

9-2017

Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management

Matthew Neumann
mpneumann@liberty.edu

Follow this and additional works at: https://digitalcommons.liberty.edu/nurse_grad_proj_schol



Part of the [Critical Care Nursing Commons](#), [Other Nursing Commons](#), and the [Perioperative, Operating Room and Surgical Nursing Commons](#)

Recommended Citation

Neumann, Matthew, "Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management" (2017). *Graduate Student Projects and Scholarship*. 11.
https://digitalcommons.liberty.edu/nurse_grad_proj_schol/11

This Article is brought to you for free and open access by the Graduate Program at Scholars Crossing. It has been accepted for inclusion in Graduate Student Projects and Scholarship by an authorized administrator of Scholars Crossing. For more information, please contact scholarlycommunications@liberty.edu.

A Scholarly Project
Submitted to the
Faculty of Liberty University
In Partial Fulfillment of
The Requirements for the Degree
Of Doctor of Nursing Practice
By
Matthew Paul Neumann
Liberty University
Lynchburg, VA
August, 2017

Scholarly Project Committee Approval:

Dr. Cynthia Goodrich, EdD, MSN, RN, CNE, Professor of Nursing, Chair, August 24, 2017

Dr. Lynne Sanders, EdD, MSN, RN, CNE, Professor of Nursing, Committee Member, August 24, 2017

Dr. Kenneth Thompson, Pharm.D., RPh, Associate Professor of Nursing, Committee Member, August 24, 2017

Liberty University

KNOWLEDGE AND ATTITUDES OF ORTHOPEDIC NURSES REGARDING PAIN

MANAGEMENT

A Scholarly Project

Presented to the

Faculty of Liberty University

In partial fulfillment of the requirements for the Degree of

Doctor of Nursing Practice

By

Matthew P. Neumann

August, 2017

Abstract

Nurses are at the forefront in the care of patient pain management; however, many nurses do not possess the knowledge, skills, and attitudes required for best pain management outcomes. Adequate pain management education is often infrequent in academic settings and in post-graduate health care environments. That shortcoming suggests a need to improve pain management education as advocated by The Joint Commission and U.S. Department of Health and Human Services. The purpose of this study is to measure 20 nurses' knowledge and attitudes regarding pain and pain management while working in an orthopedic setting. It was an evidence-based practice project utilizing a quasi-experimental approach to collect and analyze information gathered from pretest and posttest data employing the *City of Hope* "Knowledge and Attitudes Survey Regarding Pain" (2012). An education session was implemented following nurses completion of a pretest survey and a posttest survey completed subsequent to the education session. Conclusions were drawn through the application of descriptive statistics and *t*-test comparison of the two groups of surveys demonstrating efficacy of the pain education lessons. Concluding data supported the adoption of formal pain management education for nurses, improvement of nurses' knowledge and attitudes toward pain management, and improvement of patients' experience in coping with pain.

Keywords: pain, nurses, knowledge, attitudes, education, orthopedics

©2017

Matthew Paul Neumann

ALL RIGHTS RESERVED

Tables

Table One Sample by Group Statistics.....	27
Table Two Sample by Age of Registered Nurses.....	28
Table Three Sample by Years of Experience Working as a Registered Nurse.....	29
Table Four Sample by Receipt of Prior Pain Education.....	30

Figures

Figure One Bar Graph of Receipt of Prior Pain Education.....	31
--	----

Table of Contents

Title Page.....	2
Abstract.....	3
Tables.....	5
Figures.....	6
Table of Contents.....	7
Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management.....	9
Background.....	9
Problem Statement.....	10
Purpose of the Project.....	10
Clinical Question.....	11
Literature Review and Synthesis.....	12
Conceptual Framework.....	18
Methodology.....	20
Setting.....	20
Tools.....	21
Intervention and Data Collection.....	21
Feasibility Analysis.....	23
Evaluation, Analysis, and Dissemination.....	24
Design.....	24
Methodology.....	24
Sampling.....	24
Instrumentation.....	24

Data Collection.....	25
Statistical Analysis.....	25
Sample Results.....	26
Sample by Group Statistics.....	26
Sample by Age of Registered Nurses.....	27
Sample by Years of Nursing Experience.....	28
Sample by Receipt of Prior Pain Education.....	29
Qualitative Analysis.....	31
Significance and Implications.....	32
References.....	35
Appendices.....	40
Appendix A Permission to Use Iowa Model.....	40
Appendix B Knowledge and Attitudes Survey Regarding Pain.....	41
Appendix C Survey for Orthopedic Nurses.....	42
Appendix D Organization Letter of Support.....	44
Appendix E Education Session Outline.....	45
Appendix F CITI Report.....	47
Appendix G University Institutional Review Board Approval.....	48
Appendix H Health Care Facility Institutional Review Board Exemption.....	49
Appendix I Consent to Participate in Study.....	53

Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management

Effective management of acute and chronic pain is often challenging for healthcare workers in the United States. Pain affects the lives of approximately one-hundred million Americans and costs well over several hundred billion dollars annually for pain treatments and healthcare services (Institute of Medicine, 2012). In light of increasing knowledge and awareness of opioid abuse along with an all-time record of opioid related deaths in 2014, organizations such as the Institute of Medicine (IOM) and the U.S. Department of Health and Human Services (HHS) have endorsed efforts to improve understanding of pain management through research, prevention, and improved treatment strategies (HHS.gov website, 2016). Registered nurses are at the forefront of managing patient pain in hospitals; therefore, increasing pain management knowledge and refining attitudes for the nursing workforce may serve as the impetus for improving pain outcomes and patient satisfaction.

Background

Nurses working on orthopedic medical units frequently manage patients' acute, post-surgical, or post-traumatic pain and or chronic-pain disorder. Because of nurse shortages nationwide, hospital medical units are frequently understaffed and employ novice nurses, and or nurses with no formal pain management education academically and or as a post-graduate (Orsolini-Hain & Malone, 2007; Lewthwaite, Jabusch, Wheeler, Schnell-Hoehn, & Mills, 2011).

Additionally, nurses' personal experiences with pain, objective perceptions, and biases may also negatively influence pain management practices with patients. A study by Pronina and Rule (2014), found gender often impacts pain perceptions be it the patient's gender and or the gender of the nurse caring for the patient. Cumulatively, this may adversely result in poor pain

management, prevent maximum pain reduction, and decrease patient satisfaction with the healthcare institution providing care.

Implications for Practice

Literature reviews of numerous evidence-based research projects show that nurses continue to score poorly on knowledge and attitude assessments and surveys (Al-Shaer, Hill, & Anderson, 2011; Nuseir, Kassab, & Almomani, 2016; Voshall, Dunn, & Shelestak, 2013; Yava et al., 2013). In conjunction with the national push to improve pain management practices, supplementing pain knowledge among nurses and redirecting attitudes may improve pain outcomes and patient satisfaction. Should formal pain management education prove successful at the unit level, then perhaps the adoption of organization wide continuous education would (a) improve management practices, (b) improve attitudes and perceptions among nurses, (c) promote trust among patients toward the organization, and (d) raise patient satisfaction scores on the Hospital Consumer Assessment of Healthcare Provider Systems (HCAHPS) survey.

Problem Statement

It is in the interest of healthcare organizations to promote nurse competency to improve pain management and patients' pain experiences. Novice nurses lack of formal pain management education and the existence of common myths and misconceptions may contribute to less than ideal pain management practices and patient outcomes. These problems also may contribute toward prolonged length of stay in the orthopedic setting, delay physical healing, over burden bed occupancy, negatively affect patients' overall pain experience, and or adversely sway the reputation of the institution.

Project Purpose

The primary purpose of the project was to discern nurses' knowledge and attitude deficits regarding pain management in the orthopedic unit. The intent of the project was to narrow the knowledge gap, debunk myths and misconceptions, and improve pain management practices in this nursing population through the implementation of an education plan based on common deficits found through an extensive literature review. Demographic information was also collected on participants to identify any correlation with age, gender, and years of nursing experience. More notably, the study was aimed at specifically determining if prior pain management education had a direct impact on survey scores and in comparison to those who have not received pain education. The project is also committed to improving upon the overall patient pain experience as reflected by prospective HCAHPS survey scores.

Clinical Question

PICO

The PICO model (population, intervention, comparison, and outcome) was utilized in the development of a robust research question. The clinical question for the project was *Will a pain management education session improve knowledge and attitudes regarding pain management among orthopedic nurses?*

- Population – Orthopedic nurses including their age, gender, years of experience, and receipt of formal pain management education.
- Intervention – Implementation of a pain management education session based on commonalities found within the literature review.
- Comparison – Posttest data comparison to pretest data following implementation of the education plan.

- Outcome – Will the education plan improve nurses' knowledge and attitudes regarding pain management as demonstrable of survey scores and comparison?

The Knowledge & Attitudes Survey Regarding Pain (KASRP) questionnaire, developed by Betty Ferrell and Margo McCaffrey in 1987 (revised 2012), was used with the addition of demographic information including nurses' age, gender, years of experience, and the receiving of prior formal pain management education. Permission to utilize this instrument is described in a letter of introduction that accompanies the survey tool (Appendix B). Following the project implementation and data synthesis, it was recommended that the institution follow-up with subsequent HCAHPS scores to evaluate long-term efficacy of the project intervention.

Literature Review and Synthesis

A review of the literature concentrated on peer reviewed evidence-based practice research and studies analyzing knowledge, attitudes, and pain management among nurses. Articles and journals were accessed via EBSCO search engine, CINAHL plus, MEDLINE complete, and the Cochrane library. Keyword searches included: pain, knowledge, attitudes, pain management, nurse perceptions, pain education, and pain outcomes. Dates for the literature review ranged from 2001 to present including two Level I randomized controlled trials, four Level III controlled trials, four level IV case control and cohort studies, one level V descriptive study, and nine level VI descriptive and qualitative studies. Inferences made from the literature review identified gaps in knowledge and attitudes regarding pain and pain management, presence of common myths and misconceptions, poor assessment and reassessment techniques, as well as insufficient pain management education in both the setting of academia and healthcare institutions.

The call to improve upon and transform the nation's pain strategies is heavily influenced and endorsed by the Institute of Medicine, Department of Health and Human Services, and the Interagency Pain Research Coordinating Committee (The National Academies of Sciences, Engineering, and Medicine website, 2011). As a result, the IOM report conducted a compilation of strategies better known as the National Pain Strategy. Among these, and in accordance with the intent of the project, strategies include the (a) implementation of education programs, (b) training, (c) tools to enhance knowledge, (d) enhancement of assessment and reassessment skills, (e) interprofessional collaboration, and (f) continuous based learning modules for healthcare providers and clinicians (American Pain Society website, n.d.). Considering components of the National Pain Strategy, continuous quality improvement in pain management practices among nurses within healthcare organizations would serve as a stepping stone in improving pain disparities in the United States.

A prospective cross-sectional study performed by Ramia, Nasser, Salameh, and Saad (2017) indicate adverse outcomes regarding poor pain management. The researchers specify that poor pain control yields poorer overall health, increase morbidity and costs, contributes to the development of chronic pain, and reduces patient satisfaction with healthcare institutions (Ramia et al., 2017). It proposed that adequate pain control helps build upon a trust-based relationship with patients, their nurses and clinicians providing care, and with the health care delivery system. Recommendations are made suggesting that healthcare services should be charged with improving nursing knowledge and clarifying perceptions regarding pain management.

Poor pain assessment and reassessment strategies contribute to knowledge deficits among nurses managing pain (Schroeder et al., 2016). For example, many nurses often perceive a sleeping patient as experiencing little to no pain, resulting in missed opportunities to assess pain,

reassess pain after an intervention, and it may also result in poor pain control or achievement of comfort goals. This accounts for one of many myths and misconceptions among nurses concerning pain perceptions. A systematic review of twenty-three studies, performed by Ista, Dijk, and van Achterberg (2012), found that implementing assessment strategies in pain management education plans to be fundamentally effective in improving pain management strategies and patient outcomes.

Desai and Charturvedi (2012) report nursing students and novice nurses often possess misconceptions regarding pain, chronic pain management, poor perceptions regarding pain behaviors, and pain medication tolerances among patients. This frequently results in negative judgments of patients by nurses, labeling of patients for addiction seeking behaviors, and or perceiving chronic pain as a result of mental illnesses. The authors also support the adoption of pain curriculum and additional training in academic and institutional health care settings to clarify misconceptions that inhibit nurses from providing effective care.

In addition to misconceptions, Bernhofer and Sorrell (2014) found that poorly educated nurses often internalize and exhibit frustrations toward unsuccessful pain management skills and care of poorly controlled patients experiencing pain. Their qualitative study determined that nurse frustration often resulted in barriers to care, powerlessness, immoral practices/care, and an inability to ease patients' pain. Interviews revealed an important commonality among nurses: a need to improve nurse and provider education and communication to remove bias, improve collaboration for pain care, and decrease frustrations when pain relief for patients prove difficult.

A descriptive qualitative study by Wyson and Driver (2009), defines skill requirements as the need for interpersonal communication, critical thinking, and technical knowledge. In this study, patients often perceived nurse competency by nurses' ability to communicate compassion

and friendliness, which often portrays a sense of empathy and caring, whereas nurses' ability to critically think and deliver technical information often demonstrated a nurse's knowledge, education, and ability to translate knowledge in a comprehensible manner (Wysong & Driver, 2009). Likewise, improving upon nursing pain management knowledge will result in patients' perceiving nurses' as skillful clinicians and positively affects HCAHPS scores and the overall pain experience. Meeting patients' expectations regarding pain relief and outcomes depends greatly on their relationships with nurses and their perception of the nurses' skills, according to Bozimowski in a 2012 study.

Orthopedic nurses are frequently responsible for the care of post-surgery patients. A study by Johnson et al. (2015) points out adverse patient outcomes from poor pain management, including immobility, development of chronic pain, and delays in post-operative healing. Researchers Khatib, Razvi, Kulkarni, & Parab (2017) agreed but added two other adverse outcomes – longer hospital stays and overcrowding of medical/surgical units. Their research supposes that nurses' poor assessment knowledge, inconsistent use of assessment tools, lack of formal pain management education, poor compliance with pain guidelines and poor knowledge of pharmacology among nurses. Collectively, the examiners suggest and support the need for additional nurse training and pain education as they are in the best position to improve patients' pain experiences and clinical practice (Nuseir, Kassab, & Almomani, 2016).

An extensive survey and interview of 180 nurses from 14 hospital surgical wards, determined that nurse perceptions were significant barriers to effective pain management (Schafheutle, Cantrill, & Noyce, 2001). This includes cognizant and unmindful perceptions by nurses; meaning that nurses were frequently and unintentionally inferring personal objectivity during pain assessments, observation of patient behaviors, and the observance of sleeping

patients cannot be experiencing pain or severe pain. An intervention did not accompany this study but nurse perceptions/objectivity exists as barriers for effective pain management and that strategies for addressing personal bias, misconceptions, and objectivity should be included in the development of pain education programs.

A convenience sample of 129 nurses participating in a non-experimental descriptive design utilizing Ferrell and McCaffery's KASRP survey revealed a large majority of nurses possess inadequate knowledge and attitudes regarding pain (Al-Shaer, Hill, & Anderson, 2011). Among comparable demographics, novice nurses with less than five years of experience scored significantly lower than nurses with more years of experience. This study may indicate that novices do not yet possess skills of perception, interpretation, assessment and reassessment skills, and clinical knowledge to bring about best pain management outcomes and ensuing interventions. Implications by the study suggest that years of experience has a relevant effect on pain care and the adoption of education programs may supplement experience to bring about institutional improvement in pain care provided by nurses.

In another study of 96 nurses examining knowledge and attitudes toward pain management, a descriptive correlational design revealed that less than half of nurses utilized pain guidelines and possessed feelings of inadequate skills despite pain education in nursing school (Voshall, Dunn, & Shelestak, 2013). This study called for supplementary education that would deal with inadequacies in assessment skills, nurse bias, years of experience, and frequency and exposure to pain management opportunities. For example, post-surgical wards and oncology wards often afford nurses more opportunities to manage pain and build-up assessment and management skills (Schafheutle et al., 2001; Sloman, Rosen, Rom, & Shir, 2005; Rustoen et al., 2014). Voshall, Dunn, and Shelestak (2013) suggest that post-graduate learning opportunities

are needed to narrow the gap and supplement knowledge gleaned from academia to clinical practice.

A quasi-experimental study by Ghandehari et al. (2013) utilized the implementation of a pain education program for long-term care staff members. It found knowledge deficits among clinicians, and the efficacy of an education plan proved to benefit staff knowledge and assessment techniques, especially for patients diagnosed with cognitive impairment such as dementia and Alzheimer disease. The authors postulate that pain education will lead to improved pain strategies among clinicians and advance the patient-caregiver relationship.

Grant, Ferrell, Hanson, Sun, and Uman (2011) support the need for pain management education among nurses for long-term and sustaining pain management outcomes for patients. They report that nurses lack formal pain education and personal knowledge resulting in one of the many causes of poor pain management and outcomes (Grant, Ferrell, Hanson, Sun, & Uman, 2011). In a cohort study of 783 nurses, researchers found that a large majority of nurses reported an improvement in personal comfort in the care of pain management, increased use of non-pharmaceutical techniques, and retention of pain skills following an education intervention (Grant et al., 2011). The authors propose that data within their study would support decisions of healthcare institutions to implement pain management education for the advocacy of patients.

In a descriptive cross-sectional study regarding knowledge and attitudes about pain, Yava et al. (2013) found that nurses with formal pain management education scored significantly higher on knowledge and attitudes surveys compared to those who have not. Comparison of survey scores between nurses having received post-graduate pain education coursework with those who have not demonstrates an integral need for additional pain management education for nurses. In a quasi-experimental study of similar interest, Linkewich et al. (2007) implemented

pain education courses for their organizations employees at the micro level. Outcomes proved significantly beneficial, so much so that the studied clinical site resulted in mass adoption of education at the meso level for numerous units and locations within their health care facilities.

Adoption of care algorithms are increasing as a result of continuing evidence-based research guided practices intent on providing quality and continuity of care (Institute of Medicine, 2001). Considering the fact that individuals vary from one another, one could postulate from the aforementioned literature review that pain knowledge, delivery, and management varies from nurse to nurse and toward individual patients. In a recent process improvement study, researchers propose variations in care delivery when algorithms and protocols do not exist (Botti et al., 2014). As a result, it suggested that algorithms be implemented to reduce variations in pain management, improve consistency and adherence to guidelines, deliver quality care based on evidence, and improve therapeutic responses to interventions. Implementation of evidence-based pain management education may yield similar results when a collective of nurses each possess the same knowledge, skills, and resources.

Conceptual Framework

The Iowa Model (2015) Revised: Evidence-Based Practice to Promote Excellence in Health Care served as the central framework for this evidence-based practice project. According to triggers described within the literature review, the Iowa Model supported the project as it guided identification of clinical issues and practice decisions, implemented knowledge transformation, and incorporates research into clinical practice. The Joint Commission supports national efforts and the opportunity for organizations to develop patient centered strategies that effectively treats patients' pain as well as improving clinician education, pain assessment, clinical judgement, and pain management practices (The Joint Commission website, 2016). A

letter supporting permission to utilize the Iowa Model was obtained (Appendix A). The team consisted of the project leader and the scholarly project committee in which the chairperson is an expert on research, pain, and possesses experience in orthopedic nursing.

The first decision point indicated in the Iowa Model led to the identification of knowledge and attitude deficits among nurses, lack of formal pain management education, and a national initiative to improve upon holistic pain management approaches expounded from an extensive literature review. The national initiative trigger supported the aforementioned goals set by The Joint Commission, IOM, and HHS charging healthcare organizations with the task of improving pain practice and outcomes as a national and organizational urgency (HHS.gov website, 2016). The next decision point in the Iowa Model beckons topic priority and represented national initiatives and the chosen organizations strategic plan to conduct the research project. A team was formed consisting of a Doctor of Nursing Practice (DNP) student, serving the role of the project leader, guided by the scholarly project committee and pain expert chairperson.

The next decision point exemplified the above-mentioned literature review and functioned as the body of evidence supporting the grounds for having conducted the research project. A letter of support obtained from the orthopedic unit manager demonstrated stakeholder buy-in signifying support for the EBP study and served as a pilot study for the organization should program adoption be desired. Data collection, learning outcomes, and use of EBP guidelines were chosen by the project leader to guide and implement interventions for the staff nurses on the orthopedic unit. The final decision point, appropriateness for change adoption, was based on statistical analysis concluded from data comparison. Change adoption, in the form of acquiescent pain management education for the organizations nurses, was supported by the

research outcomes with the recommendation for the organization to examine prospective outcomes represented by future HCAHPS surveys.

Methodology

Guided by the Iowa Model, the venture was an Evidence-Based Practice (EBP) project having utilized a quasi-experimental approach to collect and analyze data. This consisted of utilizing a pretest/posttest composition with the implementation of an education plan tailored toward knowledge and attitude deficits inferred from existing literature of similar interests. The KASRP is a well-established and validated 37 question survey consisting of 22 True/False and 15 multiple choice questions with two case scenario questions. Permission to utilize, duplicate, and select specific questions, in part or in whole, was obtained (Appendix B) with a sample survey of the chosen questions for this study listed as appendix C.

The orthopedic unit of interest employed approximately forty registered nurses at the time of the study and the desired sample size ranged from twenty to thirty nurses. The research project used a non-random non-probability convenience sample. The project did not intend to analyze knowledge and attitudes regarding race, ethnicity, or religion and therefore was not subject to cultural or ethical biases. Consent was obtained via participatory agreement and depicted as a disclosure on the pretest survey in addition to verbal notification prior to participation with emphasis placed on autonomy and confidentiality of responses and data recording (Appendix I).

Setting

The setting for the project was an acute care hospital in the southeastern United States. Having performed this project at this location would, in part, be congruent toward the organizations strategic plan. According to the organizations recent Community Health Needs

Assessment and Implementation Plan, the project may be compatible with the hospital's commitment to improve prescribing practices, use of alternative medicine for pain management, and set straight stigma and typecasting of staff members toward drug administration and or addiction (anonymous healthcare website, 2017). A letter of support was obtained from the orthopedic unit manager and can be found in appendix D accompanying this document.

Tools

The Iowa Model (2015) served as the conceptual framework guiding the project as it equally functions as the structure utilized by the organization. It is established to be a credible tool in implementing research into practice, transform knowledge, and guide changes in clinical practice. The Iowa Model guided the project leader in using a systematic approach to identify knowledge and attitudes among orthopedic nurses as depicted by pretest data, aided the development and implementation of an education plan, in formulating analysis of posttest outcomes through comparative evidence, and in evaluating the need for a change in pain management education.

The KASRP is a tool designed to evaluate knowledge and attitudes among a variety of health care providers. It has been found to be a useful tool in measuring knowledge and attitudes about pain, pain management, as well as evaluating efficacy of pain education and measuring outcomes (MIDSS.org website, n.d.).

The Intervention and Data Collection

Implementation of the project consisted of three phases, which included:

1. Administration of a pre-education survey.
2. Subjects participated in an education session.
3. Administration of a post-education survey.

The content of the pretest survey derived from the aforementioned KASRP survey. Among the 37 questions available for use, 22 were chosen for this study. The decision to dismiss 15 questions was preferred based on eliminating queries regarding cancer pain, care of the pediatric population, and removal of the two case scenarios owing to time constraints for critical thinking and the education session. Nurse participation in the study occurred in singles and small groups of two to three nurses so that the educational session could be delivered during meal breaks. The education session did not occur in the presence of nurses who have not already participated in the study nor during completion of pre/post-education surveys to avoid disclosing information that could skew data. Nurses were provided the appropriate participatory consent in addition to verbalizing consenting procedures by the project leader and the written consent was made available upon request.

Pretest process. Following approval/exemption from the organizations institutional review board, the project leader implemented the pretest KASRP survey during nurse meal breaks on the orthopedic unit. Data collection occurred until the acquisition of a minimum sample size of $n = 20$ registered nurse participants was obtained. Nurses completed the pretest survey anonymously without the aide or consultation of the project leader or nurse colleagues. A final sample size of $n = 21$ surveyed participants was obtained.

Education/Intervention. Following completion of the pretest phase, the project leader delivered a Power Point presentation of about 15 minutes and it served as the method for delivering the pain education phase. The education plan addressed common deficiencies inferred from the literature review and pain related topics on knowledge, attitudes, objectivity, subjectivity, common myths and misconceptions, and use of pharmaceutical, non-

pharmaceutical, and adjuvant medication use. A summarized description of the education plan and topics discussed can be found within appendix E.

Posttest process. Once the education session was completed, nurses were administered a posttest survey. The survey consisted of the same questions used in the pretest; however, the posttest survey included additional qualitative questions which can be viewed accompanying the survey in appendix C. The final step of the project followed immediately after the education presentation and nurse participation must have occurred in all three phases as part of the inclusion criteria.

Data collection and team members. Following survey collection; the 21 surveys were individually and anonymously placed by the participating nurses in manila envelopes. Gathered data was then analyzed with pretest/posttest data subjected to a *t*-test comparison where outcomes were concluded. Use of additional team members were not required to perform the project; however, interprofessional collaboration with the unit manager and orthopedic nurse practitioner who is frequently responsible for managing post-operative pain were available for consultation.

Feasibility Analysis

A thorough examination of the proposed evidence-based practice project demonstrated practical feasibility and timeliness for completion. Required resources included: physical space for surveying and educating nurses (I.e. unit breakroom), personal office space, personal computer, telephone, printer/copy/scanning machine, data software (Microsoft Word Excel Spreadsheet), presentation materials (Power Point presentation and projector), *Knowledge & Attitudes Survey Regarding Pain*, and various file folders for survey collection and lock and key storage.

Evaluation, Analysis and Dissemination

Design

The project design is an evidence-based practice project utilizing a quasi-experimental approach to gather and analyze data. The project followed the Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care algorithm (University of Iowa Hospitals & Clinics website, 2015). Prospectively, the small sample size examined may allow the orthopedic unit to serve as a pilot study should the organization decide to implement further pain studies following dissemination of the study's conclusions.

Methodology

Centering on the scholarly project inquiry, the quasi-experimental methodology served the purpose in discovering if deficiencies of knowledge and attitudes regarding pain existed among the orthopedic nurses and whether or not an education plan will improve deficits. Objectives included inferring and generalizing knowledge and attitude deficits as demonstrated by the pretest survey, measuring the efficacy of the education plan, and knowledge retention reflected in posttest survey comparison and analysis.

Sampling

The orthopedic nurses functioned as the sole population examined in this study. Due to geographical limitations, one orthopedic unit was surveyed at a single acute care hospital. This limited an available sample size of no greater than forty nurses. The desired minimal sample size chosen was $n = 20$. The reduction in the available sample size was chosen, in part, due to the potential lack of nurse participation/volunteering, attrition, and incomplete survey submissions.

Instrumentation

Data measurement was obtained by use of Ferrell and McCaffery's (2012) KASRP serving as the pretest and posttest surveys. The validity of the construct and content of the survey has been time-honored and made reputable by pain expert clinicians and healthcare clinicians with reliability scored at $\alpha r > .70$ (MIDSS.org website, 2008). A simple survey accompanied the KASRP survey which only inquired upon the aforementioned demographic information and receipt of prior formal pain management education.

Data Collection

The KASRP survey is an anonymous and confidential document that did not possess any identifiable information linking individual participants in the study. The surveys were grouped and analyzed as a collective whole with inferences made based on total percentages of questions answered correctly and incorrectly. Access to data was limited to the project leader and project committee members; however, dissemination of data would be made available for the health care organization upon request. Public access is restricted with data points stored via password secured computer and surveys are kept in a secured lock and key filing cabinet. Storage of data will be retained until the three year federal regulation and retention allows for data destruction and deletion (Institutional Review Board, 2015).

Statistical Analysis

Collection of data for this evidence-based practice project concluded at either the receipt of the minimum sample size or over the course of no more than a four week period. Data analysis, as depicted in tables below, demonstrate commonalities between demographic questions, survey questions, as well as differences inferred via post-intervention *t*-test comparison. Demographic questions querying nurse age and years of nursing experience are represented in percentages of correct/incorrect answers to both the pretest and posttest; receipt of

formal pain education was subjected to a t-test comparison to discern the effects of pain education on survey outcomes. Any incomplete surveys were omitted and was subjected to exclusion in data analysis. Because male nurses were not surveyed or employed on the orthopedic unit during the study, the demographic question addressing gender was omitted from evaluation.

Sample results. The final pairs of survey sample size obtained was $n = 21$ with the decision to finish data collection based on time constraints for the project deadline. Although 21 pairs of pretests and posttests were received, only 20 pairs of surveys were finished to completion and inclusion criteria. Therefore, the individual incomplete pairs of surveys were not included in data synthesis with a final sample size of $n = 20$ female registered nurses.

Sample by group statistics. Collectively, data analysis examined the correctness of pretest and posttest surveys and then were compared to determine the overall efficacy of the education session. Table one depicts the amount of correctly answered questions in the pretest (340) out of a possible 440 answers. The pretest average, or mean of scores, equated to 16.95 (77% accuracy) correctly answered questions with a variance of 5.65 questions; meaning that there was a wide range of correct and incorrect responses and may reflect a gap in knowledge regarding pain. Posttest evaluation demonstrated improved correct responses of 361 questions, a mean score of 18.1, a narrowed variance (1.49), and an improved accuracy of 82.2%. Outcomes appraisal portrays an improvement in 21 questions, increased mean (+1.15), a reduction in variance (-4.16), and an improved accuracy of +5.2%. Although outcomes may not demonstrate significant statistical differences, it does however; exhibit positive results stemming from the education plan. More importantly, the improved mean and narrowed variance affirms a reduction of incorrect responses to questions and minimized the knowledge gap.

Table 1 Sample by Group Statistics ($n = 20$)

Survey	Correct Answers	Mean	Variance	Accuracy
Pre-test	340 / 440	16.95	5.65	77%
Post-test	361 / 440	18.1	1.49	82.2%
Outcomes	+ 21	+ 1.15	- 4.16	+ 5.2%

Sample by age of registered nurses. Nurses were asked to categorize themselves into one of five specified age ranges as part of the demographic survey. One-hundred percent of nurse participants responded to this demographic inquiry. One nurse represented 5% of the total sample size for age group 18-22 years and demonstrated the lowest pretest score (59% accuracy) and the lowest posttest score (77% accuracy); however, this age range demonstrated the highest improvement in survey accuracy (+18%). Two nurses represented 10% of the sample size for age group 23-25 revealing a mild improvement in pretest posttest outcome of +2.2% accuracy. The largest sample size existed in the age range of 26-30 years. Eight nurses (40%) characterized this demographic with pretests and posttest accuracy of 80% and 83.5% respectively with an improvement outcome of +3.5%. Similarly, four nurses responded to the 31-40 year age group (20%) also scoring marginally above 80% on both the pretest and posttest; however, this group demonstrated the lowest improvement in score outcomes (+1.2%) compared to the other age groups. Finally, five nurses comprised of the age 41+ group scored below 80% accuracy in the pretest and above on the posttest with the second highest improved outcome of +8.2%. Conclusions may indicate that the youngest, and likely most inexperienced nurse, had the most knowledge to gain from the education session. Alternatively, the eldest nurses may have demonstrated outcomes improvement based on enhancement of knowledge and rectifying adverse bias, myths, misconceptions, and poor attitudes as reflected in the literature review.

Table 2 Sample by Age of Registered Nurses

Age (Years)	# of RNs (%)	Pretest %	Posttest %	Outcome %
18 – 22	1 (5%)	59	77	+ 18
23 – 25	2 (10%)	77.3	79.5	+ 2.2
26 – 30	8 (40%)	80	83.5	+ 3.5
31 – 40	4 (20%)	81.8	83	+ 1.2
41 +	5 (25%)	73.6	81.8	+ 8.2

Sample by years of nursing experience. Nurses were also instructed to indicate their years of experience into one of five subgroups as seen in Table 3. Unlike demographic responses observing age, years of experience had a more diverse participation and even spread number of nurses. Nurses indicating their age with less than one year and six to ten years of experience subgroup demonstrated the greatest improvement in outcome percentages, +8.8% and 10.9% respectively. Interestingly, nurses reporting greater than 11 years of experience, and presumably the eldest of nurses surveyed, showed a minor decline in posttest scores when compared to pretest scores (-0.8%). An assumption for the cause could be concluded based on nurses completing school during their early twenties. In conjunction, nurses within the 31-40 year age group demonstrated the least improvement from the education session supporting this assumption.

Table 3 Sample by Years Working as a Registered Nurse

Experience	# of RNs	Pretest %	Posttest %	Outcome %
< 1 year	3	70	78.8	+ 8.8
1-2 years	2	86.4	88.6	+ 2.2
3-5 years	4	77.3	83	+ 5.7
6-10 years	5	72.7	83.6	+ 10.9
11+ years	6	81.1	80.3	- 0.8

Sample by receipt prior of pain education. Serving as the most valuable data set and in congruence with the clinical question, “*Will a pain management education session improve knowledge and attitudes regarding pain management among orthopedic nurses*”, the project leader considered whether prior formal pain management education had significant variances in accuracy and post-intervention outcomes. Although there were five total subgroups querying prior pain education, only three subgroups were found to possess significant replies and relative information where conclusions could be drawn. Table 4 represents the three questions of interest which include; (a) no receipt of pain education, (b) receipt of pain education while in nursing school (academia), and (c) receipt of pain education in both the academic setting and health care organization workplace. Among the discarded responses to this demographic question, only one nurse reported having only received pain education provided by a professional nursing organization. Considering the potential for inaccurate data from a single data set, this one subgroup was not included and a final sample size of $n = 19$ nurses were examined.

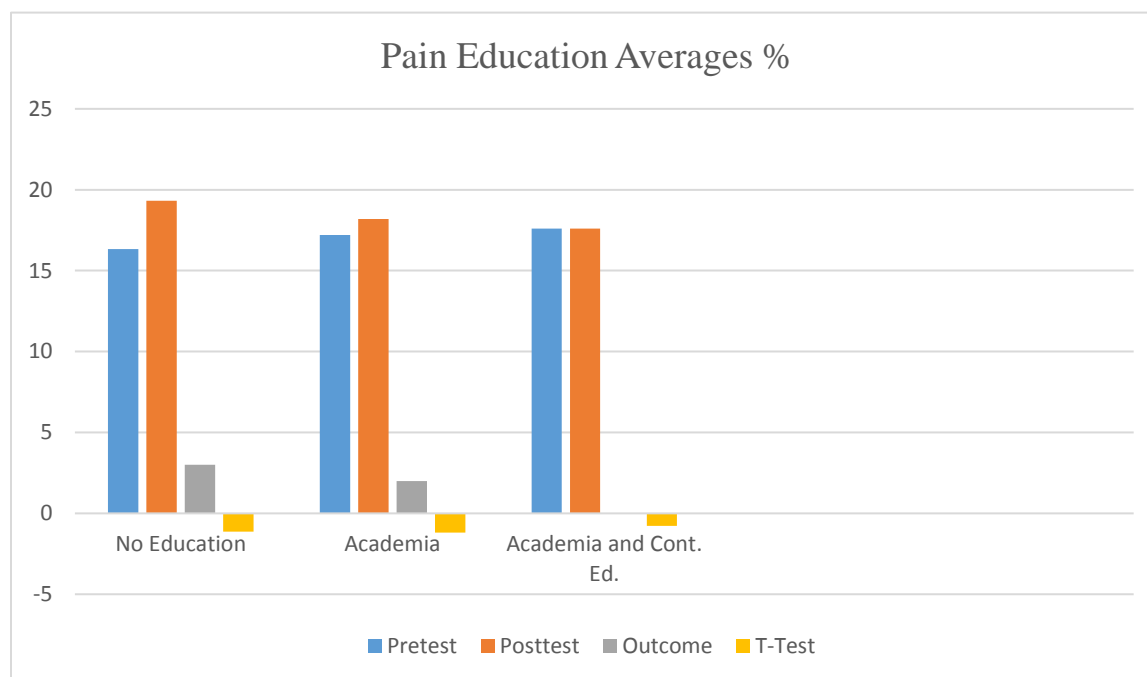
In observance of Table 4, three nurses responded to never having received pain management education prior to this study. This group not only scored the lowest pretest average

(16.33), but they also demonstrated the most improved as demonstrable of the posttest mean (19.33), an improvement of three questions. Six nurses reported receiving pain education in nursing school only and scored slightly higher at 17.2 on the pretest with an improved average of one question on the posttest (18.2). One half of the nurse respondents ($n = 10$) reported having received pain education while in nursing school and while working for a health care organization. This subgroup had the highest pretest average (17.6) but did not demonstrate an improvement in knowledge and attitudes when comparing responses with their posttests (17.6).

Table 4 Sample by Receipt of Prior Pain Education ($n = 19$)

Pain Education	# of RNs	Pretest Mean	Posttest Mean	Outcome	T-Value
No Pain Ed.	3	16.33	19.33	+ 3	- 1.13
Academia	6	17.2	18.2	+1	- 1.19
Academia & Cont. Ed.	10	17.6	17.6	0	- 0.78

Figure 1 Bar Graph of Receipt of Prior Pain Education



Qualitative analysis. In addition to the use of the KASRP survey, additional qualitative information was voluntarily solicited attached to the posttest survey. Prompts included:

- “What would you like to learn more about pain?”
- “What did you learn today that you did not previously know?”
- “What would you suggest would better enhance your knowledge?”

Among the twenty nurses surveyed, eleven responded to at least one or more prompts. When queried about what they would like to learn, general responses indicated the desire to improve upon treating patients with difficult or unrelieved pain (I.e. opioid dependency, chronic opioid usage, and patients with chronic severe pain), how to improve upon interprofessional collaboration and communication with providers, and more about appropriate use of adjuvant pain therapies. Many nurses indicated that they did not know about the use of alternative pain medications (adjuvants such as benzodiazepines, anti-convulsants, and anti-depressants), efficacy and appropriateness of adjuvants for both acute and or chronic pain disorders, and

ethical/legal ramifications of use of placebo interventions. Suggestions of respondents toward enhancing pain knowledge collectively requested additional and more frequent pain management education and learning more about difficult pain management strategies.

Significance and Implications

The purpose of this evidence-based practice project was to determine the efficacy of an education session regarding pain and pain management for a small sample of orthopedic nurses in an acute care hospital. According to data analysis and comparison, the educational sessions provided nurses an overall increase in knowledge. Although the survey utilized for this study correspondingly addressed knowledge and attitudes regarding pain management, an actual separation from knowledge and attitudes was indiscernible without additional qualitative and subjective reporting. Dissemination of the study results was provided to the target organization's nursing research council to plea for pain education and to advocate for nurse competency, patient outcomes, and the overall hospital experience.

Study limitations include the small sample size of nurses' surveyed, time constraints and dissemination of the content in the education session, and or participant willingness to learn and adopt a change in clinical practice. Although short term outcomes proved the education session to be constructive, time constraints of the project limited evaluation of long term results. The project leader suggests the target organization monitor prospective HCAHPS scores in comparison to retrospective data as well as replication of the project to obtain additional information and efficacy of succeeding education programs.

During the time of this study, pain reporting gathered from HCAHPS surveys did not directly attribute to monetary reimbursements tied to Medicare and Medicaid; however, it is projected that satisfaction scores pertaining to the pain experience may return as the query to

pain management remains a part of the HCAHPS questionnaire. Until then, the pain experience may affect the overall satisfaction, perceptions, and reporting in HCAHPS surveys subsequently contributing to incentives and reimbursements by the Centers for Medicare and Medicaid Services (CMS) (CMS.gov, 2014). Funds received by CMS are often utilized to update and expand health care services further building upon the importance of including pain education as a goal for continuous quality improvement measures.

Furthermore, for approximately the past three years, new graduate nurses without prior experience were required to attend a Nurse Residency Program (NRP). In this program, novice nurses participated in competency workshops to further enhance knowledge gleaned from nursing school and in efforts to reduce adverse patient outcomes such as infections, falls, and errors in patient care delivery. Among these competencies, nurses were provided education, coaching, and strategies to better enhance knowledge and skills in managing pain. It is further suggested that the organization include querying long-term outcomes of the pain management education provided for NRP participants. This will allow for the organization to evaluate the efficacy of their current pain management education, enhance training modules for nurses who have not participated in the NRP, and rouse development of education programs as requested by nurses gathered from qualitative reporting in this study.

The orthopedic unit in this study may serve as a pilot for the organization should the decision to adopt continuing education for additional units and affiliated health care service locations. Adoption of additional pain education will, in accordance to professional and national initiatives, serve as one of the many aforementioned strategies for improving pain at the micro/meso level. In doing so, pain education will improve nurse knowledge and attitudes regarding pain, alleviate adverse outcomes for patients, discredit myths and misconceptions,

promote trust between clients and the health care organization, and add value toward patient satisfaction, improve HCAHPS scores, increase reimbursements, and improve clinical practice.

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://ezproxy.liberty.edu/login?url=https://search-proquest-com.ezproxy.liberty.edu/docview/851871375?accountid=12085>
- American Pain Society website. (n.d.). Retrieved from https://iprcc.nih.gov/docs/HHSNational_Pain_Strategy.pdf
- Bernhofer, E. I., & Sorrell, J. M. (2014). Nurses managing patients' pain may experience moral distress. *Clinical Nursing Research*, 24(4), 401-14. <http://dx.doi.org/10.1177/1054773814533124>
- Botti, M., Kent, B., Bucknall, T., Duke, M., Johnstone, M., & Considine, J. (2014). Development of a management algorithm for post-operative pain (MAPP) after total knee and total hip replacement: Study rational and design. *Implementation Science*, 9, 110. <http://dx.doi.org/http://dx.doi.org.ezproxy.liberty.edu/10.1186/s13012-014-0110-3>
- Bozimowski, G. (2012). Patient perceptions of pain management therapy: A comparison of real-time assessment of patient education and satisfaction and registered nurses perceptions. *Pain Management Nursing*, 13(4), 186-93. <http://dx.doi.org/https://doi-org.ezproxy.liberty.edu/10.1016/j.pmn.2010.04.004>
- Crossing the quality chasm: A new health system for the 21st century. (2001). Retrieved from [http://www.nationalacademies.org/hmd/~media/Files/Report Files/2001/Crossing-the-Quality-Chasm/Quality Chasm 2001 report brief.pdf](http://www.nationalacademies.org/hmd/~media/Files/Report%20Files/2001/Crossing-the-Quality-Chasm/Quality%20Chasm%202001%20report%20brief.pdf)
- Desai, G., & Chaturvedi, S. (2012). Pain with no cause! Nurses' perception. *Indian Journal of Palliative Care*, 18(3), 162. Retrieved from

http://ezproxy.liberty.edu/login?url=http://go.galegroup.com.ezproxy.liberty.edu/ps/i.do?p=ITOF&sw=w&u=vic_liberty&v=2.1&it=r&id=GALE%7CA317504100&sid=summon&asid=9038e872195c168d2c0bebef0051521

Ghandehari, O., Hadjistavropoulos, T., Williams, J., Thorpe, L., Alfano, D., Bello-Haas, V., ...

Lix, L. (2013). A controlled investigation of continuing pain education for long-term care staff. *Pain Research & Management: The Journal of the Canadian Pain Society*, 18(1), 11-18. Retrieved from

<http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/1348582162?accountid=12085>

Grant, M., Ferrell, B., Hanson, J., Sun, V., & Uman, G. (2011). The enduring need for the pain resource nurse (PRN) training program. *Journal of Cancer Education*, 26(4), 598-603.

<http://dx.doi.org/10.1007/s13187-011-0268-1>

Institutional Review Board. (2015). Liberty University

Ista, E., Van Dijk, M., & Van Achterberg, T. (2012). Do implementation strategies increase

adherence to pain assessment in hospitals? A systematic review. *International Journal of Nursing Studies*, 50(4), 552-68. <http://dx.doi.org/> <https://doi-org.ezproxy.liberty.edu/10.1016/j.ijnurstu.2012.11.003>

Khatib, S., Razvi, S., Kulkarni, S., & Parab, S. (2017). A survey of the current acute post-operative pain management practices in tertiary care teaching hospitals in Maharashtra.

Indian Journal of Anaesthesia, 61(3), 215. Retrieved from

http://ezproxy.liberty.edu/login?url=http://go.galegroup.com.ezproxy.liberty.edu/ps/i.do?p=AONE&sw=w&u=vic_liberty&v=2.1&it=r&id=GALE%7CA486824467&sid=summon&asid=bf8913544c55623b6702cb0b8c176f00

- Linkewich, B., Sevean, P., Habjan, S., & Poling, M. (2007). Educating for tomorrow: Enhancing nurses' pain management knowledge. *The Canadian Nurse*, 103(4), 24-8. Retrieved from <http://ezproxy.liberty.edu/login?url=https://search-proquest-com.ezproxy.liberty.edu/docview/232038800?accountid=12085>
- Lewthwaite, B. J., Jabusch, K. M., Wheeler, B. J., Schnell-Hoehn, K. N., & Mills, J. (2011). Nurses' knowledge and attitudes regarding pain management in hospitalized adults. *The Journal of Continuing Education in Nursing*, 42(6), 251-57. <http://dx.doi.org/http://dx.doi.org.ezproxy.liberty.edu/10.3928/00220124-20110103-03>
- MIDSS.org website. (2008). Retrieved from http://www.midss.org/sites/default/files/37ccounted__attitude_survey_10-12.pdf
- MIDSS.org website. (n.d.). Retrieved from <http://www.midss.org/content/knowledge-and-attitudes-survey-regarding-pain-kasrp>
- Nuseir, K., Kassab, M., & Almomani, B. (2016). Healthcare providers' knowledge and current practice of pain assessment and management: How much progress have we made? *Pain Research & Management: The Journal of the Canadian Pain Society*, 1-7. <http://dx.doi.org/http://dx.doi.org.ezproxy.liberty.edu/10.1155/2016/8432973>
- Orsolini-Hain, L., & Malone, R. E. (2007). Examining the impending gap in clinical nursing expertise. *Policy, Politics, & Nursing Practice*, 8(3), 158-69. <http://dx.doi.org/10.1177/1527154407309050>
- Pronina, I., & Rule, N. O. (2014, November). Inducing bias modulates sensitivity to nonverbal cues of others' pain. *European Journal of Pain*, 18(10), 1452-57. <http://dx.doi.org/10.1002/ejp.510>

- Ramia, E., Nasser, S. C., Salameh, P., & Saad, A. H. (2017). Patient perception of acute pain management: Data from three tertiary care hospitals. *Pain Research & Management: The Journal of the Canadian Pain Society*, 1-12.
<http://dx.doi.org/http://dx.doi.org.ezproxy.liberty.edu/10.1155/2017/7459360>
- Relieving pain in America: A blueprint for transforming prevention, care, education, and research. (2012). Retrieved from
<http://www.nationalacademies.org/hmd/~media/Files/Report%20Files/2011/Relieving-Pain-in-America-A-Blueprint-for-Transforming-Prevention-Care-Education-Research/Pain%20Research%202011%20Report%20Brief.pdf>
- Rustoen, T., Valeberg, B., Kolstad, E., Wist, E., Paul, S., & Miaskowski, C. (2014). A randomized clinical trial of the efficacy of a self-care intervention to improve cancer pain management. *Cancer Nursing*, 37(1), 34-43.
<http://dx.doi.org/10.1097/NCC.0b013e3182948418>
- Schafheutle, E. I., Cantrill, J. A., & Noyce, P. R. (2001). Why is pain management suboptimal on surgical wards? *Journal of Advanced Nursing*, 33(6), 728-37.
<http://dx.doi.org/10.1046/j.1365-2648.2001.01714.x>
- Sloman, R., Rosen, G., Rom, M., & Shir, Y. (2005). Nurses' assessment of pain in surgical patients. *Journal of Advanced Nursing*, 52(2), 125-32. <http://dx.doi.org/10.1111/j.1365-2648.2005.03573.x>
- The Joint Commission website. (2016). Retrieved from
https://www.jointcommission.org/joint_commission_statement_on_pain_management/

The National Academies of Sciences, Engineering, and Medicine website. (2011).

<http://www.nationalacademies.org/hmd/Reports/2011/Relieving-Pain-in-America-A-Blueprint-for-Transforming-Prevention-Care-Education-Research.aspx>

The opioid epidemic: By the numbers. (2016). Retrieved from

<https://www.hhs.gov/sites/default/files/Factsheet-opioids-061516.pdf>

University of Iowa Hospitals & Clinics website. (2015). Retrieved from <https://uihc.org/iowa-model-revised-evidence-based-practice-promote-excellence-health-care>

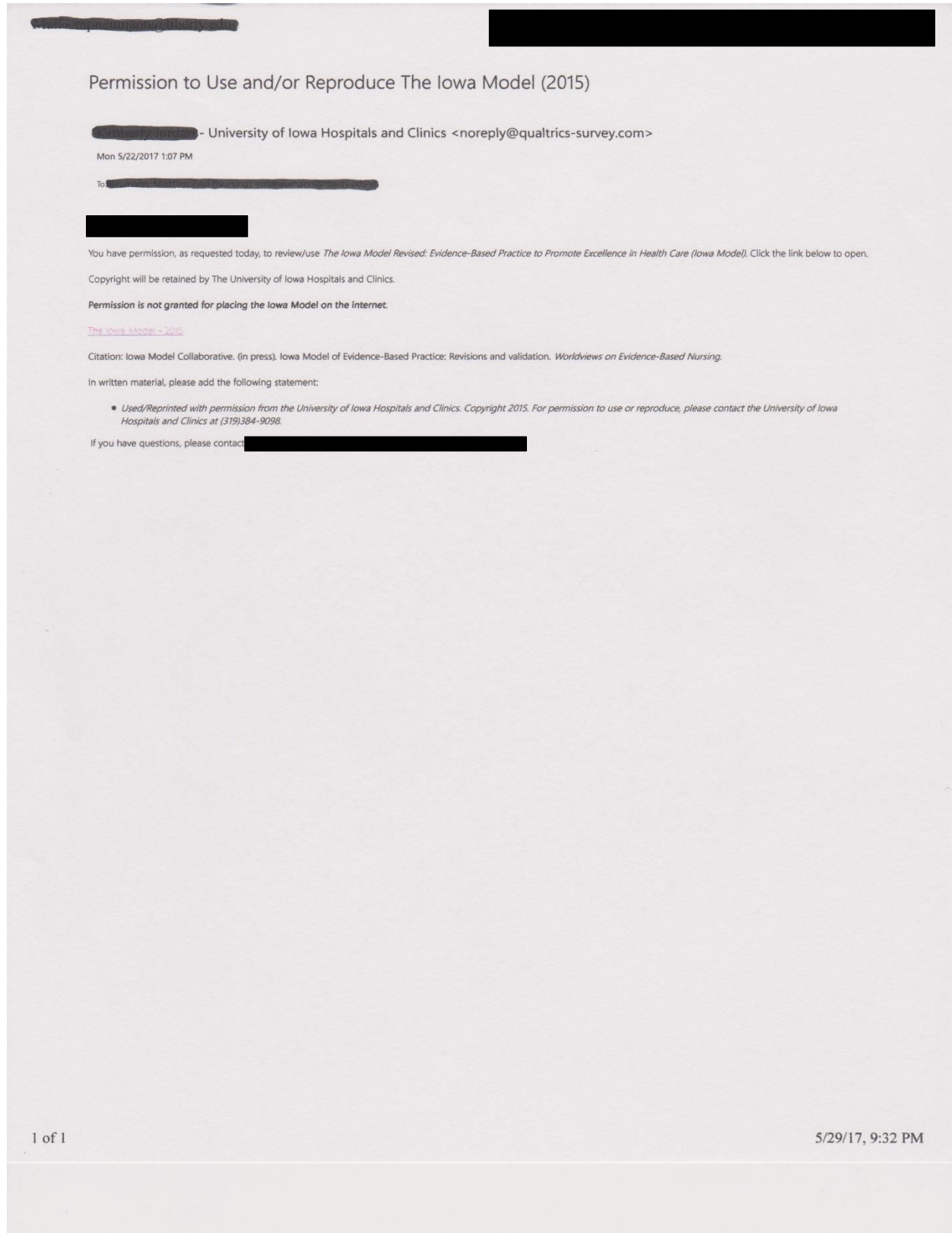
Voshall, B., Dunn, K. S., & Shelestak, D. (2013). Knowledge and attitudes of pain management among nursing faculty. *Pain Management Nursing*, 14(4), 226-35.

<http://dx.doi.org/https://doi-org.ezproxy.liberty.edu/10.1016/j.pmn.2012.02.001>

Wysong, P. R., & Driver, E. (2009). Patients' perceptions of nurses' skill. *Critical Care Nurse*, 29(4), 24-37. <http://dx.doi.org/10.4037/ccn2009241>

Yava, A., Cicek, H., Tosun, N., Ozcan, C., Yildiz, D., & Dizer, B. (2013). Knowledge and attitudes of nurses about pain management in Turkey. *International Journal of Caring Sciences*, 6(3), 494-505. Retrieved from

<http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/1445366675?accountid=12085>

Appendix A: Permission to Use and/or Reproduce The Iowa Model

Appendix B: Knowledge and Attitudes Survey Regarding Pain Permission to UseCity of
Hope

July 2014

The "Knowledge and Attitudes Survey Regarding Pain" tool can be used to assess nurses and other professionals in your setting and as a pre and post test evaluation measure for educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool has been revised over the years to reflect changes in pain management practice.

Regarding issues of reliability and validity: This tool has been developed over several years. Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the National Comprehensive Cancer Network Pain Guidelines. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established ($r > .80$) by repeat testing in a continuing education class of staff nurses ($N=60$). Internal consistency reliability was established ($\alpha > .70$) with items reflecting both knowledge and attitude domains.

Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measures both knowledge of addiction and attitude about addiction. Therefore, we have found the most benefit to be gained from analyzing the data in terms of the percentage of complete scores as well as in analyzing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores to guide your educational needs.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below. We have received hundreds of requests for the tool and additional use of the tool can be found in other published literature. We also acknowledge the assistance of several of our pain colleagues including Judy Paice, Chris Pasero, and Nessa Coyle in the revisions over the years. If using or publishing the tool results please cite the reference as "Knowledge and Attitudes Survey Regarding Pain" developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (), revised 2014.

We hope that our tool will be a useful aid in your efforts to improve pain management in your setting.

Sincerely,

Betty R. Ferrell, RN, PhD, FAAN
Research Scientist

Margo McCaffery, RN, MS, FAAN
Lecturer and Consultant

Appendix C: Survey for Orthopedic Nurses

1. What best describes your age?
 - a. 18 - 22 years
 - b. 23 – 25 years
 - c. 26 – 30 years
 - d. 31-40 years
 - e. 41+ years
2. What is your gender?
 - a. female
 - b. male
3. What best describes your years employed as a registered nurse?
 - a. less than one year
 - b. 1 – 2 years
 - c. 3 – 5 years
 - d. 6-10 years
 - e. 11+ years
4. Have you ever received formal pain education? (Select all that apply)
 - a. While in nursing school (academic)
 - b. Post-graduate education
 - c. Via professional health care organization/association seminar
 - d. Health care organization (I.e. hospital) sponsored continuing education



Post-Survey Qualitative Questions

What would you like to learn more about pain?

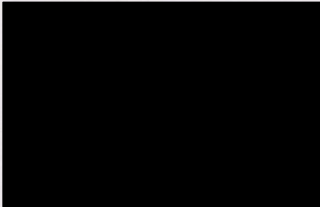
What did you learn today that you did not previously know?

What would you suggest would better enhance your knowledge regarding pain education?

Additional comments...

Appendix D: Organization Letter of Support

6/28/17



Dear Mr. Matthew Neumann:

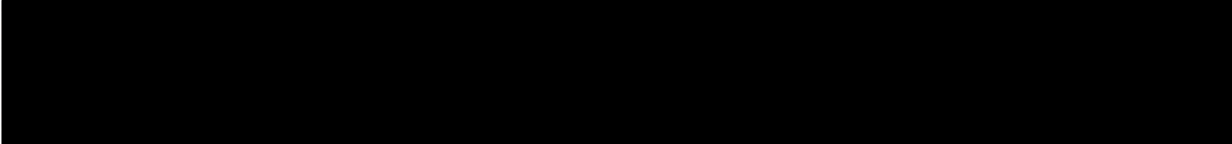
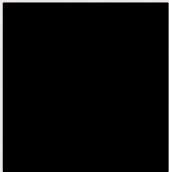
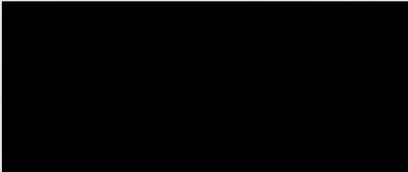
After careful review of your research proposal entitled Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management, I have decided to grant you permission to conduct your study at Centra's Orthopedic Unit.

Check the following boxes, as applicable:

☒ Data will be provided to the researcher stripped of any identifying information.

☒ I/We are requesting a copy of the results upon study completion and/or publication.

Sincerely,



Appendix E: Education Session Outline

Education Session Outline

I. Ethical Considerations

- A. National push for improved pain management practices
- B. Organizational, providers, and clinician responsibilities
- C. Patient rights to pain control

II. Clarifying Common Myths and Misconceptions

- A. Spiritual and religious beliefs and practices
- B. Sleep and pain
- C. Use of non-pharmaceutical pain methods
 - 1. Use of heat and cold therapy
 - 2. Massage, audio, and aroma therapies
 - 3. Relaxation
 - 4. Distraction techniques
 - a. Television
 - b. Writing/reflecting
 - c. Music
- D. Addiction, dependency, and co-addiction

III. Nurse Perceptions

- A. Subjectivity versus objectivity
- B. Verbal and non-verbal patient cues
- C. Vital signs

IV. Assessment/Reassessment

A. Assessment skills

1. Bias, personal experiences, and attitudes

B. Reassessment skills

1. Clinical/institution guidelines
2. Reassessment timeframe per route of administration (refer to Pharmacology)

V. Pharmacology

A. Metabolism: Pediatric, Adult, and the Elderly

B. Route/delivery of drugs

C. Opioid equi-analgesia

D. Non-opioid analgesia

E. Medication route preferences

1. Comorbidities
2. Polypharmacy
3. Metabolism

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

- Name:
- Email:
- Institution Affiliation:
- Institution Unit:

- **Curriculum Group:** Human subject - Basic
- **Course Learner Group:** Nursing
- **Stage:** Stage 1 - Basic Course
- **Description:** This course is appropriate for students doing class projects that qualify as "No More Than Minimal Risk" human subjects research

- **Report ID:** 14219125
- **Completion Date:** 24-Jun-2015
- **Expiration Date:** 23-Jun-2018
- **Minimum Passing:** 80
- **Reported Score*:** 94

Data Management (RCR-Basic) (ID: 16600)
 Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)
 Liberty University (ID: 15111)
 Belmont Report and CITI Course Introduction (ID: 1127)
 History and Ethical Principles - SBE (ID: 490)
 Defining Research with Human Subjects - SBE (ID: 491)
 The Federal Regulations - SBE (ID: 502)
 Assessing Risk - SBE (ID: 503)
 Informed Consent - SBE (ID: 504)
 Privacy and Confidentiality - SBE (ID: 505)
 Records-Based Research (ID: 5)
 Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)
 Vulnerable Subjects - Research Involving Prisoners (ID: 8)
 Vulnerable Subjects - Research Involving Children (ID: 9)
 Vulnerable Subjects - Research Involving Pregnant Women, Human Fetuses, and Neonates (ID: 10)
 Research and HIPAA Privacy Protections (ID: 14)
 Vulnerable Subjects - Research Involving Workers/Employees (ID: 483)
 Conflicts of Interest in Research Involving Human Subjects (ID: 488)

20-Jan-2015	5/5 (100%)
02-Oct-2014	3/3 (100%)
02-Oct-2014	No Quiz
02-Oct-2014	3/3 (100%)
02-Oct-2014	4/5 (80%)
20-Jan-2015	5/5 (100%)
20-Jan-2015	5/5 (100%)
20-Jan-2015	5/5 (100%)
23-Jan-2015	5/5 (100%)
23-Jan-2015	5/5 (100%)
23-Jan-2015	2/2 (100%)
23-Jan-2015	4/5 (80%)
23-Jan-2015	4/4 (100%)
23-Jan-2015	3/3 (100%)
23-Jan-2015	3/3 (100%)
24-Jun-2015	4/5 (80%)
24-Jun-2015	4/4 (100%)
24-Jun-2015	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Appendix G: University Institutional Review Board Approval**LIBERTY UNIVERSITY**
INSTITUTIONAL REVIEW BOARD

July 7, 2017

Matthew Neumann

IRB Application 2925: Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management

Dear Matthew Neumann,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because evidence-based practice projects are considered quality improvement activities, which are not considered "research" according to 45 CFR 46.102(d).

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,



LIBERTY
UNIVERSITY

Appendix H: Health Care Facility Institutional Review Board Exemption

_____ Institutional Review Board

EXEMPT RESEARCH CHECKLIST

Version 4, 15NOV2016

_____ IRB of Record _____

Date: 7/19/2017

Facility: _____

Principal: _____

Email address: _____

Phone number: _____

EXEMPT
Date: 7/24/17

Title of Research Project/Study Title: Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management

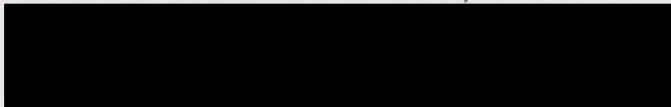
Attach documents related to the study.

Checklist Statements	True	Not True
Category 1 – For Educational Settings		
1. The research will only be conducted in established or commonly-accepted educational settings including but not limited to schools and colleges. (May include other sites where educational activities regularly occur.)	True	
2. The research will involve only normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.	True (ii)	
3. The research will not involve individuals as participants who are known to be prisoners.	True	
4. The research is not subject to FDA regulations.	True	
Category 2 – For Educational Tests, Surveys, Interviews, Public Behavior Observation:		
5. The research will involve only the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior.	True	
<i>Address statement 6 only if the research will involve children as participants. If children will NOT participate, check N/A and continue with statement 7.</i>	N/A	
6. The procedures will be limited to the use of educational tests (cognitive, diagnostic, aptitude, achievement) or observation of public behavior where the investigator will NOT participate in the activities being observed.		
7. The information obtained from educational tests, survey procedures, interview procedures or observation of public behavior will be recorded in such a manner that human subjects CANNOT be identified, directly or through identifiers linked to the subjects.	True	
<i>“True” to either statement 7 or 8 will qualify for exemption provided that statements 9 and 10 are true.</i>		
8. Any disclosure of the human subjects’ responses outside the research could NOT reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, or reputation.	True	
9. The research will <u>not</u> involve individuals as participants who are known to be prisoners.	True	
10. The research is not subject to FDA regulations.	True	
Category 3 – For Educational Tests, Surveys, Interviews, Public Behavior		

Observation of Public Officials:		
11. The research will involve only the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior AND the human subjects are elected or appointed public officials or candidates for public office. (Applies to senior officials such as mayor or school superintendent rather than a police officer or teacher.)	True	
<i>"True" to either statement 11 or 12 will qualify for exemption provided that statements 13 and 14 are true.</i>		
12. The research will involve only the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior AND federal statute(s) require without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.	True	
13. The research will <u>not</u> involve individuals as participants who are known to be prisoners.	True	
14. The research is not subject to FDA regulations.	True	
Category 4 – For Existing Data, Documents and Specimens:		
15. The research will involve only the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens. ("Existing" means existing before the research is proposed to the IRB to determine whether the research is exempt. All materials to be reviewed currently exist at the time of this exemption request.)		Not True
16. The sources of the existing data, documents, records or specimens are publicly available OR the information will be recorded by the investigator in such a manner that participants cannot be readily identified either directly or through identifiers (such as a code) linked to them.	True	
17. The research will <u>not</u> involve individuals as participants who are known to be prisoners.	True	
18. The research is not subject to FDA regulations.	True	
Category 5 – For Public Benefit or Service Programs (Federal):		
19. The project is a research or demonstration project conducted by or subject to the approval of a (federal) Department or Agency head and which is designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those public benefit or service programs.		Not True
20. The research will <u>not</u> involve individuals as participants who are known to be prisoners.	True	
21. The research is not subject to FDA regulations.	True	
22. The program under study delivers a public benefit (e.g., financial or medical benefits as provided under the Social Security Act) or service (e.g., social, supportive, or nutrition services as provided under the Older Americans Act).	True	
23. The research or demonstration project will be conducted pursuant to specific federal statutory authority.	True	
24. There is no statutory requirement that the project be reviewed by an IRB.	True	
25. The project does not involve significant physical invasions or intrusions upon the privacy of participants.	True	
26. The exemption has authorization or concurrence by the funding agency.	True	
Category 6 – For Taste and Food Quality and Consumer Acceptance Studies:		
27. The research involved only a taste and food quality evaluations or a food consumer acceptance study in which (i) wholesome foods without additives will be consumed OR (ii) food will be consumed that contains a food ingredient, agricultural chemical or environmental contaminant that is at or below the level found to be safe by the Food and Drug Administration or is approved by the Environmental Protection Agency or the Food Safety and Inspection Service of		Not True Not a food study

the U.S. Department of Agriculture.		
28. The research will <u>not</u> involve individuals as participants who are known to be prisoners.	True	
Emergency Use of an Unapproved Test Article (i.e., a drug, device or biologic that is not FDA-Approved)		
The activity involves emergency use of an investigational drug, device or biologic. Such an activity is not exempt from IRB review. However, this emergency use may occur prior to IRB review and approval (see Category A and B in the Emergency Use Policy for details.) Note that such an emergency use must be reported to the IRB within five business days.		Not True
The activity does not meet with DHHS definition of "research."	True	
Criteria that must be met for the research to be determined to be consistent with IRB ethical standards		
The research holds out no more than minimal risk to subjects.	True	
Selection of subjects is equitable.	True	
If there is recording of identifiable information, there are adequate provisions to maintain the confidentiality of the data.	True	
If there are interactions with subjects:		
There will be a consent process (and maybe some type of documentation) that will disclose such information as:	True	
<ul style="list-style-type: none"> • That the activities involve research. • The procedures to be performed. • That participation is voluntary. • Name and contact information for the investigator. 		
There are adequate provisions to maintain the privacy interests of subjects.	True	

Signature of Principal Investigator:



_____ Typing my name on the line
above constitutes an electronic signature.

Printed Name _____ Matthew P. Neumann _____

Date _____ 7/19/2017 _____

FOR THE IRB REVIEWER ONLY:Is the activity exempt? YES ☒ NO ☐Does the research meet the standards of ethical conduct? YES ☒ NO ☐Which exemption category or categories apply to the activity? IIApproved by IRB Exempt Committee (date): 7-24-17

Signature of IRB Reviewer:

_____ Typing my name on the line
above constitutes an electronic signature.

Printed Name _____

Date _____

Appendix I: Consent to Participate in Study

CONSENT FORM

Knowledge and Attitudes of Orthopedic Nurses Regarding Pain Management
Matthew P. Neumann
Liberty University
School of Nursing

You are invited to be in a scholarly project of knowledge and attitudes regarding pain management. You were selected as a possible participant because you are a registered nurse frequently caring for patients experiencing pain. Please read this form and ask any questions you may have before agreeing to be in the study.

Matthew P. Neumann, a Doctor of Nursing Practice student in the School of Nursing at Liberty University, is the project leader.

Background Information: The purpose of this project is to evaluate knowledge and attitudes regarding pain and to determine the efficacy of a pain education session.

Procedures: If you agree to participate in this project, I would ask you to do the following:

1. Complete a pre-test survey (~5 minutes).
2. Participate in an education session (~15-20 minutes).
3. Complete a post-test survey (~5 minutes).

Risks and Benefits of Participation: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

The direct benefits participants should expect to receive from taking part in this project may include improving upon pain management knowledge and skills, improve attitudes, expose and debunk myths, misconceptions, and objective judgements, and subsequently improve pain management practices.

Benefits to society include: Improved nursing knowledge and attitudes regarding pain management may result in improved patient care and pain experiences, improve patient satisfaction with their hospitalization experience, improve the reputation of the chosen health care organization, and subsequently serve as the first choice location for health care services.

Compensation: Participants will not be compensated for participating in this project.

Confidentiality: The records of this project will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Data will be reported as aggregated data and records will be stored securely. Only the project leader will have access to the records.

- Survey responses will remain confidential and will not be shared with your coworkers. Although some personal information about you will be requested, obtained through demographics, no effort by the project leader will be made in attempt to link survey responses or data to you personally.

- Data will be secured via a password-locked computer and completed surveys will be housed in a locked filing cabinet. Data will be stored/retained for three years per federal regulations and will subsequently be destroyed/deleted following the three year retention period.
- Sessions will not be video or audio recorded.
- Confidentiality is limited to loss or theft of data. I cannot assure participants that other members of the focus group will not share what was discussed with persons outside of the group.
- No grant funding supports this project.

Voluntary Nature of the Study: Participation in this project is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University and or [REDACTED]. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

How to Withdraw from the Study:

If you choose to withdraw from the project, please inform the project leader that you wish to discontinue your participation prior to submitting your study materials. Your responses will not be recorded or included in the project.

Contacts and Questions: The project leader for this project conducting the study is Matthew P. Neumann, you may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [REDACTED]. You may also contact the researcher's faculty advisor, Cynthia Goodrich, at [REDACTED].

If you have any questions or concerns regarding this project and would like to talk to someone other than the project leader, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the project leader if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. By answering/completing this survey, I am consenting to this study through implied participatory consent.

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)