The knowledge and attitudes of nonanesthesia nurses regarding postoperative epidural analgesia

LT COLLEEN L. SANDIE, CRNA, MS, NC, USN
Yokusuka, Japan
CDR LOUIS J. HEINDEL, CRNA, ND, NC, USN
Bethesda, Maryland

The provision of epidural analgesia for postoperative pain control offers many patient benefits and has become commonplace on many nursing units. Since nurses are responsible for the day-to-day management of patients receiving epidural analgesia, their knowledge, attitudes, and practices regarding this technique are pivotal to its success. Therefore, the purpose of the present descriptive study was to examine the knowledge base, attitudes, and clinical practice of registered nurses (N=85) regarding postoperative epidural analgesia as managed by an acute pain service (APS).

Information was obtained from a survey distributed via a convenience sample to all nurses working on 6 units in a large military teaching facility. We developed the “Epidural Knowledge and Attitude Survey” using the nursing literature on epidural analgesia. The survey consisted of a demographics section, true/false (T/F) questions, multiple choice (M/C) questions, an attitude section, and a comment section. These sections addressed the nurses’ knowledge, attitudes, and practices in regard to epidural pharmacology, management, and adverse effects, as well as their general satisfaction with the APS of their facility. Data were analyzed statistically using means, standard deviations, percentages, forward step-wise linear regression, the Fisher-Irwin (exact) test, the $\chi^2$ test, and analysis of variance with Bonferroni multiple comparisons. A P value of <.05 was considered statistically significant.

Results of the study demonstrated that the respondents attained a 78% overall correct score on T/F questions and 38% on M/C questions. The attitude section illustrated that 73% of nurses had “positive” attitudes toward epidural analgesia. Correct management of patients receiving epidural analgesia was being practiced by 77% of nurses. The satisfaction with the APS at this facility was 32% “very satisfied” and 62% “somewhat satisfied.” The demographic characteristics that best predicted a higher score on the knowledge portion of the survey were greater years of practice as a nurse and receipt of pain education in nursing training. Nurses who had received inservice education about epidural analgesia rated a “good” self-knowledge of epidurals more often (40%) than those who did not (10%) and scored significantly higher on the knowledge portion of the survey.
The principal conclusions of the present study were that while the attitudes and practices of these nurses were good, their knowledge level regarding epidural analgesia was low. Recommendations include implementing a multidisciplinary epidural education program for nurses at this facility to address these knowledge deficits and conducting similar studies in the future.

Key words: Epidural analgesia, nurses’ knowledge, pain assessment, pain education, pain management.

Introduction

The purpose of the present descriptive study was to examine the knowledge, attitudes, and practices of nurses regarding epidural analgesia for postoperative pain control as managed by an acute pain service (APS).

A background review of the literature to demonstrate the significance of the present study illustrated that the administration of local anesthetics and/or opioids via epidural catheters to provide postoperative analgesia had become commonplace on many nursing units. Potential patient benefits of epidural analgesia included a decrease in total opioid requirements, earlier mobilization, improved pulmonary function, and shorter hospital stays. Correspondingly, a high level of patient satisfaction with epidural analgesia has been demonstrated.

In most hospitals, the anesthesia department operated an APS that would oversee the postoperative epidural analgesia program. Close, multidisciplinary links had to be established to optimize pain relief provided by these programs. Since nurses, in concert with the APS, were responsible for the day-to-day management of patients receiving epidural analgesia, their knowledge levels about and attitudes toward this technique were pivotal to its success.

The nursing community’s efforts to educate nurses about this modality were evidenced by the numerous articles describing the science and associated nursing management of epidural analgesia. Also, several authors had described the implementation of multidisciplinary epidural pain programs, including the required education of nurses.

In addition to the above-noted information specific to epidural analgesia, a grounding in the basic pain management literature was required to understand nurses’ knowledge, attitudes, and practices in this area. Numerous studies have examined the knowledge and attitudes of nurses regarding opioids (dosing, adverse effects) and pain management. These studies have consistently revealed a lack of training and knowledge among nurses that has not changed substantially in many years. Nurses’ attitudes regarding patients in pain demonstrated substantial inaccuracies and bias, often leading to poor pain management.

While the basic pain management literature demonstrated the above negative findings, the literature lacked crucial information regarding the knowledge, attitudes, and practices of nurses regarding postoperative epidural analgesia. Therefore, the specific research questions to be addressed in the present study were:

- What is the knowledge base of nurses regarding the anatomy, pharmacology, physiology, and management of postoperative epidural analgesia?
- What are the attitudes of nurses about postoperative epidural analgesia as managed by an APS?
- What are the current practices of nurses regarding postoperative epidural analgesia?
- What effects do various characteristics of nurses (educational level, age, gender, clinical experience, clinical unit they work on, etc) have on their knowledge and attitudes regarding pain management and postoperative epidural analgesia?
- What is the satisfaction level of nurses regarding the APS’s management of postoperative epidural analgesia?

Methods

This study was reviewed by the Clinical Investigative Department of the facility where it was conducted and was deemed exempt due to the study’s descriptive nature.

The data was collected from a survey distributed via a convenience sample to the mailboxes of all registered nurses working in the postanesthesia care unit, intensive care unit, and 4 surgical units of a large, 400-bed military teaching hospital. Within this facility, every nurse on these units could have cared for a patient receiving epidural analgesia as managed by the anesthesia department’s APS.

We designed the 56-item survey based on a review of the literature pertaining to basic pain management, epidural analgesia, and the related nursing implications. This survey consisted of demographics, multiple-choice (M/C), true/false
(T/F), agree/disagree, and open-ended questions. It was designed to assess nurses’ general pain management knowledge, their knowledge of epidural analgesia, their understanding of the mechanism of action of epidural opioids and local anesthetics, their attitudes about the efficacy of epidural analgesia to treat postoperative pain, and their general satisfaction with their facility’s APS.

The attitude assessment section had 16 questions with answers on a 4-point Likert scale: strongly agree, agree, disagree, or strongly disagree. The statements were chosen to reflect commonly held views on epidural catheters for postoperative pain relief, patient-controlled analgesia (PCA), and their management. The last section of the survey included an open-ended question that solicited respondents’ suggestions for improving their knowledge about pain management and the functioning of the pain service. Content validity was established by 2 nurses prepared at the doctoral level with expertise in the area of postoperative pain management and epidural analgesia, the anesthesiologist in charge of the APS, and the pain clinic registered nurse.

A cover letter that provided a description of the purpose of the study and instructions was attached to each survey. Nurses were asked to complete the survey anonymously and return it at their convenience to a box located at the nursing station. The only identifying characteristic was the unit worked on. A follow-up “reminder” letter was sent out 1 week after the initial distribution.

With the exception of the written comments, all entries were assigned a numerical score and then entered into a database. These data were subsequently analyzed using the SPSS (SPSS, Inc., Chicago, Ill) statistical program to calculate means, standard deviations, frequencies, and percentages of responses. The following statistical comparisons were then carried out with the STATA (STATA Corporation, College Station, Tex) computer program. We used a forward stepwise linear regression method to determine which attitude questions and which demographic characteristics were the best predictors of the knowledge score. The following statistical tests were then conducted to identify significant relationships between the attitude questions that effectively predicted the overall score and the demographic variables. Categorical data were tabulated in contingency tables and subjected to the Fisher-Irwin (exact) test. One exception to note is the “Nursing Unit” grouping, where the \( \chi^2 \) test was used because there were too many categories.

Interval data were subjected to 1-way analysis of variance, with Bonferroni multiple comparisons. \( P \) values less than .05 were considered statistically significant.

Results

Of 200 surveys distributed, 85 (43%) were returned. The mean age of respondents was 31, with a range of 21 to 48. The sample consisted of 77% female and 23% male respondents. They had a mean of 6 years of nursing experience (range, 3 months to 26 years). Most of the respondents (46%) held an associate degree as the highest degree obtained, followed by a bachelor of science in nursing or a bachelor of science degree (44%), a diploma (8%), and a master of science or master of arts degree (2%). The majority of respondents (79%) reported receiving some form of pain education during their nursing training, while 54% had attended in-service education on postoperative epidural analgesia.

On the T/F section of the survey, the respondents attained a 78% overall correct score. A breakdown of this section into the 3 categories of basic pharmacology, epidural pharmacology, and basic pain management/assessment illustrated more useful information. For example, although a 70% correct score was attained on the basic pharmacology questions, this percentage included the low correct response rate of 15% to the question regarding “Aspirin 650 mg PO [by mouth] being equal in analgesic effect to Demerol 50 mg PO.” A 74% correct response rate on the epidural pharmacology questions was attained. Finally, in the category of basic pain management/assessment, 89% answered correctly.

The M/C questions yielded a 38% overall correct score. These questions also were broken down into specific categories: epidural pharmacology and epidural function/management. The pharmacology section yielded a 30% overall correct response rate. Of note in this category was the low knowledge demonstrated on the questions distinguishing between the adverse effects of epidural local anesthetics (6%) and epidural opioids (5% correct). An analysis of the epidural function/management questions demonstrated a 43% correct response rate.

The attitude section demonstrated an average of 73% “positive” responses. To better define this section, it was separated into 4 main categories: the attitudes toward epidurals, practice issues, attitudes toward knowledge level, and the satisfaction with the pain service. In the first
category, a 75% overall “positive” response rate was demonstrated regarding the efficacy and safety of epidural analgesia at this facility. As an example, 98% of respondents agreed with the statement “epidural analgesia provides adequate pain relief.” In terms of adverse effects, 77% of nurses disagreed with the statement “patients receiving epidural analgesia have greater adverse effects than those receiving intravenous PCA.” Finally, 80% of respondents agreed with the statement “epidural narcotics help to prevent postoperative complications such as pneumonia, atelectasis, and thromboembolism.”

In terms of practice issues, an overall 77% “positive” response rate was noted. A breakdown of these questions demonstrated that 84% of nurses agreed with the statement “upon admission to your unit, patients are instructed on how to report pain intensity, indicate relief, and ask for more pain medication.” Monitoring the site of the epidural catheter for signs of infection was reported to be a routine part of 98% of these nurses’ daily patient assessment. Also, 84% indicated that their unit uses a standard pain flow sheet for all patients on epidural infusions, while 71% reported that they routinely provided teaching to their patients who arrive from surgery with an epidural catheter in place.

The respondents rated their knowledge of epidural analgesia management as good (26%), fair (61%), and poor (13%). As a corollary, only 51% of respondents agreed with the statement “your knowledge of epidural analgesia is adequate to make you comfortable managing patients on the epidural pain service.” Finally, 100% of respondents agreed with the contention “more education about postoperative epidural analgesia should be offered to nurses at this hospital.”

In response to the question regarding satisfaction with the service of the facility’s APS, 32% of nurses were “very satisfied,” 62% “somewhat satisfied,” and 6% “not at all satisfied.” In addition, 87% of nurses agreed with the statement “communication between the epidural pain service and the nursing staff needs to be improved.” However, 79% of nurses also agreed that the anesthesia pain service manages patients with epidural analgesia effectively.

A synopsis of the 36 surveys in which the respondents made comments illustrated the following results. The need for more education about pain management and epidural analgesia was cited by 18 nurses. Others noted that training on the management of epidural analgesia should be part of the orientation process. Remarks about the pain service included: “Pain service at times can be difficult to contact and deal with,” and “We need a better response time from pain service—not ‘whenever we get there.’” Finally, this observation demonstrated one nurse’s attitude toward epidurals: “I prefer the PCA’s and have seen more successful pain relief with them than the epidurals.”

The findings of the statistical analysis were as follows. The demographic characteristics that best predicted a higher score on the T/F and M/C sections of the survey were: greater years of practice as a nurse and receipt of pain education in nursing training. The attitude questions that best predicted a higher score were: a belief that epidurals are more effective than intravenous PCA for postoperative pain, a strong belief that epidurals are not more labor-intensive for nurses, and a high self-rating of level of epidural knowledge. Other variables were not significant predictors at the .05 level.

The significant relationships that emerged between the attitude questions that effectively predicted the overall score and the demographic variables follow. First, those nurses who reported a higher degree of knowledge specific to epidurals believed them to be superior to other modes of pain control; those with less knowledge were not sure. Second, those who perceived their knowledge of epidurals as “good” scored better on the T/F and M/C sections than the “poor” responders. Third, a “good” self-knowledge rating of epidurals was significantly higher for diploma holders (71%) than for associate degree holders (30%) or bachelor of science/bachelor of science in nursing degree holders (11%). Self-ratings of “good” were significantly higher in the postanesthesia care unit (58%) than in the intensive care unit (11%) and other wards combined (18%). Finally, those who had received inservice education about epidural analgesia rated a “good” self-knowledge more often (40%) than those who did not receive inservice education (10%).

Discussion

In general, this survey demonstrated that the educational program in place at this facility and the clinical experience of these nurses had armed them with positive attitudes and practices, but low knowledge levels in regard to epidural analgesia. At the time of this survey’s distribution, no regular pain management and/or epidural inservice education existed for nurses, either through the APS or the education department, at this facility.

The questions related to practice issues
demonstrated that the respondents were practicing correct epidural management techniques. Future researchers could conduct a chart review or other study to assess if these nurses’ reports of correct practice were accurate.

An analysis of the demonstrated knowledge showed an overall deficit among the respondents in all aspects, including management, of epidural analgesia. While the high scores on the T/F section seemed to indicate a good knowledge base, the low scores on the M/C questions may have been a more accurate indicator of knowledge levels. Reasons for this assertion lie in the nature of T/F questioning, in that each participant had a 50% chance of answering correctly, regardless of knowledge base. In contrast, the respondents had to know the material better to answer correctly on the M/C questions.

The fact that only 54% of respondents had received any inservice education on the management of postoperative epidural analgesia may substantially account for the knowledge deficits noted. This finding also may explain the low degree of confidence demonstrated by these nurses about their knowledge of epidural analgesia and their comfort with managing these patients. Finally, although the majority of respondents had received pain education during their nursing training, they were not asked about the specific content of that training. It would have been instructive to ask where the nurses received most of their education/information regarding epidural analgesia and general pain management.

The following conclusions were obtained when the individual statistical analysis stages were combined. First, standard nursing training, no matter what the duration or to what educational degree attained, was not sufficient to prepare nurses for pain management. Rather, understanding epidural use, especially its effectiveness and labor-saving character, arose only from specific instruction in pain control. Finally, capability in pain control was derived from years of experience in nursing, particularly after specific instruction in pain management.

Results indicated that while the respondents’ educational degree did not influence the score on the T/F and M/C sections, the amount of specific pain education received by the respondents did factor into those scores. This finding was consistent with those of Clarke et al. They stated, “It seems likely that past education in current pain management had a greater impact on these scores than educational level per se.” Other notable discoveries included the fact that a higher self-knowledge rating corresponded with higher scores on this survey. And, since those who reported receiving inservice education about epidural analgesia rated a “good” self-knowledge more often than those who did not, it could be postulated that more inservice education may lead to a greater knowledge base and positive attitudes among the nurses regarding epidural analgesia.

The results of this study were analyzed with an understanding of the following limitations. First, the generalizability of the study was limited, since this facility’s nursing education and the function of its APS may have differed substantially from other facilities. Second, the results of the survey may have been influenced by its design, for example, the T/F section as mentioned earlier. Also, while many of the items in the attitude section of the survey did not have a definite right or wrong answer, this difficulty was recognized to be inherent with attitude assessment. Third, the low response rate yielded questions regarding the survey’s ability to accurately represent the target population in terms of demographics or knowledge and attitudes demonstrated. Fourth, the reliability of the survey was not tested with a pilot study. Finally, the convenience type of distribution introduced the possibility of a biased sample. For example, those who did complete the survey may have been more interested in pain management and had more positive attitudes and a better knowledge base. Unforeseen events that could have affected the findings and return rate included:

1. The timing of distribution around the holidays,
2. Length of the survey,
3. Workload of the nurses, and
4. Lack of interest in improvement of pain management.

After acknowledging the above limitations, some useful information that could be used to further the areas of nursing education, practice, and research was discovered in this study. These data indicated that basic and inservice nursing education had not provided nurses at this facility with the knowledge that enabled them to manage confidently patients with epidural analgesia. A related practice issue uncovered is that most of the nurses who responded to the survey were actively involved in the care of patients receiving epidural analgesia. Therefore, any deficit in knowledge regarding epidural analgesia could have been detrimental to the postoperative recovery of patients under their care.
Another contribution of this study was to provide a basis upon which future research can be compared. Similar studies should be conducted at other facilities to build a library of useful findings upon which to base education and practice. Future research also could assess patient satisfaction with and attitudes about postoperative epidural analgesia at this and other facilities in comparison to the nurses’ knowledge, attitudes, and practices about this modality.

Based upon the findings of this survey, the following recommendations were proposed to improve the knowledge, attitudes, practices, and satisfaction of nurses regarding epidural analgesia as managed by this APS to optimize patient benefits from this technique.

1. Design and implement an education and certification program for nurses about pain management and epidural analgesia with the assistance of the APS, the ward staff, and the education department to address the noted knowledge, attitude, practice, and satisfaction deficits.

2. Provide current pain management information, including basic and epidural analgesia techniques, in all hospital orientation programs for nurses.

3. Identify and train a group of nurses to serve as epidural analgesia resource personnel on each unit. These people also may serve as liaisons between the APS and education department for the nurses on the units.

4. Conduct post-testing and periodic, ongoing evaluations with patients and nurses in the area of pain management to gauge effectiveness of training.

REFERENCES


AUTHORS

LT Colleen L. Sandie, CRNA, MS, NC, USN, is currently a staff nurse anesthetist at the Naval Hospital in Yokosuka, Japan. This research was conducted while LT Sandie was a student nurse anesthetist at the Naval Medical Center, San Diego, Calif.

CDR Louis J. Heindel, CRNA, ND, NC, USN, is deputy director of the Navy Nurse Corps Anesthesia Program, Bethesda, Md.

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