4-week intervention. The short summaries included information on the intervention examined in the Cochrane review, outcomes measured, patients and types of settings included in the studies, references for the individual studies, and results. Their development and use in research dissemination were described in an earlier publication (Oermann et al., 2006).

**Instruments**

Data were collected using the Research Dissemination Questionnaire (RDQ) developed by the investigators. The RDQ had 17 items that examined nurses’ awareness, understanding, and perception of usefulness of the disseminated information, and the acceptability of the delivery method (email or mail). Five items on the questionnaire asked nurses to rate their awareness of the research evidence before and after receiving the summaries, to indicate if prior to the study they had ever thought about which pain management technique was most effective, and to report how likely it was that they would think about the research evidence in the future. Understanding was evaluated by subjects’ self-report (one question); seven cognitive items measured comprehension of the research evidence. The cognitive items included one true-false and six multiple-choice questions.

Perception of usefulness of the disseminated information was evaluated by three items on the RDQ. One item asked participants to rate, on a scale ranging from 1 (“very unlikely”) to 5 (“very likely”), how likely they were to use the information in their clinical practice. For that item they could indicate if they did not care for surgical patients. A second item asked nurses to rate, on a scale of 1 (“strongly disagree”) to 5 (“strongly agree”), if the information was useful. The other item for assessing the usefulness of the disseminated information asked participants if they discussed the information with other clinicians in the agency.

Acceptability of the delivery method was assessed with one item on the RDQ, which asked subjects how well they liked receiving the short summaries by either email or mail. The same scale of 1 (“strongly disagree”) to 5 (“strongly agree”) was used for that item. The RDQ also collected demographic data.

The RDQ was adapted for the comparison groups by omitting the items and wording that referred specifically to the emails or mailings and the questions that inquired about thoughts and knowledge prior to receiving the intervention. Experts reviewed the questionnaire for clarity and to ensure it reflected the content disseminated in the short sum-
matories. Revisions were made based on their feedback. Psychometric properties of the RDQ were not established in this pilot study.

**Procedures**
As noted previously, the study received IRB approval. The intervention groups received five emails or mailings. The first one explained the study and provided an introduction to Cochrane reviews. Each of the remaining four emails or mailings presented a short summary of the findings of the review comparing PCA to CEA for pain control. A research coordinator on each unit emailed the summaries to the nurse at work, one per week, or placed them in the nurse’s mailbox at the same time. One week after the last summary was disseminated, the participants in the intervention groups were emailed or mailed the posttest questionnaire, and nurses in the comparison groups received it by mail.

**Data Analysis**
Data were analyzed using descriptive statistics, chi-square tests of association, and independent and paired t-tests (with Fisher’s exact test for comparisons of groups with small sample sizes).

**Findings**

**Awareness**

Five items on the RDQ measured nurses’ awareness of the research evidence. Because of missing data, only 31 posttests from the intervention group were analyzed. Prior to the study, all the nurses knew what PCA and CEA were, but only 48.4% (n=15) were aware of research evidence regarding these pain management strategies. After the intervention, all the nurses reported awareness of the research on the effectiveness of these two techniques and their adverse effects. Of study participants, 20 (64.5%) nurses reported that prior to the interventions they had thought about which technique (PCA or CEA) was better for pain control; after reviewing the research evidence, 25 (80.6%) nurses were “very likely” to consider the evidence in their patient care, and 4 (12.9%) would “likely” think about the research evidence in their own practice. The other two nurses did not work on surgical units.

Responses of staff nurses versus APNs showed that the intervention increased awareness of research on pain management from 13% to 100% among staff nurses ($t_7 = -7.0, p < 0.001$) and from 61% to 96% among APNs ($t_9 = -3.5, p = 0.002$). The APNs (90.9%) indicated they would “very likely” consider the research evidence in the future, and they were more likely to think about it compared to staff nurses ($p < 0.05$).

**Understanding**

Nurses’ knowledge of the research evidence from the short summaries was measured using one self-report question and seven test items on the content in the systematic review. On the self-report item, 74.2% (n=23) of the nurses “strongly agreed” and the other 8 “agreed” that they learned something new about the research evidence.

A higher percentage of nurses in the intervention group than in the comparison group had correct answers on each of the seven test items. However, the differences were not significant statistically except for the question that asked which adverse effects occurred most frequently among patients receiving CEA compared with PCA. In the intervention group, 83.9% correctly answered that item compared with 50% in the control group, a difference that was statistically significant using Fisher’s Exact Test ($p = 0.04$).

**Usefulness of Disseminated Information**

Three items on the RDQ assessed the usefulness of the disseminated information. On a scale of 1 (“very unlikely”) to 5 (“very likely”), 21 (67.7%) participants reported they were very likely to use the research evidence in caring for patients receiving PCA or CEA, and another 6 (19.4%) were somewhat likely to use the information. A second item asked nurses to rate, on a scale of 1 (“strongly disagree”) to 5 (“strongly agree”), the usefulness of the disseminated information. The mean score for the usefulness of the research summaries was 4.5.

Discussing research with colleagues is one strategy for disseminating evidence to other nurses; in this study, participants were asked if they had discussed the evidence with anyone else. Only 13 (43.4%) nurses (12 APNs and 1 staff nurse) discussed the information with other clinicians.

**Acceptability of Delivery Method**

Half of the nurses received the short summaries by email and the other half by mail. Both groups of nurses “liked” the delivery method to which they were assigned randomly; there were no differences between the groups ($t_{20.1} = -1.17 p = 0.25$).

**Discussion**

In this study, the feasibility of disseminating the findings of systematic reviews to bedside nurses and APNs using a series of short, easy-to-understand summaries was examined. Although the sample was small, nurses reported increased awareness of the research evidence and their likelihood to think about the research as they cared for patients receiving PCA or CEA. We cannot conclude that nurses will use the research; however, awareness of research evidence may stimulate thinking that could lead to questioning current practices. Improved awareness of the research evidence was most apparent among staff nurses; their awareness increased from 13% to 100%. The short summaries appeared to be effective in improving nurses’ awareness of the research evidence.
Nurses were positive about the research summaries whether delivered via email or placed in their work mailboxes. Emailing research evidence directly to staff in clinical agencies avoids the cost of copying materials and can be used to communicate new evidence as it becomes available. As wireless access becomes more common, email can be accessed at any time of day and from places other than the worksite. Email has been used for several aspects of the research process, including sample recruitment, data collection, and collaboration (Cooper, 2000). However, despite its ease, emailing for data collection may not produce response rates greater than postal mail (Leece et al., 2004).

In an earlier phase of this research, we developed brief reports and simplified forest plots for disseminating the findings of systematic reviews to nurses (Oermann et al., 2006). Nurses who prefer text could read about the research evidence in the brief report, and those who prefer a visual presentation could use the forest plots. Additional studies are needed to determine the feasibility of disseminating research findings to staff using these methods.

Although the preliminary findings of this study are promising, we encountered many problems in its implementation. Because of concern about maintaining participants’ anonymity, they did not have direct access to the email addresses of the study participants. Instead, a research coordinator on each unit forwarded the summaries to the participants. In retrospect, the research coordinators were not certain that the summaries were forwarded consistently to nurses on the units. The study research assistant delivered the copies of the summaries for mailbox distribution, which was an advantage of copy over email in this situation.

Second, we protected participant anonymity by requiring that all participants, not only those who received print copies, return copies of the RDQ to insure that questionnaires could not be matched to email addresses. This meant that participants receiving email summaries had to print, complete, and deliver their questionnaires to a collection box. The disconnect between receiving emailed interventions, yet having to respond in print, may have contributed to the low response rate. In the future, it will be important to obtain email addresses for the potential participants and disseminate the summaries to them while assuring confidentiality.

A third barrier was the subject matter of the selected Cochrane review. We chose a review about postoperative pain, believing that pain was a ubiquitous concern among patient populations. Anecdotal feedback from participants, however, suggested that some potential nurses declined to participate because “the nurse does not decide which intervention, PCA or CEA, is chosen.” This might explain why so few nurses discussed the evidence with others. Further, many of the nurses in the study reported that the information was irrelevant because they did not care for surgical patients. This study was a test of the distribution methods; future recommendations include assessing the needs of nurses in the target clinical areas to match the topic in the systematic review more closely to their practice.

The intervention was designed to deliver short weekly summaries of the Cochrane review, each one presenting evidence about a different outcome in the review. The full intervention extended 5 weeks. It was difficult to maintain staff interest over that period of time, and some nurses indicated that they received only a few of the mailings because of their work schedules or problems with distribution by the researcher coordinators. Although repeated attempts were made to distribute the posttest, a number of nurses reported they had completed the intervention but were not on the unit when the posttest was sent. An intervention that extends over a shorter period of time and is targeted to the nurse’s specific practice area might be more effective. Although the comparison groups were in different hospitals from the units with the intervention, researchers could not control if nurses from one unit discussed the project with other nurses.

Summary

It is well known that disseminating research results to bedside nurses and other clinicians can be difficult, and it would not be reasonable to expect one intervention to make significant strides toward addressing all the barriers to translating research into practice. Nevertheless, we demonstrated the feasibility of distributing systematic research reviews to clinicians in a way that does not require an in-depth understanding of research methods and language. Participants reported positive responses to receiving the information regardless of the method (email or copy in mailbox). Furthermore, most participants gained knowledge about the research. Summaries of systematic reviews of research offer a promising approach to disseminating research results to clinicians and strengthening the evidence base for nursing practice.

References


