

Pilot Study: The Effect of Education on the Knowledge and Attitudes of Nurses Regarding Pain

Kathryn Gift

Doctor of Nursing Practice Candidate

University of Maryland

School of Nursing

Abstract

Pain affects more than 76 million adults in the United States and is the number one reason people seek medical attention (Joint Commission, 2013, Zacharoff, Pujol, & Corsini, 2010). Although pain management is considered a top priority in health care, it continues to be inadequately addressed (Duke, Haas, Yarbrough, & Northam, 2013). The basis for nursing intervention and a critical component of effective pain management is pain knowledge and assessment (Al-Shaer, Hill, and Anderson, 2011). A nurse's perception of pain can be influenced by their knowledge and past experiences of pain, the patient's demographic (Manias, Botti, & Bucknall, 2002) as well as the nurse's years of experience and degree preparation (Al-Shaer, Hill, & Anderson, 2011).

The purpose of this quality improvement pilot study is to determine if the presentation of a three hour class titled Pain Types, Assessment, and Management will enhance nurse's knowledge regarding pain. In this single group pretest/posttest design, the 37 item Knowledge and Attitudes Survey Regarding Pain (KASRP) survey tool (Ferrell & McCaffrey, 2012) was used for both the pretest and posttest. A paired-samples t-test was conducted to evaluate the impact of pain education intervention on the scores of the KASRP. There was a statistically significant increase in KASRP scores from the pretest ($M=21.72$, $SD=3.46$) to the post test ($M=23.50$, $SD =3.66$), $t(17) = -2.618$, $p <.05$ (two-tailed). The mean increase in KASRP scores was 1.77 with a confidence interval from 3.21 to 3.45. Future educational offerings as well as quality improvement projects will be generated based upon the findings.

Pilot Study

Pain affects more than 76 million adults in the United States and is the number one reason people seek medical attention (Joint Commission, 2013; Zacharoff, Pujol & Corsini, 2010). Pain is considered to be one of the most common clinical problems in the acute care setting (Jarrett, Church, Fancher-Gonzalez, Shackelford, & Lofton, 2013), and although pain management is considered a top priority in healthcare, it continues to be inadequately addressed (Duke, Haas, Yarbrough, & Northam, 2013). Nurses spend more time in the clinical setting with patients in pain than does any other member of the health care team, and therefore are critical in fulfilling the important role of providing pain relief (Duke et al., 2013; Jarrett et al., 2013; Lewthwaite et al., 2011). It is especially important, therefore, that nurses possess accurate information regarding pain assessment and management (McCaffrey & Ferrell, 1996). When nurses do not use a pain assessment tool, pain management may be ineffective. In addition, when nurses did use a pain assessment tool, they did not consistently evaluate the information to make pain management decisions (Layman Young, Horton and Davidhizar 2006; Michaels et al., 2007). When assessing for pain, a nurse's estimation of the patient's pain rating was different from patient's reported pain rating, which is considered to be the most reliable indicator (Al-Shaer, Hill, & Anderson, 2011; Manias, Botti, & Bucknall, 2002).

When determining a patient's perceived pain score, nurses tend to focus on obtaining a number representing the pain rating and rarely look beyond the initial score, failing to reassess for pain or a patient's response to interventions (Michaels et al., 2007). The difference between nurses' and patients' pain estimates and assessments are due to influences that are difficult to quantify. A nurse's perception of pain can be influenced by his/her knowledge of pain, past experiences with pain, patient's gender, culture or age, and other contextual concerns such as

psychological, sociocultural, and situational factors (Manias, Botti, & Bucknall, 2002). Nurses in acute care settings have shown a desire to learn more about pain management and were responsive and receptive to educational interventions (Al Shaer et al., 2011; Lewthwaite et al., 2011; Michaels et al., 2007). However, when education is provided about pain assessment, the results on pain assessment and management indicators after the educational interventions are mixed. Chart audits after a 20 to 30-minute intervention showed no differences in pain assessment documentation between participants and non- participants (Michaels, et. al., 2007). Follow-up activities on nurses' attitudes about patient pain after a 60- minute intervention did show improvement immediately and six months later, but this improvement was not evaluated for a similar change in documentation behavior. The nurse participants were asked how the educational program changed their approach to pain management. The most frequent comments were that they gave pain medication on a schedule and were more empathetic to their patient's responses. Some nurses stated that the education resulted in more frequent reassessments of pain and improved pain management (Jarrett, et. al., 2013).

Donabedian's Quality of Care model was selected for this practice problem of nurses' knowledge deficit related to pain, based upon previous use of the model in evaluating nursing quality (Donabedian, 1969; Kobayashi, Takemura, & Kanda, 2010; McCormack, 2007). The Proposition of Donabedian's model is that structure leads to process, and process leads to outcomes (Donabedian, 1993).

The purpose of this pilot project is to determine if the presentation of a three-hour pain overview course will enhance the nurse's knowledge regarding pain. Outcomes of the pilot project will help to determine the need for additional education, assessment and documentation tools. In addition, the project will provide a baseline for the development and initiation of

quality improvement projects such as chart audits to evaluate the transference of knowledge gained into a comprehensive documentation of a patients' report of pain.

Methods

Design

Nursing administration at the target hospital in the southern region of the United States with approximately 582,319 inpatient and outpatient visits identified a need for a standardized pain resource course for the nursing staff. In addition, staff completing an education needs assessment specifically requested education in pain management and pain medications. The project utilized a single group pretest/posttest design to determine if the three-hour class titled Pain Types, Assessment and Management enhanced nurses' knowledge. The course consisted of three one-hour modules: overview of pain types and prevalence, assessment of pain, and pharmacological management of pain (focus on opioids). Comorbid conditions associated with pain (Post Traumatic Stress Disorder, Traumatic Brain Injury, and Suicide) were included in the pain assessment module due to patient population.

Sample

A convenience sample of 18 inpatient nurses (9 RNs and 9 LPNS) assigned to the extended care area of the hospital participated in the educational offering. Participation was voluntary and consent was implied by completing the pre and posttest. The proposal for the study was declared exempt by the Institutional Review Boards for the University of Maryland and the participating hospital.

Measures

The Knowledge and Attitudes Survey Regarding Pain (KASRP) (Ferrell & McCaffrey, 2012) is a 37-item survey tool that measures knowledge and attitudes about pain. It consists of

closed –ended questions which include 21 true or false questions, 14 multiple – choice questions, and two case studies on pharmacological and non-pharmacological interventions and attitudes on pain management. Each case study has two questions, including pain rating (Likert scale) and a multiple choice item. Permission was obtained to use the KASRP which was administered in a group setting immediately prior to and immediately after presentation of the three hour pain overview class. Components of the Veterans Administration Pain Resource Nurse Program were used to develop the three hour class. The KASRP has been extensively used since 1987 as a pre and posttest evaluation measure for educational programs (Ferrell & McCaffrey, 2012). The instrument, revised in 2012, derives from current standards of pain management from the American Pain Society, the World Health Organization, and the National Comprehensive Cancer Network Pain Guidelines.

Construct validity for the tool was confirmed by comparing scores of nurses with various levels of expertise (student nurses, new graduate nurses, oncology nurses, specialty nurses, and senior pain experts). Nurses with more expertise had a higher score. Repeat testing in a continuing education class of staff nurses (N=60) assisted in establishing test-retest reliability ($r > .80$). Internal consistency reliability (alpha $r > .70$) was established through survey items reflecting both knowledge and attitude domains (Ferrell & McCaffrey, 2012).

Data Analysis

Data analysis was conducted using SPSS version 21. Raw data was checked for error. Descriptive statistics including frequencies and percentages were used to analyze the sample demographic data and survey items. Demographic data was collected separately from the test data to provide for the confidentiality of the participating staff. The KASRP pre and posttest results were analyzed using means, standard deviations of the percentage of correct answers of

participants in addition to the percentage of participants who correctly answered individual survey items (Ferrell & McCaffrey, 2012). Although there was a small sample size (n=18 out of a possible 50 nurses) ,a paired samples t-test was used to determine the differences between pre and posttest scores due to the normal distribution of the data.

Results

The sample of the inpatient staff nurses (RN=9, LPN=9) participating in the study represented those who completed both the pre and posttest. Demographic data including age and years of experience was collected separately from the test data. Although all 18 participants agreed to participate in the study, two participants did not complete the demographic survey. Sixty- two percent of the staff had ten years or less experience in nursing with forty- three percent of the staff in the age range of 31 to 40. Fifty percent of the registered nurses had a bachelor's degree.

A paired-samples t-test was conducted to evaluate the impact of pain education intervention on the scores of the 37 item KASRP. For the purposes of evaluation, each question within the case study was evaluated separately, resulting in 39 questions. There was a statistically significant increase in KASRP scores from the pretest (M=21.72, SD=3.46) to the post test (M=23.50, SD =3.66), $t(17) = -2.618, p <.05$ (two- tailed). The mean increase in KASRP scores was 1.77 with a confidence interval from 3.21 to 3.45. The Cohen's *d* statistic (-0.619) indicates a medium to large effect size.

The test items were also analyzed to determine which items had the most correct and incorrect answers. Six items were answered correctly by at least 88.9% of the participants with three of the questions answered correctly by 100%. Most of these items contained information regarding assessment and perceptions of pain. The most frequently incorrectly answered items

focused predominately on cancer pain and medication knowledge. Seven questions were missed by at least 66.7% of the participants.

Discussion

This pilot study illustrates the effectiveness of a face to face education intervention in increasing nurses' knowledge of pain and attitudes about pain as demonstrated by an increase in scores from the pretest to the posttest. As expected, the posttest mean was higher than the pretest due in part to the educational offering. Difficulty correctly answering questions pertaining to medications in these participants was similar to results in other studies (Duke, et al., 2013; Goodrich, 2006; Plaisance & Logan, 2006). The low score for the cancer questions maybe a result of limited information provided in the educational offering and participants' lack of current clinical exposure to cancer and hospice patients. None of the participating staff were from the hospice unit of the extended care department. Other studies (Duke, et al., 2013; Plaisance & Logan, 2006) also found that items pertaining to assessment and perceptions of pain to be the questions most correctly answered.

Although 100% of the staff correctly answered the question about the most accurate judge of a patient's pain is the patient, staff had difficulty applying this knowledge to the case study questions (Table/Appendix). The case studies describe two identical patients with the same level of pain and the same amount of morphine provided for pain relief. The only difference between the two case studies is patient A is smiling and patient B is grimacing. The percentage of staff indicating that they would document the patient's stated pain rating was 77.8% for patient A and 83.3% for patient B. Staff acknowledgement that the patient is the most reliable judge of pain intensity and documenting a different score than the patient's stated score is a finding that is consistent with previous studies (Duke, et al., 2013; Plaisance & Logan,

2006). In order to effectively manage patient pain, nurses need to trust the patient's report of pain regardless of the patient's nonverbal behavior or the nurses' personal beliefs (Al Shaer et al., 2011).

Although the majority of the participants correctly assessed the patient's level of pain, few correctly identified the next dose of pain medication. The previous dose provided inadequate pain relief and the time since the last dose exceeded the minimum interval. Only 33.3% for patient A and 44.4% for patient B indicated they would administer the recommended dose of morphine based on the assessment data. Many participants selected a suboptimal dose or the option to provide no pain medication. Unfortunately, the disconnect between the patient's perception of pain and the nurses' assessment and pain medication dosage has been documented in other studies (Duke, et al., 2013; Plaisance & Logan, 2006).

Strengths

Rigorous education design, creative scheduling, and stakeholder support, and provision of educational materials were identified as strengths of the pilot. A course evaluation addressing satisfaction with content and the speaker was completed post-educational offering. The information from the evaluation validates staff satisfaction and provides staff the opportunity to comment on course strengths and weaknesses and recommendations for future training. Participants who signed a roster received three continuing education units (CEUs) by an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation (ANCC). Evaluations were positive and staff written comments stated the session was informative. The classroom location was within the same building as the patient care units to allow for easy access to the class, and not incur the need for staff to travel to another location, adding additional time away from the unit.

The course was offered a total of three sessions over two days. Two days were selected to accommodate the two day shift rotations (total of 50 day shift RNs and LPNs). Two sessions were held on one day which captured 55.5% of the RN and LPN staff working the day shift (15 attended out of 27 assigned to work). Two of the eight units had 100% of the RN/LPN staff attend the training for the two session day and 50% attendance for the day with one session. Telephone calls were made to the nurse managers the day of training reminding them the training, including time and location. The nurse manager of the two units with 100% participation was grateful for the reminder and modified staff assignments to allow for staff participation and patient coverage. In addition, the nurse manager “worked the floor” to provide additional coverage while staff attended training. Face to face training provided an opportunity for staff to ask questions and clarify concepts. A packet that included copies of the PowerPoint slides as well as pain assessment and medication management information was provided to all participants to aid in note taking and provide a take away reference guide.

Including a pre and posttest with the educational offering provided a method to gain baseline data on staffs’ knowledge and attitudes regarding pain and provided more information than an education survey. The analysis of the test results will be used to guide future quality improvement activities such as pain effectiveness monitors and Joint Commission mock survey tracers for documentation of pain assessment and plan of care. In addition, the test results will function as a pain education needs assessment which will direct future pain education topics.

Barriers

As is often the case in staff education initiatives, time, workload and communication issues provided some barriers within the project. Although a save-the-date announcement was sent to nursing staff and nursing leadership four weeks prior to training and before work

schedules were posted, some of the units did not send staff to the training. A flier announcing training dates, time, duration, location and the availability of nursing continuing education contact hours was posted one week prior to the training. Feedback from one manager during the reminder telephone call was that training session was too long, and no one from the unit would be attending. No mention was made indicating an impact of staffing or patient acuity levels in the ability of staff to attend training. Another nurse manager was able to send one staff member although staffing issues precluded the attendance of more. All telephone reminders to nurse managers for the second day session went to voice mail. Attendance for the second day session was only 16.6% of the total of attendees for the course. Fifteen percent fewer staff was assigned to work during the second day the course was offered. Workload for the unit on the day of training may have had more influence than the advance notice or timing. One night shift nurse (works night shift) attended training on a day off even though compensation was not provided. Other nurses stated through email messages that they would attend the training if it was held during their shift (night shift) or if they received compensation to attend when they were not scheduled to work.

Limitations

A convenience sample, small sample size and participants from an extended care environment are limitations to this pilot study which may limit generalizability. Not all units within the extended care department sent staff to the education session.

Recommendations

According to Kramer, Schmalenberg & Maguire (2010) providing and supporting educational programs, including continuing education, is one of the nine structures and leadership practices essential for a healthy work environment. Conducting an assessment of the

workplace culture should be conducted to determine potential barriers to the development and implementation of an educational program (Griffith, 2013; Skees, 2010). Including stakeholders, especially nurse managers and senior nursing leadership may help to identify barriers and solutions to allowing staff nurses to attend training as well as determining educational needs.

Collaboration with nursing staff and nursing leadership (particularly nurse managers) is important in order to determine topics to be covered as well as time and location of training, especially when planning face to face education. Length of the program should be a collaborative event with nurse managers as well as time of day in order decrease any conflicts with unit function (Griffith, 2013). When possible, consider offering the face to face classes during the evening and night shifts. Having the educator modify his/her schedule to accommodate all shifts decreases the need for nursing leadership to provide numerous hours of compensation or over time in order to train the night and evening shifts. Providing several sessions throughout the shift allows the nurse manager the option to rotate staff through the training session and provide coverage for the unit. Notifying nurse managers as soon as possible of training dates and providing follow up reminders allows an opportunity to incorporate training into staffing schedules. If possible, encourage managers of similar units to share staff in order to maximize staff participation in training. Calling nurse managers or supervisors the day of the training session can also help with attendance.

When notifying staff nurses of education and training opportunities it is highly recommended to remind them to seek permission from their supervisor. Informing staff of training can be in the form of an education calendar, email, fliers, reminders during staff meetings and through informal one to one communication. Awarding contact hours for

continuing education that is at least 30 minutes long may encourage nurses to attend training (Skees, 2010).

Educational offerings need to be tailored to meet the needs of the staff. The KASRP identified nurses' difficulty in applying pain principles to clinical settings as demonstrated by the answers to the case study questions. Incorporating simulation and case studies during the education session can provide the staff the opportunity to apply information, ask questions and receive feedback (Lewthwaite, et al., 2011; Pilcher & Bedford, 2011). Prior to dismissing participants, ask them to complete an evaluation form. Be sure to include questions regarding objectives, presenters, delivery method of information and a section asking the participant for feedback about what was enjoyed the most, suggestions for improvement and recommendations for future training. Reviewing this information can help to tailor future training sessions to meet the needs of the staff (Pilcher & Bedford, 2011; Skees, 2010).

Given the needs of a patient care area, face to face education and training may not always be a viable option. Providing education sessions through independent training modules either in paper or electronic form can provide staff with greater access to resources and education material (Griffith, 2013; Pilcher & Bedford, 2011). These modules can be used for just in time training or as part of an annual training requirement.

Summary

Prior to this study there was no documented evaluation of the nurses' knowledge and attitudes regarding pain at this facility. The project determined the need for additional education covering cancer pain and pain management, pharmacology of analgesics and adjunct medications.

References

- Al-Shaer, D., Hill, P. D., & Anderson, M. A. (2011). Nurses' knowledge and attitudes regarding pain assessment and intervention. *MEDSURG Nursing*, 20(1), 7-11. Retrieved from <http://proxy-hs.researchport.umd.edu/login?url=http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&N EWS=N&PAGE=fulltext&D=medl&AN=21446289>
- Donabedian, A. (1969). Quality of care: problems of measurement. II. Some issues in evaluating the quality of nursing care. *American Journal of Public Health and the Nations Health*, 59(10), 1833-1836.
- Donabedian, A. (1993). Avedis Donabedian: An interview. interview by Richard Baker. *Quality in Health Care*, 2(1), 40.
- Duke, G., Haas, B. K., Yarbrough, S., & Northam, S. (2013). Pain management knowledge and attitudes of baccalaureate nursing students and faculty. *Pain Management Nursing*, 14(1), 11-19.
- Ferrell, B. R., & McCaffery, M. (2012). *Knowledge and Attitudes Survey Regarding Pain*. Retrieved Feb 23, 2013 <http://prc.coh.org/Knowledge%20&%20Attitude%20Survey%2010-12.pdf>
- Goodrich, C. (2006). Students' and faculty members' knowledge and attitudes regarding pain management: A descriptive survey. *The Journal of Nursing Education*, 45(3), 140. <http://dx.doi.org.10.106/j.pmn.2012.12.06>

Griffith, S. (2013). Using action research to investigate and improve hospice staff participation in workplace education. *International Journal of Palliative Nursing*, 19(6), 302-308.

Jarrett, A., Church, T., Fancher-Gonzalez, K., Shackelford, J., Lofton, A. (2013). Nurses' knowledge and attitudes about pain in hospitalized patients. *Clinical Nurse Specialist*, 27(2), 81. doi: 10.1097/NUR.0b013e3182819133

Joint Commission (2012). Facts about pain management. Retrieved March 1, 2013 from http://www.jointcommission.org/pain_management/

Kobayashi, H., Takemura, Y., & Kanda, K. (2011). Patient perception of nursing service quality; an applied model of Donabedian's structure-process-outcome approach theory. *Scandinavian Journal of Caring Sciences*, 25(3), 419-425.

Kramer, M., Schmalenberg, C., & Maguire, P. (2010). Nine structures and leadership practices essential for a magnetic (healthy) work environment. *Nursing Administration Quarterly*, 34(1), 4-17.

Layman Young, J., Horton, F. M., & Davidhizar, R. (2006). Nursing attitudes and beliefs in pain assessment and management. *Journal of Advanced Nursing*, 53(4), 412-421. Retrieved from [http://proxy-
hs.researchport.umd.edu/login?url=http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&N
EWS=N&PAGE=fulltext&D=med4&AN=16448484](http://proxy-
hs.researchport.umd.edu/login?url=http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&N
EWS=N&PAGE=fulltext&D=med4&AN=16448484)

Lewthwaite, B., Jabusch, K., Wheeler, B., Schnell Hoehn, K., Mills, J., Estrella Holder, E., & Fedorowicz, A. (2011). Nurses' knowledge and attitudes regarding pain management in

hospitalized adults. *The Journal of Continuing Education in Nursing*, 42(6), 251-7. doi: 10.3928/00220124-20110103-03

Manias, E., Botti, M., & Bucknall, T. (2002). Observation of pain assessment and management—the complexities of clinical practice. *Journal of Clinical Nursing*, 11(6), 724-733.

McCaffery, M., & Ferrell, B. R. (1996). Correcting misconceptions about pain assessment and use of opioid analgesics: Educational strategies aimed at public concerns. *Nursing Outlook*, 44(4), 184-190. Retrieved from <http://proxy-hs.researchport.umd.edu/login?url=http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&N EWS=N&PAGE=fulltext&D=med4&AN=8872000>

McClanahan, E. & Wicks, C. (1993). *Future force: kids that want to, can, and do!* Chino Hills, CA: PACT Publishing.

Michaels, T., Hubbartt, E., Carroll, S., & Hudson Barr, D. (2007). Evaluating an educational approach to improve pain assessment in hospitalized patients. *Journal of Nursing Care Quality*, 22(3), 260-265. doi: 10.1097/01.NCQ.0000277784.14310.66

Pilcher, J. W., & Bedford, L. (2011). Willingness and preferences of nurses related to learning with technology. *Journal for Nurses in Professional Development*, 27(3), E10-E16.

Plaisance, L., & Logan, C. (2006). Nursing students' knowledge and attitudes regarding pain. *Pain Management Nursing*, 7(4), 167-175. doi: 10.1016/j.pmn.2006.09.003

Skees, J. (2010). Continuing education: a bridge to excellence in critical care nursing. *Critical Care Nursing Quarterly*, 33(2), 104-116.

Zacharoff, K. L., Pujol, L. M., & Corsini, E. (2010). *PainEDU.org manual A pocket guide to pain management* (fourth edition ed.). Newton, MA: Inflexxion.