Pain Management: An Educational Intervention to Improve Nurses’ Knowledge and Attitudes

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# PAIN MANAGEMENT: AN EDUCATIONAL INTERVENTION

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Pain is a part of human experience common among patients in the hospitals. Pain management is a universal problem of significant magnitude especially in the United States. As an essential aspect of patient care, adequate pain management can enhance earlier mobility and lessen complications. Providing adequate pain management requires the use of evidence-based interventions to provide pain relief and avoid unnecessary
suffering. Many hospitalized patients have reported unrelieved pain, and considerable effort to improve pain relief has been ongoing for many years. Knowledge, skills and positive attitudes in pain management facilitate provision of safe and compassionate care to patients. Furthermore, the gaps in knowledge about pain and pain management among nurses have been frequently cited as a major reason for under treatment of pain.

The purpose of this project was to evaluate the effectiveness of an educational intervention in improving nurses’ knowledge and attitudes change regarding pain management of hospitalized patients. A convenience sample of registered medical surgical nurses (n=30) in one hospital was asked to participate. The results of the study indicated that there were deficits in nurses’ knowledge and attitudes of pain and pain management. Inadequate knowledge was seen in pain medication dosing, analgesic ceiling dose, and management of pain to in opioid dependent patients. The posttest results showed statistically significant improvement in the pain management, knowledge and attitude of the participants.

**Keywords:** pain, pain assessment and management, nursing knowledge, attitudes, opiate use disorder, and medical surgical nurses.

**Background and Significance**

Pain is a universal problem of great magnitude in the United States of America with an estimated loss of $635 billion dollars a year in decreased workforce productivity (Institute of Medicine [IOM], 2011). Pain is an enormous global problem (International Association for the Study of Pain [IASP], 2011) and has a huge economic burden since it is closely linked with disability and unemployment. It has been estimated that 1 in 5 adults suffer from pain and that another 1 in 10 adults are diagnosed with chronic pain.
Each year (IOM, 2011). Based on the epidemiological report published by National Institute of Health (NIH), the annual cost of pain was greater than the annual cost of heart disease ($309 billion), cancer ($243 billion), diabetes ($188 billion) (IOM, 2011; Pizzo & Clark, 2012).

Significant pain is common in both medical and surgical patients and is often untreated (Lin, Reid, Chused & Evans, 2016). Although acute pain is common in surgical patients, pain is as prevalent and as severe in medical inpatients. Acute pain management in medical inpatients can be complex due to medical comorbidities and polypharmacy (Lin et al., 2016). Despite several decades of research, pain is common and still a significant problem for patients throughout their stay in the hospital. On the other hand, acute postoperative pain is a common clinical condition that, when poorly controlled, can result in a number of significant medical complications such as pneumonia, deep vein thrombosis, infection, chronic pain, and depression (Sinatra, 2010).

According to the Centers for Disease Control and Prevention (CDC, 2010) an estimated 48 million surgical procedures are performed each year in the in-patient hospital setting with an additional 53.3 million surgical and nonsurgical procedures performed during ambulatory surgery visits (CDC, 2010). These numbers continue to grow which means that pain management of hospitalized patients remain suboptimal.

On the other hand, recent reports have highlighted the alarming high rate of opioid prescribing and overdose related deaths. Over the last 20 years, there has been a significant increase in opioids prescription for acute and chronic pain noncancer pain. This had been accompanied by a major increase in opioid addiction and drug overdose deaths, emergency department visits, and admissions to drug treatment facilities secondary to prescription opioids (Salsitz, 2016).
Opioid therapy has long been used for the treatment of acute pain, such as post-operative and post-procedural pain. Opioid analgesics have the ability to relieve acute pain through their action on the mu opioid receptor—the major analgesic receptor expressed throughout the nervous system. These endogenous opioids or endorphins, produced by the nervous system are involved in the pleasure/reward system, and provide analgesia and mood regulation (Salsitz, 2016). There is a cause for concern with opioid therapy since the opioid receptors are located all over the body rather being isolated to the pain centers. Unwanted side effects such as dependence, tolerance, depression, anxiety disorders, sleep disturbance, constipation, and family and social problems are common with chronic use of opioids (Juurlink & Dhalla, 2012; Salsitz, 2016).

Pain is defined by the IASP as an unpleasant, sensory and emotional experience associated with actual or potential tissue damage (IASP, 2011). Pain is a subjective experience; there are no objective means of measuring the degree or severity, with patient reports as being the most accurate and reliable indicators (Jarett, Church, Fancher-Gonzalez, Shackelford, & Lofton, 2013; Lewthwaite, Wheeler, Miles & Fedorowicz, 2011).

Pain management is a human right. Patients must be taught about their pain and informed how it can be better assessed and managed (IASP, 2011). However, inadequate pain management continues to be a significant problem and is frequently under recognized in hospitalized patients. Hospitalized patients experience acute pain because of procedures, illness or disease condition, surgery and inadequate pharmacological approaches (Pasero & McCafferry, 2011). IOM (2011) reported that the combined incidence of both acute and chronic pain is approximately 100 million people in the United States. The IOM (2011) further reported the many factors contribute to inadequate
pain management, including inadequate knowledge and attitudes about pain and suboptimal pain management practices among health care professionals. Despite the availability of effective treatments to pain, patients are still not achieving effective pain control.

Research studies have reported that under treatment of pain and the lack of knowledge about pain management have been proven in decades (McCaffery & Ferrell, 2008). McCaffery and Ferrell (2008) stated that limitations in nurses' knowledge about pain assessment and management persist and contribute to inadequate pain care. De Rond, de Wit, van Dam, van Campen, den Hartdog (2000) developed a pain monitoring program for nurses to educate nurses about pain, pain assessment and management. After nurses were educated, their attitudes changed with regard to their level of knowledge and skills in relieving pain. Nurses serve in a significant way to ensure that the patient in pain receives and understands the effectiveness of their pain treatment plan. Nurses play a crucial role in several aspects of pain management, which include pain assessment and reassessment, developing care plans and providing patient education. These are important features that support best practices to improve outcomes. Even though evidenced-based practices are in place, pain management remains underutilized by nurses. Most of all, nurse engagement is needed considering their primary role in patient care.

To ensure the best quality care for patients, nurses need an effective and sufficient knowledge, skills and attitudes to address pain issues. Research studies have revealed that nurses play a key role in managing patients’ pain. However, numerous studies have supported the nurses’ lack of knowledge to effectively and efficiently manage pain (Lewthwaite et al., 2011; Abdalrahim, Majali, Stomberg, & Bergbom, 2011; Zhang et al.,
Lewthwaite et al. (2011) further concluded nurses were least likely to answer pharmacology questions correctly and therefore recommended ongoing education in pain management, particularly medications for pain management. Al-Shaer et al. (2011) suggested a need to improve the knowledge, skills and attitudes of healthcare providers to improve patient outcomes.

**Problem Statement**

The magnitude of pain in the United States is astounding (Pizzo & Clark, 2012). Pain is the most common symptom that causes patients to seek medical treatment and is one of the common problems seen in the clinical care setting (Al Shaer, Hill, & Anderson, 2011; Lewthwaite et al., 2011). Despite the advancement in pain management and even with guidelines and protocols in place, nursing today faces great challenges in the effective and efficient management of pain (Abdalrahim et al., 2011). Inadequately treated acute pain in hospital setting increases the risk for development of chronic pain, which in turn has significant long-term adverse impact on patients’ overall function and quality of life (Lin et al., 2010).

Acute pain is common among hospitalized patients, and early recognition and management is the main concern of healthcare providers. Common in hospital setting are patients with substance use disorder (SUD), who have been previously diagnosed with opioid use disorder (OUD) often experience acute pain and may require opioid analgesics. Unfortunately, research studies have shown nurses’ attitudes and misconceptions about opioids and negative attitudes toward patients with OUD, such patients are subjected to unrelieved pain and unnecessary suffering (Murnion, Gnjidie, & Hilmer, 2010; Paschakis & Potter, 2015).


**Needs Assessment**

The problem of pain is increasing and is being recognized as a priority at this project site. In an effort to improve the care of patients in pain, it was decided to implement an education session at this project site. Addressing the existence of patients’ pain is an important component to effective pain management. Whereas, the inadequate and inconsistent approach to pain will have profound implications to nursing practice.

In 2006, the Center for Medicare and Medicaid (CMS, 2014) launched the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). The purpose of this initiative is to improve the quality of care by measuring patients’ hospital experience. Pain management is a composite of HCAHPS scores. Pain management plays an important role in HCAHPS because hospitals are awarded or deducted reimbursements based on patient’s satisfaction survey. This could be the reason why hospitals are placing great importance on pain management. Hospital must participate in the HCAHPS survey to avoid 2% reduction in financial reimbursements (Tinkham, 2014).

The hospital HCAHPS scores indicate a significant need for improvement in the care of patients in pain. As per the report of the Patient Experience department staff, the score is below the 50th percentile. The immediate target was the 75th percentile, and the ultimate goal being 95th percentile. There remains a gap in practice regarding pain management of medical surgical nurses as reported from the results of the HCAHPS scores. Based on the HCAHPS scores, which are at the 47th percentile (Press Ganey, 2016), the DNP student affirms the need for pain management education to improve pain management at the hospital. According to Press Ganey (2016), good pain management
improves patient safety scores, recovers quickly, and shortens the length of hospital stay thus improving patient satisfaction.

**Objectives and Aims**

The primary aim of this project is to implement a pain education intervention for medical and surgical nurses and to determine whether the education intervention could improve nurses’ knowledge and attitudes in pain management using the Nurses Knowledge and Attitudes Survey Regarding Pain (NKASRP). The specific objectives are as follows:

- To explore knowledge and attitude change regarding pain management, which include pain assessment and reassessment, and pharmacological and non-pharmacological approaches to pain by the medical surgical nurses.
- To evaluate the effectiveness of an educational intervention as it relates to medical surgical nurses’ ability to manage patient’s pain.

The expected outcome of this education intervention is for the medical surgical nurses to feel more comfortable and competent in assessing pain and when administering pain treatment. This, in turn will help nurses develop a patient-specific plan for pain management. Furthermore, this education intervention may help nurses recognize the red flags of opiates use disorder in a nonjudgmental manner.

**Review of Literature**

A comprehensive search of literature was conducted to identify and critique existing studies related to nurses’ knowledge, and attitudes on pain management. The following electronic databases were included and reviewed: PubMed of the National Library of Medicine, CINAHL, and MEDLINE. Headings (MESH) terms included: pain, pain assessment and management, nurse education and training, nursing intervention, and
medical surgical nurses, knowledge and attitudes and barriers to pain management, opiates use and multimodal analgesia. These search items were used individually and in combination to derive a list of current, evidence-based articles. Articles were filtered to focus on nursing knowledge and attitudes on pain and its management.

The problem of pain is increasing and is being recognized as a priority by both national and international agencies. In 2004, the International Association of the Study of Pain (IASP), the World Health Organization (WHO), and the European Federation of IASP Chapter (EFIC) held a global day campaign to promote pain relief as an essential human right (Lipman, 2005). These agencies conceptualized human rights based on inherent human dignity regardless of other factors such as ethnicity, nationality, and sex. The agencies endorsed pain as a major worldwide healthcare problem, a disease in its own right and that patients have the right as human beings to be free of pain (Lipman, 2005).

Historically, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO, 2001) pain management standards reflected the management standards for sustainable improvement of pain management. In 2001, JCAHO pain standards were developed in the hope of achieving optimum pain control and improving patient outcomes. The pain standards further stated that nurses, especially those with expertise in pain management, could be valuable assets in assisting with the institution’s improvement of pain management. JCAHO published pain standard manual addressed the patient’s right to have an assessment of pain as well as appropriate management, reassessment, and follow up. The following tenets of the pain standards hold hospitals and healthcare facilities that are accredited by The Joint Commission (TJC; Nworah, 2012).
• Recognize the right of patients to appropriate assessment and management of their pain;
• Educate relevant providers in pain assessment and management;
• Identify patients with pain in an initial screening assessment;
• Determine and assure staff competency in pain assessment and management;
• Perform a more comprehensive pain assessment when pain is identified;
• Educate patients and their families about the importance of effective pain management;
• Record the results of the assessment in a way that facilitates regular reassessment and follow-up;
• Collect data to monitor the appropriateness and effectiveness of pain management

The original Joint Commission (2001) standards did not state that pain needed to be treated like a vital sign. However, some organizations like the Veterans Administration implemented a program that makes pain a vital sign. Vitals signs should only be used as cues to begin further assessment of pain. In a retrospective study found no improvement in quality of pain care at a Veterans Affairs general medicine clinic after implementation of the “Pain as the 5th Vital Sign” initiative (Mularski et al., 2006). The initiative required that intake nurses, after an in-service education, assess pain and intensity for outpatient visits using the NRS and record the result in the vital signs record. The investigators used indicators of quality pain management, based on appropriately evaluating and treating pain, to assess randomly selected 300 visits before and 300 visits after, implementing the pain initiative. The quality of pain was unchanged between visits before and after pain initiative, Patient (n=79) who reported substantial pain often did not receive recommended care: 22% had no attention to medical record; 27% had no further
assessment documented; and 52% received no new therapy for pain that visit. The authors concluded that routinely measuring pain management did not increase the quality of pain management and that patients with substantial pain documented by the 5th vital sign often had inadequate pain management (Mularski et al., 2006). It is not surprising that hospitals now assess pain routinely. For hospitalized patients, pain scores are used as a quality measure, since reimbursement are based from patient satisfaction on their hospital experience.

Chu and Galang (2013) examined registered nurses’ attitudes towards the patients with illicit drug use admitted to a general hospital in Toronto, Canada. Study results indicated that nurses had neither a positive nor a negative attitude toward patients with a history of illicit drug use, although low motivation to work and a need for more role support from the hospital management to enable nurses to fulfill their professional role. Nurses must ensure that improving patients’ satisfaction is a priority and can be achieved through improved pain management.

Overview of Pain

Pain is a universal experience shared by humans and the most common reason why they seek medical care (IOM, 2011). Traditionally, pain was considered merely a physical symptom of illness. Recent studies showed that feelings of pain have distinct relationships to physical, emotional and psychological aspects of individuals (Cox, 2010). The author defined pain as a subjective experience, an individual experience and a complex one influenced by biological, psychological and social factors. Further, pain is a universal experience and one of the most common problems that nurse encountered on a daily bedside practice.
The International Association for the Study of Pain (IASP, 2011) provided a comprehensive definition of pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage” (p. 3). This definition indicates that pain is a complex entity and that has not only a physical component, but an emotional one as well. McCaffery and Pasero defined pain as “whatever the experiencing person says it is and whenever he says it does” (as cited in Herr et al., 2006, p. 44). Only the patient knows how she or he really feels; it is not appropriate for healthcare providers to try to judge whether or not the pain is real.

Pain is further delineated based on the duration of its occurrence, into acute and chronic pain (Ferrell, 2005; IOM, 2011; Salinas & Abdolrasulnia, 2011). Most often, acute pain is nociceptive (in response to noxious stimulus) and commonly associated with injury, surgery or other short-term illnesses and is experienced for a period of time of less than three to six months (Ferrell, 2005; IOM, 2011). Chronic pain tends to be complex, have multiple medical and psychiatric comorbidities, including mood and anxiety disorders, post-traumatic stress disorder, and substance abuse disorder (Cheatle & Barker, 2014). In addition, chronic pain is categorized as being associated with chronic illnesses and conditions, as a diagnosis itself, and is experienced for more than three to six months (Ferrell, 2005; IOM, 2011). Yet some healthcare providers are reluctant to support the use of opioid medication for patient with chronic pain. Studies indicate that the general concern of physicians in prescribing opioids is the little training in pain management and opioid therapy (Jamison, Sheehan, Scanlan, & Matthews, 2014). It is implied that successful pain management with opioid therapy depends on the importance of providing more training among physicians and nurses.
Pain is a treatable but complex subjective condition among patients; however, it is further aggravated by clinical conditions such as stage of illness and co-morbidities, invasive procedures and surgical interventions, particularly in the acute care settings. Jarett et al. (2013) explained that the patients not receiving adequate pain management while hospitalized delays healing, alters immune response, and increases levels of stress and anxiety. The authors further explained that pain left untreated leads to worsening patient conditions and decreased quality of life. Additionally, postoperative period may have serious complications such as poor wound healing, infections, cardiac ischemia, ileus due to inadequate pain approaches. It was also emphasized that the benefit of pain relief includes better patient outcomes, shortened length of hospital stay, reduced cost of care, faster postoperative recovery, improved sleep and increased mobility. The authors further stressed that patients with unrelieved pain have longer hospital stays, higher readmission rates, and more frequent outpatient visits (Jarett et al., 2013).

**Pain Assessment**

Pain assessment is one of the most important nursing interventions in dealing with pain management. It is a critical step to providing good pain management. Nurses recognize that pain assessment is an essential aspect of nursing practice and the first step in the process of effective pain management. Without comprehensive pain assessment it is not feasible to identify the nature of pain, consequently, making it difficult to manage. Lack of proficient and uniform pain assessment is one of the most challenging barriers in achieving adequate pain control (Glowacki, 2015).

Nurses working in hospitals must select the appropriate pain assessment tool that should be done in a regular basis. And to meet the patients’ needs, pain should be reassessed after each intervention to evaluate the effect of pain medications. Lack of
proficient and uniform pain assessment is one of the most challenging barriers in achieving adequate pain control (Glowacki, 2015). In clinical practice, it is encouraged to use the Numeric Rating Scale (NRS) ranging from 0 to 10, for verbal patients however, in non-communicative patients, the use of valid and reliable pain tool, like the Behavioral Pain Scale (BPS) is suggested (Glowacki, 2015).

The most acknowledged and recognized barrier to effective pain management is patients’ subjectivity (Glowacki, 2015). According McCaffery & Pasero, (2011), the use of patients’ self-report is the gold standard for pain assessment. No other source of information has ever been shown to be more accurate or reliable than what a patient says. Nurses must accept and respect the report of pain and proceed with necessary intervention. Due to inadequate pain assessment and pain intervention by health care professionals, patients continue to experience pain even with pain guidelines in place. Pain management guidelines that has been established in decades bridged the knowledge gap in the assessment and management of pain.

**Pain Management**

For several patients with acute or chronic pain, relief is achieved only with the use of opioids. Opioids are commonly prescribed for pain but are associated with the potential for misuse, dependence, diversion, and overdose mortality, and thus they are strictly regulated (Webster & Grbois, 2015). Opioid analgesics are recognized as a legitimate medical therapy for selected patients with severe chronic pain that do not respond to other therapies.

Research studies suggested that the mainstay of treatment for acute pain is pharmacotherapy or the use of drugs (Joransen et al., 2010). However, its effectiveness is greatly enhanced by patient education, nurses’ knowledge and attitudes and the
multimodal interventions such as physical therapy, psychosocial support and other complementary and alternative treatment (Elvir-Lazo & White, 2010).

**Pain Management and Opioid Use Disorder**

Over the past two decades opioid analgesics have become a cornerstone of what is considered as effective, balanced pain management (Cheatle, 2015). Historically, opioid analgesics were typically prescribed for acute and cancer related pain. By late 1990s, healthcare providers were encouraged to be more proactive in treating all types of pain to alleviate suffering, including prescribing opioid. These resulted with fourfold increase in sales of prescription opioid analgesics from 1999-2010 and as of 2011-2012 6.9% of adults reported using a prescription opioid (Cheatle, 2015) and from 2013 to 2014 7.9 to 9.0 increased (Dowel et al., 2016). In 2012, healthcare providers wrote 259 million prescriptions for opioid pain medications, with prescribing rates increased for family practice, general practice, and internal medicines compared with other specialties (Dowell, Haegerich. & Chou, 2016).

Since 2010 the drug overdose deaths and opioid-involved deaths have continued to rise in the United States. The majority of drug overdose deaths in the United States were 38,329 pharmaceutical-related deaths, of which 16,651 deaths were related to opioids alone (Cheatle, 2015). The increase in drug overdoses is attributable to the misuse and abuse of prescription drugs, especially opioid analgesics, sedatives and tranquilizers, and stimulants. Due to worsening opioid epidemic there should be a collaborative effort among health agencies to improve the epidemic outbreaks. Center for Disease Control and Prevention (CDC) has developed guidelines which aims to establish patient-centered approaches to initiating, managing and discontinuing opioid use. The CDC advises that chronic pain primarily be treated with nonpharmacologic therapy or
with medications other than opioids. Opioids should be considered only if benefits outweigh risks. (Dowell et al., 2015). Through these guidelines, patients will have access to safer, more effective pain treatment.

CDC Guidelines for Prescribing Opioids for Chronic Pain:

1. Determine when to initiate or continue opioids for chronic pain
   - Nonpharmacologic therapy are preferred
   - Establish realistic goals

2. Opioid selection, dosage, duration, follow up and discontinuation
   - Prescribe immediate release opioids instead of extended-release/long acting

3. Assessing risk and addressing harms of opioid use.
   - Evaluate risk factors for opioid-related harms.
   - Review patient history

In 2012, the American Society for Pain Management Nursing position statement on pain management in patients with substance use disorder affirm that “every patient with pain, including those with substance use disorders, has the right to be treated with dignity, respect, and high-quality pain assessment and management” (Oliver et al., 2012, p. 1). Nurses have a unique role and play an essential role in managing acute pain with Opioid Use Disorder (OUD). Since nurses most often stay at patient bedside, they are the first to know when their patients are in pain. Nurses advocate on patients’ behalf; listening to, empathizing with them, and ensuring patients’ feelings are being heard.

Keeping the above facts in mind, it is important for nurses to be well versed with addressing any untoward manifestation as well as for recognizing overuse and dependence. Caring for these patients can be challenging and requiring additional time
for comprehensive assessment and continuous monitoring. Interestingly, when nurses are well educated on pain medications and pain is viewed as a priority, they are prepared to manage and treat when complications arise through their continuous pain assessment. On the same note, through education nurses can bridge the gaps in patients understanding of opioid use and dependence. Nurses should discuss with patients what to expect regarding pain and pain treatment and providing a plan for pain management.

**Pain Management and Multimodal Analgesia**

Pain relief is a major concern and area of focus in healthcare. The concept of multimodal analgesia was introduced in 1993, offers multiple benefits to patients however the implementation of multimodal analgesia is challenging (Narinder, 2015).

Multimodal analgesia reduces pain by treating pain through mechanisms of action along multiple sites of the nociceptive pathway, is recommended in the treatment of postoperative and trauma-related pain (Manworren, 2015). Currently, multimodal analgesia is the choice for postoperative pain; it combines analgesics from two or more drugs classes that employ different mechanisms of action. With analgesic techniques, multimodal analgesia achieves synergistic effect at lower analgesic doses (Polomano, Mechele, Nicholas, & Vallerand, 2017). Several evidence-based practice guidelines from professional organizations endorsed the uses of multimodal analgesia for acute pain (Polomano et al., 2017). Research has shown that multimodal analgesia not only reduces pain, opioid use, and opioid related events but also enhances postoperative recovery and function, and increases patient satisfaction (Polomano et al., 2017).

Multimodal analgesia was introduced more than two decades ago and currently recommended in the treatment of both acute and chronic pain. In outpatient setting, opioid analgesics, once considered the standard approach to preventing acute
postoperative pain, are being replaced by a combination of non-opioid drugs (Elvir-Lazo, White, 2010; Polomano et al., 2017)). Today, the use of multimodal analgesia due to its efficacy, is rapidly become the standard of care for preventing pain after ambulatory procedures at most out-patient surgery centers (Elvir-Lazo & White, 2010).

Patient education is an integral part of multimodal pain management. Patients need to understand the rationale for their treatment to encourage participation in effective pain control. Nurses and patients must understand how to properly assess the characteristic of pain, its intensity, its location and duration. Nurses can facilitate better postoperative pain control by implementing and applying evidenced-based analgesic practices and having effective communication between the patients and family. In addition, nurses must be knowledgeable and competent in delivery of multimodal analgesia regimen to prevent the development of opioid-related adverse effects.

**Nurses’ Knowledge of Pain Management**

Pain is a universal experience of everyone that nurses encounter in clinical practice. Since pain is a global health issue that requires attention of healthcare providers especially nurses, a deeper understanding of pain management must be taken into consideration. An effective pain management requires nurses to be equipped with adequate knowledge. Similarly, the depth of nurses’ knowledge and their perceptions regarding pain management are linked to the patient’s perception of adequate pain control (Lewthwaite et al., 2011). To achieve the goal of better pain management for improved patient satisfaction, one must ensure that nurses have sufficient knowledge to adequately manage pain (Jarett et al., 2013). Adequate assessment of patient’s pain requires that nurses become well educated in recognizing a patient’s perception, previous experiences with pain and current knowledge in pain.
Two studies examined the effect of educational interventions on nurses’ pain management knowledge and the amount of time the nurses retained the information (Guardini et al., 2008; McNamara, Harmon & Saunders, 2012). Both studies implemented educational programs and evaluated the participating nurses’ knowledge using the pre- and posttest design. Each of the studies also looked at the time of knowledge retention in terms of weeks and months. Guradini et al., (2008) used an educational program that was given to a group of nurses (n = 168) in seven, seven-hour sessions over a nine-month period. In similar studies, McNamara et al. (2012) conducted a descriptive study of (n = 58) nurses to assess the effectiveness of a pain educational program in improving nurses’ knowledge and attitudes. The validated, self-administered questionnaires were completed before, immediately after and six weeks after the educational program. The pre-program results of the questionnaire indicated that nurses have difficulty believing patients were in pain. The post program reassessment indicated that the outcome of the educational program was statistically significant improvement on nurses’ knowledge and attitudes towards pain (p<0.01). Each study looked at the time of knowledge retention in terms of weeks and months. Guardini and colleagues (2008) found that education did improve nurses’ short term knowledge level about pain. This was demonstrated by a significant increase on the knowledge on each of the 10 items from the pretest to the posttest scores. However, a significant decrease in knowledge scores at the 18 month follow-up on all but 3 questions. This indicates that the nurses’ knowledge has not been retained over time (Guardini et al., 2008). McNamara et al. (2012) found that nurses did retain pain management knowledge after a single education. The post education scores were increased and statistically significant. The study concluded that although knowledge retention occurred, the decrease over time indicates
that nurses’ education about pain management needs to be ongoing for effective pain management to occur. The difference found between the studies was the amount of time between the course and the final posttest with one being 18 months later and one being 6 weeks later. There were limitations identified on the study of Guardini and colleagues (2008) including context of Italian nurses and the Christian concept of suffering being the accepted norm. In addition, Guardini and colleagues (2008) study found that the learning strategies employed were insufficient for showing long lasting changes in knowledge. The study findings suggest that continuation of educational program will maintain positive attitudes to pain management (McNamara et al., 2012; Guardini et al., 2008).

Al Qadire and Al Khalaileh (2014) investigated Jordanian nurses’ knowledge and attitudes. The study confirmed the lack of the required knowledge to provide optimal pain management to patients. Jordanian nurses (n = 70) showed a lower level of knowledge and attitudes regarding pain on the pretest. Consequently, their lack of knowledge may add more barriers to pain management (Al Qadire & Al Khalaileh (2014). The posttest findings which occurred two weeks after the training revealed nurses’ significant improvement in pain management practices. The study confirmed that a six-hour pain management can improve nurses’ knowledge. This study also revealed differences between nurses’ attitudes and clinical practice. Research studies agreed that the patient is the only reliable source of reporting pain, while Jordanian nurses would still prefer to use placebo to treat their patients in pain. This nursing practice might mean that nurses still devalue the patients’ reporting of pain (Al Qadire & Al Khalaileh, 2014). When nurses have a better understanding of how to adequately manage pain, they are better able to assess the effectiveness, potential side effects, and able to achieve their treatment goals.
McCaffery & Ferrell (2008) have conducted extensive research studies assessing the knowledge and attitudes of nurses and have found that fears of addiction are actually increasing. Studies have identified that the lack of formal education and training nurses receive in pain management while in school contributed to the nurse’ ineffective management of pain (Abdalrahmin et al., 2011; McCaffery & Ferrell, 2008; McNamara et al., 2012). It is therefore, appropriate to investigate nurses’ knowledge and attitudes regarding pain, so as to plan and intervene appropriately.

In a nationwide study conducted by Bernardi, Catania, Lambert, Tridello, and Luzzani (2007) included 287 Italian nurses from 21 oncology wards. Information was obtained by using the Ferrell and McCaffery Nurses’ Knowledge and Attitudes Survey (Italian version). Among the 29 knowledge questions assessed, the mean number of correctly answered question was 21.4, with a range of 6-35. The correct answer rate for the entire scale, on average, was 55% (SD=25.9). Further analysis of items showed that more than 50% of oncology nurses underestimated the patients’ pain and they did not treat it in the correct way; they also had an incorrect self-evaluation about their pain management knowledge. This study revealed a significant knowledge deficits and erroneous beliefs that may hamper treatment of oncology patients in pain.

Machira, Kariuki, and Martindale (2013) used a quasi-experimental pre-and posttest design to gather information regarding registered nurses’ pain knowledge and to evaluate the impact of a pain management program (PMP) in Kenya. Twenty-seven nurses from two units participated in a baseline assessment using the Nurses’ Knowledge and Attitudes Survey Regarding Pain (NKASRP). Nine randomly selected nurses then received seven hours of focused education. This group completed the assessment again both immediately after and two weeks after the (PMP). This process took two weeks,
Pain management is a critical component of healthcare, and improving nurses' knowledge and attitudes is essential for effective pain management. In a study, a deficit in knowledge and attitudes related to pain management was prominent at baseline. The baseline mean score was 18.44 with a p value of 0.007 before the educational program, and the mean score was 27.56 with a (p 0.008) at a follow-up 2 weeks after the intervention. The nurses who received the PMP scored significantly higher on the NKASRP following the PMP. A well-structured PMP for nurses had an immense impact on the pain knowledge of Kenyan nurses (Machira et al., 2013). The study concluded that the PMP appeared to be effective in improving nurses’ pain knowledge and attitudes (Machira et al., 2013). On a similar finding, de Rond, et al. (2000) implemented a Pain Monitoring Program for nurses. After nurses were educated, pretest score of 69.1% increased to 75.8% at posttest. It was concluded that the PMP is effective in improving nurses’ knowledge of pain management.

**Nurses’ Attitudes**

Despite evidence of standards of care in pain management practices, nurses adhere to personal beliefs and attitudes about pain management. Nurses’ attitudes regarding pain have been identified as a barrier to effective pain management in tandem with knowledge and individually for the last 30 years (Lewthwaite et al., 2011).

The study by Abdalrahmin et al. (2011) explored the nurses’ knowledge of and attitudes toward pain in a surgical ward before and after an implementation of postoperative management program. The study included 65 registered nurses who were asked to respond to a 21 items questionnaire, and a total of 240 patients records were audited. The study was conducted in a single setting, which limited the generalization of its conclusions. After implementation of the program the mean scores for all questionnaire items were found to have increased 75%, with an average of 16/21 for the
correct scores. There was statistically significant improvement in the documentation of patient care in 85% of patient record. It seems that registered nurses have received information about acute pain during their education in schools, however their education was inadequate that made nurses poorly equipped to control patients’ pain. The study further indicated that nurses hold negative attitudes and misconceptions and lack adequate knowledge and training regarding pain management (Abdalrahmin et al., 2011).

Morgan (2012) conducted a study to examine nurses’ knowledge and attitudes toward hospitalized patients with SUD and pain. Data were collected from nurses working with SUD population through individual interviews and using semi-structured interview guide. The study concluded that nurses lack knowledge of treatment for both SUD and pain. Additionally, attitudes and insufficient skill can cause barriers and result in under treatment of pain.

**Barriers to Effective Pain Management**

Studies have addressed issues related to pain management practices and barriers to effective pain management are frequently cited in the literature. A number of factors may make pain assessment and management difficult have been reported. Identified barriers include patient himself or herself, clinicians and organizational related factors (Pasero et al., 2009; Rose et al., 2011; Coker et al., 2010). The initial step in improving pain management for patients in pain is for nurses to recognize the barriers to effective pain management.

**Patient-related barriers.** Studies have indicated that patients are reluctant to talk about pain and the barriers to pain management (Elcigil, Maltepe, Esrefgil, & Mutafoglu, 2011). In the study, Elcigil et al. (2011) nurses indicated 12.6% of patients experienced difficulties with reporting pain intensity. It was mentioned that some patients reported
being reluctant to take pain medications out of fear of dependence and side effects and becoming tolerant to the effects of the medication. Not wanting to bother nurses and difficulties with completing pain scales were also reported as a barrier by patients were reported in this study (Elcigil et al., 2011).

In another study, Egan and Cornally (2013) found difficulty assessing pain on these elderly patients due to problems in cognition, may find it difficult to complete numerical pain scale and also communication problems as a result of sensory impairment. Others have been believed to underrate their pain because they believe that pain is a part of the normal aging process. According to the study by (Herr, Spratt, Mobilly, & Richardson, 2004) a frequent barrier to optimum pain management is elderly patients’ reluctance to cause trouble to the healthcare staff, which results in non-reporting of pain symptoms. Patient may think that reporting pain will divert physician’s attention from the underlying disease. Elderly patients are often affected by numerous conditions that are potential sources of their pain. To improve pain management, it is important to establish current practices and protocols in an institution. It is essential that nurses have sufficient knowledge of patient-related barriers to pain management to provide adequate pain-related care and treatment.

**Nurse-related barriers.** Pain remains insufficiently treated in hospitals due to nurses failing to administer opioids and failure to identify the correct opioid doses. A number of studies (Bernardi et al., 2007; Elcigil et al., 2011; Murnion et al., 2010) indicated that knowledge deficits, inadequate pain assessment, and reluctance to administer opiates are the most important barriers for nurses in implementing pain management. Poor knowledge of opioid preparation, dose selection, prescribing errors, and prescriber attitudes and beliefs were the suggested barriers experienced by the staff.
nurses. Poor prescribing especially on opioids include concerns about adverse effects such as constipation, respiratory depression, tolerance, addiction and association with drug abuse were stated among nurse-related barriers. Nurses are in a unique position to advocate for pain management needs on behalf of their patients. Unfortunately, nurses may not be prepared to advocate for patients as a result of lack of time, lack of knowledge and education and difficulties in assessing pain.

A study by Coker et al. (2010) found that nurses’ significantly underestimate the assessment of pain intensity and its consequences, the level of pain at rest and in motion as well as overall pain intensity. In this study, 15% of nurses shared that they administered pain management for 24h a day, even though 79% of nurses thought that round the clock administration of medication was the recommended method in contrast to on demand analgesic administration. There is the evidence that as a result of staff shortages and increasing workloads, nurses put nursing procedures first in-patient care, while attaching less importance to such aspects of care as pain management (Coker et al., 2010). Nurses have no time to educate patients about pain, nor they do not use nonpharmacological approaches to pain (Elcigil et al., 2011).

The study findings by Abdalrahim et al. (2011) have revealed that barriers to adequate pain control may be the lack of pain educational programs among nursing students. The literature consistently revealed the inadequacy of pain knowledge and inappropriate pain management attitudes of nursing students. Teaching student nurses about pain would make a difference in their knowledge, skills and attitudes. Student nurses may receive information about pain and pain management during educational preparation in nursing school; however, their education may not be in depth (Abdalrahim et al., 2011).
In the seven systematic research studies conducted (Chow & Chan, 2014), two authors identified, summarized and critically appraised pain management knowledge and attitudes of nursing students and evaluated the pain education program for nursing students. Findings indicated that nursing students worldwide had inadequate pain knowledge and misconceptions on pain management. Pain education programs, in general, were found to be effective in improving nursing students’ pain knowledge and attitudes (Chow & Chan, 2014). Shortcomings in pain education during student training years confirmed poor pain management.

Similarly, Duke, Haas, Yarbrough, and Northam, (2013) affirmed nursing students’ perceptions of the curriculum deficits regarding pain management. In a descriptive study including a sample of 162 junior and senior students enrolled in a baccalaureate nursing program and 16 nursing faculty. The Knowledge and Attitudes Survey Regarding Pain (KASRP) was used to measure knowledge and attitudes toward pain (Duke et al., 2013). The results showed that both faculty members and students did not have adequate pain knowledge and appropriate pain management attitudes. A positive correlation was found between the level of education and the percentage correct score of the KASRP. Differences found in knowledge and attitudes among the levels of students and faculty were significant (df = 3.173; F = 14.07, p < .001). Senior students nearing graduation scored only 68% (SD = 6.8) with faculty scoring only slightly better with a mean of 71% (SD = 13). Significant differences occurred between the junior and senior students, and between the junior students and faculty members. The findings documented the need to evaluate the way in which pain assessment and management are being taught in school.

Al Khalaileh and Al Qadire (2013) did a survey of fourth year nursing students
(n = 144) from three government universities in Jordan using the NKASRP (McCaffery and Ferrell, 1998). The results of the study showed that students had poor pain knowledge and attitudes, with an average of only 16 correct answers out of 40 questions. Students were weak in pain assessment and believed that patients should tolerate pain as much as possible before starting opioid treatment, and 48% suggested that the patients in pain could be managed by placebo.

A semi-structured interview of twenty-one UK nurses perceived four main challenges in managing pain namely, lack of clinical guidelines, lack of structured pain assessment tool, limited autonomy in decision making and patient’s condition itself (Subramanian, Allcock, James & Lathlean, 2011). The study result supported that nurses need continuing education to create awareness and to make effective decisions in pain management. The fundamental lack of knowledge and skill among nurses is a common barrier to application of a nursing intervention. Other clinician-related barriers are personal and cultural bias and communication difficulties among healthcare providers. False concerns about drug dependence and overdosing are examples of physician-related barriers in the treatment of pain.

System-related barriers. Research studies on pain management identified various system-related barriers (Coker et al., 2010; Elcigil et al., 2011). It includes a lack of clearly defined standards and pain management protocols. Delay in time to treat the pain due to multiple reasons, such as searching for the prescribed drug, is the most often reported system-related barrier (Elcigil et al., 2011). Participants in this study agreed that limited access to healthcare providers who specialized in pain management, and difficulty in contacting physicians to discuss treatment of pain were the barriers identified. Collaboration with other healthcare providers would ensure barriers experienced by
nurses could be resolved. In addition, other cited barriers to optimal pain assessment and management include busy units, inadequate staffing, poor communication, inadequate staff training, reluctance to prescribed opioids (Elcigil et al., 2011).

**Theoretical Framework**

Jean Watson’s Theory of Human Caring has been identified as the conceptual framework for this project. This theory has focused on the philosophic and spiritual basis of caring and sees caring as the ethical and moral ideal of nursing. Watson (1988) defines caring as the moral ideal nursing whereby the end is protection, enhancement, and preservation of human dignity. Human caring involves values, a will, and a commitment to care, knowledge, caring actions and consequences. Watson essentially believes that nursing is related to intersubjective human response to health-illness, environment-personal interaction, a knowledge of the nurse caring process, self-knowledge, the knowledge of one’s power and transaction limitations (Sourial, 1996). These processes begin with basic human kindness and elaborate on the deeper context of such values as empathy and compassion. The goal of Watson’s theory is to protect, enhance, and preserve human dignity by helping a person find meaning in illness, suffering, pain and existence (Watson, 1997). In addition, the goal centers on helping people to gain a higher degree of harmony within the mind, body and soul. This theory will clearly support the importance of providing comfort and safety of patient in pain. As a whole, the caring theory encourage nurses to embody the qualities of caritas processes identified by Watson (1998) namely:

1. Formation of a Humanistic-altruistic system of values;
2. Instillation of faith –hope:
3. Cultivation of sensitivity to one’s self and to others;
4. Developing of a helping-trusting, human caring relationship;
5. Promotion and acceptance of the expression of positive and negative feeling;
6. Systematic use of caring problem-solving caring process;
7. Promotion of transpersonal teaching-learning;
8. Provision of a protective, supportive and/or corrective, physical, societal and spiritual environment;
9. Assistance with gratification of human needs;
10. Allowance for existential-phenomenological-spiritual forces

Figure 1. The theory of human caring, (Watson, 1997).

Watson Caring theory states that nursing is concerned with health promotion, preventing illness and treatment of disease. Jean Watson believed that holistic health care
is central to the practice of caring in nursing. Nurses are encouraged to embody the qualities of caritas processes to be able to effectively recognized patients’ needs. In relation to effective management of pain, this theory clearly supports the acceptance of patients’ assessment of their pain and the importance of comfort and safety. According to Jean Watson, nurses must develop and sustain a helping-trusting caring relationship with their patient, and families. In nursing, trust is vital to the nurse-patient relationship (Watson, 2008). Watson (2008) also noted that through these relationships, human caring takes place and prosper. Trusting relationship requires respect, love, moral commitment inner harmony and authentic presence, and caring consciousness. For example, patients who are in pain are vulnerable and may require full assistance from nurse to function well. In a relationship built on trust, both parties are confident the nurse will do whatever it takes to get the patient back to functioning well. Therefore, Watson Caring theory considers the holistic care for the patient with their physical, psychological, and social environment. For caring to occur, nurses must observe and interpret patient’s subjective experience and must possess positive regard to individual patients’ need.

Methodology

A pre and post evaluation design was used to evaluate the effectiveness of a pain management educational intervention for improvement in the knowledge and attitudes of the medical surgical nurses from one teaching hospital located in Northern New Jersey. Pretest-posttest designs are widely used for the purpose of comparing and measuring change resulting from an intervention or treatment (Dimiter & Rumrill, 2003).

Settings

The proposed project was conducted in the medical surgical units of a university-affiliated teaching hospital located in Northern New Jersey. The medical units specialized
in gastrointestinal and hepatic disorders, and progressive care unit served general surgery; ear, nose and throat; thoracic patients and cancer patients. The hospital is a level 1 trauma center and a state funded teaching hospital that offers exceptional programs that serve patients throughout New Jersey and beyond. It accommodates 519 licensed beds, 676 Medical and adjunct medical staff, 602 medical residents and 3,220 total employees. The hospital has earned full accreditation from The Joint Commission and has awarded a Certificate of Distinction for Advanced Certification in Comprehensive Stroke Center. For years the hospital has been consistently recognized for excellence and high quality care by national agency in healthcare.

**Study Population**

The target population is direct patient care nurses from the participating in-patient units. These nurses are involved in bedside care and they are in the best position to affect the pain outcomes of hospitalized patients on a daily basis. All participants will meet the following criteria: (1) full time employee, registered nurse of the hospital, (2) should have at least one of year experience as bedside nurse, (3) who are providing direct care nursing to adult medical surgical patients. A total of 30 medical surgical registered nurses participated in this project.

**Study Interventions**

The DNP student had an initial visit of the unit to verbally alert the unit manager about the project. The unit managers were advised to remind the staff the opportunity to participate in the pain management educational session. Permission was solicited from the assistant director of the medical-surgical unit prior to the study. Advertising the study was completed through flyers posted on the different units as well as direct contact with staff nurses.
The nurses received a pretest survey in envelopes describing the study and the purpose of the study. The traditional paper and pencil method was used in conducting the pretest survey on the Nurses’ Knowledge and Attitude Survey Regarding Pain (NKASRP). The nurses were asked individually to complete the demographic sheet provided inside the folder. The pretest survey and the demographic data sheet were collected together before the educational intervention.

The educational session presented in a Power point included evidenced-based guidelines on pain management, current trends on pharmacological and non-pharmacological approaches on pain management. The topics that were presented were based on the survey tool. The nurses were given the opportunity to ask questions throughout the presentation. At the end of the education session, the second folder with the same survey form and evaluation form were handed to all nurses in attendance. An evaluation form was to ensure evidence that educational needs of staff were met, and an improved knowledge based regarding pain management was demonstrated. A total of eight educational sessions were conducted in each unit during a 4-week period. Four sessions were done on weekdays and four on a weekend in order to accommodate different shifts and days of the week.

Outcomes to be Measured

- The primary outcome measure is the Nurses’ knowledge and attitudes as measures by the Nurses Knowledge and Attitude Survey Regarding Pain (NKASRP). After signing the consent letter, a demographic form was completed by the participants. Immediately after the demographic form was completed, the pretest survey tool NKARPS was answered as the baseline prior to the educational session. The questionnaire developed by Dr. Betty Ferrell and Dr.
NKASRP was used assess nurse’s knowledge, skills and attitude. According to Ferrell and McCaffery (2014), the content of the tool was derived from the current standards of pain management, knowledge on pharmacology, physical dependence as the American Pain Society, the WHO, and the Agency for Healthcare Policy and Research. It is the most comprehensive tool in the literature review that measured the knowledge and attitudes of nurses and it is widely used. The NKASRP was selected because the tool showed supporting evidence of reliability and validity when used in research. The NKASRP is self-administered that measures knowledge, skills and beliefs that include questions about general pain principles, pain assessment and management, and use of analgesics (Ferrell & McCaffery, 2014). Items 1 through 22 and item 33 are true-false items and assess general knowledge of pain, its manifestation, and treatment. Items 23 through 31 and 34 through 39 are multiple choices and deal primarily with pharmacotherapeutics. The last two items have a two-part statement to 32 the patient care scenarios that require the participant to assess and reassess a patient. This resulted in a total of 40 responses. Internal consistency of the NKASRP has been reported to range between 0.70 and 0.73 with test-retest reliability of r = 0.80 (Ferrell and McCaffery, 2014). The NKASRP takes about 15 minutes to complete. Total scores will be computed by counting the number of responses and dividing by the number of items. A written permission to use this tool was obtained from the authors, Dr. Betty Ferrell, RN, PhD, FAAN and Dr. Margo McCaffery, RN, MSN, FAAN. Copy of the permission is presented in Appendix B. A copy of the survey tool: Nurses’ Knowledge and Attitudes Survey Regarding Pain is presented in Appendix C.
• The education session was delivered by the DNP student in a Power point presentation which included evidenced-based guidelines on pain management, current trends on pharmacological and non-pharmacological approaches on pain management.

• Immediately after the education session, the participants were asked to complete the posttest survey, using the same NKASRP tool, and an evaluation form to ensure that educational needs of the nursing staff were met. The evaluation form focused on the relevance of the education, individual perception on how to improve knowledge and attitudes of nurses. All participants found the education relevant to his or her daily practice.

**Risks or Harm**

The DNP student assumed the responsibility for the protection of the human subjects throughout the duration of the study. The project study was in compliance with research study standards. A consent letter and assurance of confidentiality was provided to the participants (Appendix D). No patient information was required nor discussed. Confidentiality was maintained at all times. Institutional Review Board (IRB) approval was obtained from the both the from hospital site and from the school where the DNP student is currently enrolled. (IRB approval is presented in Appendix G).

**Subject Recruitment**

The study subjects were direct care nurses meeting the inclusion criteria on the units designated as adult, medical surgical in-patient units of a university teaching hospital. Fliers were placed in prominent areas two weeks before the survey. DNP student provided small incentives, a $5.00 card from Starbucks to the nursing staff of each participating unit to encourage participation and survey completion. The DNP
student sought the assistance of the nurse educator to provide additional encouragement in support of the study. Nursing leaders participated by reminding and encouraging the nursing staff in the completion of the survey. Nursing leaders engagement further allowed nurses to complete the study program. Such measures were utilized to recruit as many nurses to participate in the project study.

**Consent Procedure**

The protection of individual rights is important in any research study. The consent letter ensures that all the participants are provided sufficient information about the study. Prior to completing the survey forms, the DNP student gave a brief explanation about the project study. The consent letter and assurance of confidentiality were provided to each participant (Appendix D). The medical surgical nurses received the introduction and consent information prior to the pre-test survey. By signing the consent letter, the participant indicated she/he understood the purpose of the study and that their participation was voluntary. No identifying data was placed on completed survey. Obscurity and anonymity of the project results were maintained at all times.

There were no risks associated with participation in this project, and no penalty associated with refusal to participate. The participant’s right to participate, refusal to participate or withdrawal to participate was honored at all times.

**Subject Costs and Consumption**

The DNP candidate conducting the project study absorbed the financial cost. The cost of planning, implementation and evaluation of the project were arranged by the DNP student.

<table>
<thead>
<tr>
<th>Project Items</th>
<th>Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5 Starbucks card</td>
<td>30 X 5</td>
<td>$150.00</td>
</tr>
</tbody>
</table>
Survey paper, envelopes, and printing (2 sets) | 30 X 20 | $ 600.00
---|---|---
| | | $750.00

**Project Timeline**

The timeline was projected to ensure timely completion of the project. Timeline guided the DNP student in detailing the activities necessary to achieve established goals. The DNP candidate anticipated that the commitment to improve pain management practices was reflected on caring for patients in pain.

<table>
<thead>
<tr>
<th>Time</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>August, 2016</td>
<td>Capstone Proposal formulated</td>
</tr>
<tr>
<td>October, 2016</td>
<td>Project submitted</td>
</tr>
<tr>
<td>Feb. – May, 2017</td>
<td>Project revision submitted/Approval</td>
</tr>
<tr>
<td></td>
<td>Meet with DNP chair</td>
</tr>
<tr>
<td>July –August, 2017</td>
<td>Continue project proposal completion</td>
</tr>
<tr>
<td>Sept.- Oct., 2017</td>
<td>Proposal hearing</td>
</tr>
<tr>
<td>Nov- Dec., 2017</td>
<td>IRB submission</td>
</tr>
<tr>
<td>Jan – May, 2018</td>
<td>Awaits IRB approval</td>
</tr>
<tr>
<td>June-July, 2018</td>
<td>Continue project (Data collection and Data analysis) to a finish project</td>
</tr>
<tr>
<td>October 1, 2018</td>
<td>Final Presentation</td>
</tr>
</tbody>
</table>

**Evaluation Plan**

**Data Maintenance Security**
The confidentiality was maintained at all times. The informed consent safeguards the participant’s awareness of all measures to ensure confidentiality and anonymity in data collection at all times. The DNP student collected all survey copies and all information was kept in a secure locked filing cabinet available to the researcher and the project chair. All files were in a secure location in the project chair office. No discussion or any information regarding participants have occurred during the process.

Data Analysis

Statistical Package for Social Sciences SPSS Version 23 was utilized to analyze the data collected. Participants’ demographic information, posttest results and education session evaluation results were summarized as the frequencies and proportion of all study variables. The Nonparametric Wilcoxon Signed Ranks test was used to compare the NKASRP pretest and post test scores on knowledge and attitudes about pain management of the nurse participants in providing pharmacological and non-pharmacological approaches to pain control. The $p$ value less than 0.05 was considered as statistically significant. The Nonparametric Wilcoxon Signed rank test is used to compare two sets of scores i.e. pre-survey and post survey that comes from the same subjects or for the one-sample location problem (Rey & Neuhauser, 2014).

Findings

Sample

A convenience sample of 30 nurse participants from medical surgical units at a teaching hospital. A pretest survey was distributed followed by and educational intervention. Immediately after the education intervention a posttest survey was completed with evaluation and feedback about the education session.

Characteristics of Nurse Participants
The demographic characteristics of the registered nurse participants (n = 30) are presented in Table 1. Seventy-seven percent (n = 23) were female, 3% (n = 7) were male, and the largest single group was between the ages of 31-40 years old (30%). The participants were composed of Asian 60%, (n = 18), African American 30% (n = 9), Caucasian 7% (n = 2) and Other 3% (n = 1).

The educational level was varied in which the participants having Associate degree 10% (n = 3), Baccalaureate degree 90% (n = 27). Most of the participants in the study are holding a Baccalaureate degree and two participants are in school for the master’s degree. The number of years of experience working as a registered nurse ranged from 10 to 40 years of experience. The participants had a variety of clinical experience however, majority 63% (n = 19) had begun as medical surgical nurses. Years of professional experience ranges from 1 – 40 years of clinical experience. Half of the number of the participants 50% (n = 15) had 1-10 years of professional experience, and only 10% (n = 3) of the participants had 30 years or greater clinical experience. The participants’ professional specialty included 10% (n = 3) with critical care experience in the past, oncology experience 3% (n = 1), ED/Trauma 20% (n = 6), Medical Surgical 3% (n = 1), and majority 63% (n = 19) of the participants had no clinical specialty. Finally, most of the nurses 60%, (n = 18) participants mentioned that they had no pain management education session outside the study facility and 40% (n = 12) a half day pain management session that was provided by the institution.

**NKASRP Pretest and Post Test Results**

The total survey score was calculated and summarized as means standard deviation (SD). Responses on the NKASRP were analyzed by comparing the scores on pretest and the post test. On the pretest, participants had a mean score of 24.77 (SD =
3.901). On the other hand, the post test showed a mean score of 30.43 (SD=2.254).

When comparing the overall NKASRP pretest scores and post test scores, nurses’ knowledge and attitudes in providing pharmacological and nonpharmacological approaches to pain control, the correct rate of test items increased significantly ($z = -4.33$, $p < .001$) from pretest scores to posttest scores. The low scores on the pretest for nurses on the present study may be attributed to their having limited access to formal lectures or continuing education on pain management in their clinical practice. Sixty percent (n= 18) documented that they did not have any prior education on pain and pain management whereas, only 40% (n=12) had limited knowledge on pain. Results indicated a statistically significant difference in knowledge and attitudes about pain after the education intervention. All participants gained knowledge on pain management as evidenced by increased in scores on posttest.

**Knowledge Deficits in Pharmacology and Nonpharmacology Treatment**

Further analysis showed areas of knowledge that participants found challenging. The five true and false questions most likely to be answered correctly focused on attitudes, and basic pain medication administration. The survey questions of the top five correct responses to the true false portion of the questionnaire and the percentage of participants who answered those items correctly are presented in Table 3. Question 3, 7, 11, 13, & 15 were answered above 80% of the time. In contrast, Table 4 showed the five most frequently incorrect answered True/False Questions. Questions # 5, 6, 8, 17, & 19 are the frequently incorrectly answered questions and are pharmacology-based questions. Result findings indicated that participants have poor knowledge where related to specific medications to pain, especially opioids and their dosages. Similar findings have been reported by other studies namely, Erkes et al. 2001; McCaffery and Ferrell 1999;
McCaffery and Robinson 2002. Fear of opioid administration may be the result of overconcern about medication tolerance and respiratory depression when opioids are used (McCaffery and Ferrell, 1999; McCaffery and Robinson, 2001). The test Question # 11 (96%) was answered correctly by the participants as seen from the survey result from the pretest result 80% to the post test result 96%.

There were two (2) case studies that were included in the survey questions. These questions explored nurses’ decision-making regarding their assessment of pain and the interventions needed to relieve patients in pain. The two patients were Andrew (patient A) and Robert (patient B), both 25 years old and both on their first day following abdominal surgery. Their vital signs were all within normal limits. Their pain levels were assessed by the participants were 8 out of 10. The two patients expressed their behaviors as: when the nurse enters the room Andrew smiles and jokes. On the other hand, Robert is lying quietly and grimaces and turns in his bed as the nurse approaches him. Regarding the level of pain in the two clinical cases of the questionnaire, the correct value of both questions was eight.

In the first case study, 100% (n = 30) of the participants documented the patient’s pain level was 8 on the NRS 0-10. On the second case study, 100 % (n = 30) nurses marked the patient pain scale 8 on NRS 1-10. When comparing the two groups of answers, nurses correctly scored both patients in pain. This shows that nurses are not influenced by patients’ behavioral response to pain. However, when medicating these two patients, the participants had a wrong idea of recognizing the effect of Morphine in treating the patient in pain. Only 43% (n = 13) will medicate Patient A with Morphine 3mg IV now, while 50% (n = 15) will medicate Patient B with Morphine 3mg IV now. Findings indicated indifference between their assessments and intervention. Due to
nurses’ inadequate knowledge of pain management, several nurses in this study failed to
give Morphine dosage to each patient. Nurses might think giving opioid medication to
patients in pain will increase the chance of developing to opioid tolerance and respiratory
distress. Studies have reported nurses tend to underestimate hospitalized patients in pain.

Discussion

This study was conducted to evaluate and improve the nurses’ knowledge and
their attitudes toward pain in medical surgical units. A total of 30 registered nurses
participated in this study. All of the participants knew that it is important to manage pain
among hospitalized patients especially immediate post-operative patients and cancer
patients. Providing adequate pain management is dependent on the knowledge, attitudes
and skills of the nurse.

Nursing patients in pain is a challenging task that requires adequate knowledge,
skills and right attitudes. The present study demonstrated a statistically significant
increase in the total scores on knowledge and attitudes to pain management among
medical surgical nurses after the completion of the posttest survey. Several earlier studies
support the findings of this study and that inadequate knowledge and inappropriate
attitudes regarding pain (Bernardi et al. 2007; Abdalrahmin et al. 2011; Elcigil et al.
2011; Machira et al. 2013).

The study also aimed to investigate the effectiveness of a pain education
intervention in improving nurses’ knowledge and attitude regarding pain and pain
management. The Nurses Knowledge and Attitude Survey Regarding Pain (NKASRP)
was the instrument used in the study and was answered by the participants immediately
before and after the education intervention. The questionnaire was designed to evaluate
the pain management knowledge and attitudes regarding the characteristics of pain
management, pharmacology, addiction, physical dependence, tolerance, and principles of assessment and management of pain (McCaffery & Ferrell, 2014).

The educational session generated a lot of discussion around the importance of effective pain management. The overall feedback from the participants on the education session was positive. They felt that pain management training should be part of continuing education that the hospital has been providing the nursing staff. The participants recognized the importance of evidence-based approach to maintain optimal level of patient’s comfort and safety.

The study findings presented in Table 2, the pretest survey and the posttest survey results that showed during the pretest, all participants (n= 30) had a mean score of 24.77 (SD = 3.901). In general, it can be concluded from the participants’ responses on the pretest demonstrated lack of sufficient knowledge about pain and had negative attitudes toward pain management. On the other hand, the posttest, all participants (n = 30) showed a mean score of 30.43 (SD = 2.254). It revealed that the education intervention about pain management was effective in improving nurse’ knowledge and attitudes toward pain. The nurses had a better understanding about the nature of patient’s pain.

All the participants correctly answered Question # 31 (the most accurate judge of the intensity of patient’s pain is the patient). The patient is the best judge of pain intensity because pain is subjective and only the patient can feel the pain. This was correctly identified by 100% of all the participants. Participants’ response was indicative of the nurses’ knowledge that she understood the concept of pain is subjective and that whatever the patients say it is. Pain cannot be measured objectively but rather, pain should be measured subjectively as only the suffering person knows how the experience
feels. Only the patient knows how she or he really feels; it is not appropriate for healthcare providers to try to judge whether the pain is real or not.

A greater percentage of nurses 93% (n = 28) did not believe that a placebo could be used to determine if pain is real. If placebo were used and pain relief occurred, many nurses would disregard the patient’s report of pain. Further, it would suggest that patients are not honest for accurately reporting pain. Contrary to this study, Jordanian nurses would still prefer to use placebo to treat their patients in pain as reported in the study by Al Qadire & Al Khalailaeh, (2014). This nursing practice might mean that nurses still devalue the patients’ reporting of pain (Al Qadire & Al Khalailaeh, 2014).

Two survey questions addressed knowledge of the recommendation for cancer pain can be treated with oral morphine Question # 23. Regarding the oral administration of morphine for cancer-related patients, a large number of participants 60% (n = 18) did not respond correctly. Many nurses are still unaware that the oral route can be used for cancer pain. The oral route is preferred for prolonged cancer-related pain because it is most convenient and cost-effective method of administration (McCaffery & Pasero, 1999). Morphine, as the appropriate drug of choice for persistent cancer-related pain, was selected by a least percentage of the participants. Participants 50% (n = 15) still thought that Codeine was the drug of choice (Question #25). The strong message in this survey support that nurses require further education when it comes to cancer pain management.

The present study also showed the need for more emphasis on pain course in particular to opioid pharmacology and nurses’ attitude to opioid treatment. The majority of the items of the NKASRP are pharmacology-based questions which are extremely important in the management of pain. Deficiencies were documented in evaluating the
use of opioid narcotics, calculation of analgesic equivalents and differentiating addiction from physical dependence. Areas needing improvement included knowledge about the effects of narcotics and differentiating addiction from tolerance and physical dependence.

The analysis of the result findings of the three most frequently incorrectly answered questions were Questions # 28, 33, & 36. This finding indicated not all nurses have adequate knowledge in caring for patients with alcohol and opioid problems. Nurse participants of the study indicated that they were weak in both pharmacological and nonpharmacological interventions for patients in pain. Pain will remain insufficiently treated in hospitals when nurses fail to administer opioid and failure to identify the correct opioid doses. Research studies (Innis et al., 2004; IOM, 2011) described nurses’ attitudes toward pain management in relation to opioid use and their side effects especially about addiction. These studies also indicated that nurses tend to underestimate patients’ pain intensity and therefore, under administer analgesic medications. Inadequate knowledge of opioid pharmacy remains an issue among healthcare providers (IOM, 2011).

As shown in Table 5, findings indicated difference between assessment and intervention. The finding further showed that nurses have adequate knowledge in assessing patient in pain however, their knowledge on medication administration of opioid was limited. In such a situation, under treatment of pain is due to nurses’ fear of respiratory depression. In the study Murnion, et al., (2010) identified that only 35% of acute inpatient achieved complete pain relief. Poor knowledge of opioid preparation, dose selection, prescribing errors, and prescriber attitudes and beliefs were the suggested barriers experienced by the staff nurses. Poor prescribing especially on opioids include
Concerns about adverse effects such as constipation, respiratory depression, tolerance, addiction and association with drug abuse.

Jean Watson’s Theory of Human Caring provided the framework of this project study. The goal of Watson’s theory is to protect, enhance and preserve human dignity. The theory encompasses the caring attitudes and patient-centered focused of the nurse in providing optimum level of comfort and safety. Furthermore, the theory considers the holistic care for the patient with their physical, psychological, and social environment. Nurses in their daily practice apply the key concept of this theory: care, compassion, support, healing and trust.

**Limitations**

Although there was very important information obtained from this project and the results of the study were promising however, several limitations should be mentioned, the project has some limitations due to small sample size. Another limitation was that lack of diversity due to the largely female nursing population in the medical surgical units. The utilization of convenience sample versus randomized sampling increased sample bias thus limiting generalizability of the results. A convenience sample of 30 nurses was used from one institution limits the ability to generalize the findings to other population of nurses.

In addition, NKASRP as a set of structured close – ended questions used in the study, the depth of questioning was limited. The main project was focused on examining nurses’ knowledge, and attitudes in relation to pain management, yet their actual pain management practice was not examined. It would be beneficial to assume that a long-term evaluation on pain management would complement and validate the actual practice of nurses on pain management.
The education intervention was brief. Nurses were educated only for 15-20 minutes. A more extended program may have a greater impact on nurses’ pain knowledge, attitudes and clinical practice. Because the education course proved to be effective, it is recommended that education be a regular topic on hospital’s in-service courses. More in-service training should be planned and implemented to enhance nurses’ competence in pain management. Future studies should investigate the effects of increased education time.

**Recommendations/Implications to Practice**

**Economic/Cost Benefit**

Unresolved pain is costly to both patient and healthcare institution (IOM, 2011). IOM (2011) reported the combined incidence of both acute and chronic pain is approximately 100 million people in the United States, people suffering from pain experience both acute and chronic pain. Nurses must understand the cost of pain has huge economic burden since it is closely linked with disability and unemployment, (IASP, 2010). Literature revealed that the pain represents a major clinical, social and economic problem and management is important to minimize patient suffering.

In general, given the magnitude of economic cost of pain and suffering, healthcare should consider investing in research, education and training designed to reduce the burden of pain to society. To be effective in the treatment of pain, clinical nurses at the bedside must support best practices since inadequate and inconsistent pain management practices will lead to patient suffering and increase financial cost.

**Impact on Healthcare Quality and Safety**

Collaborative efforts from both the physician and the nurse to improve the quality of pain management and these efforts must move beyond assessments and
communication of pain approaches. Essential to maintaining healthcare quality and safety is establishing a standard for pain assessment and documentation to ensure that pain is recognized. This study recognized that the patients should be involved in pain management plans and pain treatment. In order to improve pain management, nurses have to determine that pain management goals should be tailored to the needs of individual patients. Educating patients and families will strengthen their lines of defense to overcome barriers of treatment for pain. Barriers to the effective pain management must be identified and addressed to avoid failure to solve patient’s pain.

**Policy Implications**

Pain practice guidelines and policies exist, and their implementation is needed to better understand patient’s response to pain. It is important to facilitate clinical applications of pain policies and its application to patients’ care should be supported and evaluated. Staff nurses’ involvement in pain management policy reviews can facilitate dialogue. Interventions can be implemented by hospitals that include developing policies and protocols that emphasize pain assessment and management to ensure patient’s pain is adequately controlled. The policy and protocol development can only be achieved through continued support and encouragement from the administration.

**Translation**

Knowledge translation into practice is the ultimate goal of educational activities. The educational activity that was present proved to be very effective in the management of pain. The education class has to be conducted from time to time. Constant reinforcement of knowledge and shared decision-making on pain management will help nurses achieve better pain control. The study requires that the hospital will determine and ensure staff competency in pain assessment and management and will address pain
management on clinical orientation of staff. To promote sustainability, the study recommends that nurses’ knowledge and attitudes should be tracked to validate strategies that have most affected nurses’ knowledge and attitude.

**Dissemination**

Dissemination of information helps to transform new knowledge to practice. Dissemination of the study results to conferences and publication to scholarly journals specific to pain management has the potential to enlighten nursing practice and advance education. On the same note, dissemination of the project has the purpose of reporting to the stakeholders that includes the administrators, nurse managers and the nurses working at the project site will receive the findings of this project study. The Journal of Nursing Administration and the Journal of Nursing Education are the two journals where to best publish. The DNP student was invited by the Nursing Research Council Committee for a podium presentation of the project study to other members of the committee.

**Professional Reporting**

Recommendations for future research include replication of this study with a larger population sample and from different hospital units. Identifying nurse’s knowledge and patients’ pain experiences through research can be a means of improving patient outcomes. Further research is needed that will include family members’ knowledge and perceptions of pain and pain treatment. Recommendations for re-audit registered nurses’ knowledge and attitudes on a timely basis would ensure pain assessment and management are being carried out. There is also a need for greater understanding of how nurses’ pain management can potentially impact HCAPHS scores.

**Conclusions**
The nurse participants in the present study showed positive response in the educational intervention. The nurses realized the need of additional education on pain management and other topics influencing nursing practice. Quality improvement projects bring evidence into practice. The results of this quality improvement project study showed increased nurses’ knowledge and attitudes regarding pain management practices. The nurses used the knowledge gained from the education intervention to better manage their patients’ pain thereby, improving patient satisfaction.

Effective pain management is an essential component of quality patient care. The education intervention in this study has proven to be an effective avenue to improve nurses’ knowledge and attitude in the management of pain. As nurses increase their knowledge and improve attitudes regarding pain management, clinical outcomes will improve. Further, current study findings concluded that educational programs in pain management enhance nurses’ knowledge, skill and attitudes however, sustained and an improved and ongoing pain education would be essential for nurses to become aware of current guidelines in pain management.

The literature reviewed concluded that educational program in pain management is acknowledged as one of the key aspects of improving pain management, however educational opportunities alone will not raise the bar. Healthcare organizations, professional agencies and researchers must continue to dig deeper in their efforts to find ways to ensure that pain is no longer a burden to patients, their families and the society as a whole.
References


Quality-Initiatives-Patient-Assessment-instruments/
HospitalQualityUnits/HospitalHCAHPS.html.


Academies Press,


https://www.nap.edu/resource/24781/Highlights_071317_Opioids.pdf


http://www.cdc.gov/nchs/fastats/inpatient-surgery.htm


APPENDIX A

Demographics Questions

1. Select your appropriate age group
   18-20 years of age
   21-30 years of age
   31-40 years of age
   41-50 years of age
   51-60 years of age
   60 years of age and older

2. Select your gender
   Male
   Female

3. Select your current nursing specialty area
   □ Critical Care
   □ Oncology
   □ Emergency / Trauma

4. Select the highest nursing degree currently held
Diploma
Associate Degree
Bachelor’s degree
Master’s degree
Doctoral degree

5. Select the number of years you have been a practicing as a RN
☐ 1-10 years
☐ 10-20 years
☐ 20-30 years
☐ 30-40 years
☐ 40-50 years
☐ 50 or more years

6. Select the number of hours you work as a RN each week
1-10 hours weekly
11-20 hours weekly
21-30 hours weekly
40-50 hours weekly

7. List any prior pain management courses or education you have received
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
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 r>.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, (http://prc.coh.org), 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 Margo McCaffery, RN, MS, FAAN Research Scientist Lecturer and Consultant
APPENDIX C:

Survey Tool

Nurses’ Knowledge and Attitudes Survey Regarding Pain (NKASRP) (http://prc.coh.org)

True/False – Circle the correct answer.

T  F  1. Vital signs are always reliable indicators of the intensity of a patient’s pain.

T  F  2. Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.

T  F  3. Patients who can be distracted from pain usually do not have severe pain.

T  F  4. Patients may sleep in spite of severe pain.

T  F  5. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.

T  F  6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

T  F  7. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.

T  F  8. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.

T  F  9. Opioids should not be used in patients with a history of substance abuse.

T  F  10. Elderly patients cannot tolerate opioids for pain relief.
T F  11. Patients should be encouraged to endure as much pain as possible before using an opioid.

T F  12. Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.

T F  13. Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.

T F  14. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.

T F  15. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.

T F  16. Vicodin (hydrocodone 5 mg + acetaminophen 300 mg) PO is approximately equal to 5-10 mg of morphine PO.

T F  17. If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.

T F  18. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.

T F  19. Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regimen.

T F  20. Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.

T F  21. The term ‘equianalgesia’ means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief.

T F  22. Sedation assessment is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression.

Multiple Choice – Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is
   a. Intravenous   b___intramuscular, c___subcutaneous d____oral, e____rectal

24. The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is
   _____ a. intravenous   _____b. intramuscular c. ___subcutaneous d. __oral  e. ____rectal

25. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
   a. ___codeine b. ___morphine c. ___meperidine d. ___tramadol

26. A 30 mg dose of oral morphine is approximately equivalent to: a. ___Morphine 5 mg IV
   b. ___Morphine 10 mg IV c. ___Morphine 30 mg IV d. ___Morphine 60 mg IV

27. Analgesics for post-operative pain should initially be given
   a. ____around the clock on a fixed schedule
b. ___ only when the patient asks for the medication
   c. ___ only when the nurse determines that the patient has moderate or greater discomfort

28. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is
   a. ___ less than 1% b. 1-10%
   c. ___ 11-20%
   d. ___ 21-40%
   e. ___ > 41%

29. The most likely reason a patient with pain would request increased doses of pain medication is
   a. ___ The patient is experiencing increased pain.
   b. ___ The patient is experiencing increased anxiety or depression.
   c. ___ The patient is requesting more staff attention.
   d. ___ The patient’s requests are related to addiction.

30. Which of the following is useful for treatment of cancer pain?
   a. ___ Ibuprofen (Motrin)
   b. ___ Hydromorphone (Dilaudid)
   c. ___ Gabapentin (Neurontin)
   d. ___ All of the above

31. The most accurate judge of the intensity of the patient’s pain is a. the treating physician
   b. ___ the patient’s primary nurse
   c. ___ the patient
   d. ___ the pharmacist
   e. ___ the patient’s spouse or family

32. Which of the following describes the best approach for cultural considerations in caring for patients in pain:
   a. ___ There are no longer cultural influences in the U.S. due to the diversity of the population.
   b. ___ Cultural influences can be determined by an individual’s ethnicity (e.g., Asians are stoic, Italians are expressive, etc).
   c. ___ Patients should be individually assessed to determine cultural influences.
   d. ___ Cultural influences can be determined by an individual’s socioeconomic status (e.g., blue collar workers report more pain than white collar workers).

33. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?
   ___ < 1%   ___ 5 -15%   ___ 25 - 50%   ___ 75 - 100%

34. The time to peak effect for morphine given IV is
   a. 15 min.
   b. 45 min.
   c. 1 hour
   d. 2 hours

35. The time to peak effect for morphine given orally is
   a. 5 min.
   b. 30 min.
   c. 1 – 2 hours
   d. 3 hours

36. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:
___ a. sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued.
___ b. Impaired control over drug use, compulsive use, and craving.
___ c. The need for higher doses to achieve the same effect.
___ d. a and b

37. Which statement is true regarding opioid induced respiratory depression:
   ___ a. More common several nights after surgery due to accumulation of opioid.
   ___ b. Obstructive sleep apnea is an important risk factor.
   ___ c. Occurs more frequently in those already on higher doses of opioids before surgery.
   ___ d. Can be easily assessed using intermittent pulse oximetry.

Case Studies
Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

Directions: Please select one answer for each question.

38. Patient A: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.

   0  1  2  3  4  5  6  7  8  9  10

   No pain/discomfort ----------------------------------------Worst Pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.

1. ___ Administer no morphine at this time.
2. ___ Administer morphine 1 mg IV now.
3. ___ Administer morphine 2 mg IV now.
4. ___ Administer morphine 3 mg IV now.

39. Patient B: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert’s pain:

   0  1  2  3  4  5  6  7  8  9  10

   No pain/discomfort ----------------------------------------Worst Pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time:
1. Administer no morphine at this time. 2. Administer morphine 1 mg IV now. 3. Administer morphine 2 mg IV now. 4. Administer morphine 3 mg IV now.


APPENDIX D

Consent Letter

**Consent to Participate**

Dear Nurses,

My name is Soledad Dela Merced and I am a Doctor of Nursing Practice (DNP) student at Rutgers University. I am doing a project study entitled; Pain Management: A Project to Improve Nurses’ Knowledge and Attitude.

You are invited to participate in this study to explore and evaluate knowledge and attitude of nursing staff in pain management. We hope to learn about gaps in knowledge for nurses to plan and intervene appropriately when necessary. The study will also provide participants current trends on this topic.

Your participation is voluntary and may be terminated any time upon your request without further explanation. You will not provide your name and the pre and posttest surveys will remain anonymous. The sample size will include 30 medical surgical nurses in this hospital.

There are no foreseeable risks to you. Although there may be no direct benefit to you, but possible benefits to your patients. And also to you being part of the study is to contribute knowledge base to our profession and gain a sense of satisfaction for your contribution to the study project.

There are no costs to participate. For any questions, please contact me at 973-6998919 and/or my faculty adviser, Dr Amita Avadhani at avadhaam@sn.rutgers.edu.
Thank you for your cooperation.

Sincerely,
Soledad Dela Merced, MSN, RN, CCRN

APPENDIX E

Educational Intervention Evaluation Form

Your feedback is important to this study to ensure we are meeting your educational needs. We would appreciate if you could take a few minutes to share your opinions so we can serve you better.

Please return this form to the educator at the end of the educational activity.
Thank you!

Educational Activity Title: ___________________  Date __________
Instructor: _____________

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1. The objectives of the program was clearly presented.
2. The educational content was applicable to my job.
3. The content of the program met my expectation.
4. The educational activity is relevant to my practice.
5. I received valuable information about pain and its management.
6. The educator was knowledgeable about the topic.
Overall Evaluation:

1. In your opinion, the overall rating of this educational activity-----

2. What did you most appreciate about the educational activity------

3. The presentation could have been improved most by-------

Appendix F

Recruitment Flyer

Volunteers are needed for a Project Study. A 30-minute education session will be held on this unit to provide information about pain management. A short and anonymous survey will be conducted to measure Nurses’ knowledge and attitude about Pain Management.

Medical Surgical nursing staff employees of are encouraged to participate.

Any participation in this education session study is strictly voluntary and not required or mandatory.

Sessions will be held on your unit and will be available from February through March, 2018. Specified times will be determined by staff accommodation, need and interest.
Please notify **Soledad Dela Merced, RN**, a DNP student Rutgers University, in person or by email at [removed] if you would like to participate in this project study.

**Thank you in advance for your interest and participation!**
APPENDIX G

IRB approval

Arts & Sciences IRB - New Brunswick
335 George Street
Suite 3100, 3rd Floor
New Brunswick, NJ 08901
Phone: 732-235-2866

Health Sciences IRB - New Brunswick/Piscataway
335 George Street
Suite 3100, 3rd Floor
New Brunswick, NJ 08901
Phone: 732-235-9806

Health Sciences IRB - Newark
65 Bergen Street
Suite 511, 5th Floor
Newark, NJ 07107
Phone: 973-972-3608

DHHS Federal Wide Assurance Identifier: FWA00003913
IRB Chair Person: Cheryl Kennedy
IRB Director: Carlotta Rodriguez
Effective Date: 5/9/2018
Approval Date: 4/27/2018
Expiration Date: 4/26/2019

**eIRB Notice of Approval for Initial Submission**

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**STUDY PROFILE**

| Study ID: | [Redacted] |
| Title: | Pain Management: A Project to Improve Nurses' Knowledge and attitudes |
| Principal Investigator: | Soledad Dela Merced |
| Co-Investigator(s): | Amita Avadhani, Peijia Zha |
| Study Coordinator: | Amita Avadhani |
| Approval Cycle: | Twelve Months |
| Risk Determination: | Minimal Risk |
| Review Type: | Expedited |
| Expedited Category: | (7) |
| Subjects: | 30 |

**CURRENT SUBMISSION STATUS**

| Submission Type: | Research Protocol/Study |
| Approval Date: | 4/27/2018 |
| Submission Status: | Approved |
| Expiration Date: | 4/26/2019 |
| Pregnancy Code: | No Pregnant Women as Subjects |
| Pediatric Code: | No Children As Subjects |
| Prisoner Code: | No Prisoners As Subjects |
ALL APPROVED INVESTIGATOR(S) MUST COMPLY WITH THE FOLLOWING:

1. Conduct the research in accordance with the protocol, applicable laws and regulations, and the principles of research ethics as set forth in the Belmont Report.

2. Continuing Review: Approval is valid until the protocol expiration date shown above. To avoid lapses in approval, submit a continuation application at least eight weeks before the study expiration date.

3. Expiration of IRB Approval: If IRB approval expires, effective the date of expiration and until the continuing review approval is issued: All research activities must stop unless the IRB finds that it is in the best interest of individual subjects to continue. (This determination shall be based on a separate written request from the PI to the IRB.) No new subjects may be enrolled and no samples/charts/surveys may be collected, reviewed, and/or analyzed.

4. Amendments/Modifications/Revisions: If you wish to change any aspect of this study, including but not limited to, study procedures, consent form(s), investigators, advertisements, the protocol document, investigator drug brochure, or accrual goals, you are required to obtain IRB review and approval prior to implementation of these changes unless necessary to eliminate apparent immediate hazards to subjects.

5. Unanticipated Problems: Unanticipated problems involving risk to subjects or others must be reported to the IRB Office (45 CFR 46, 21 CFR 312, 812) as required, in the appropriate time as specified in the attachment online at: https://orra.rutgers.edu/hspp

6. Protocol Deviations and Violations: Deviations from/violations of the approved study protocol must be reported to the IRB Office (45 CFR 46, 21 CFR 312, 812) as required, in the appropriate time as specified in the attachment online at: https://orra.rutgers.edu/hspp

7. Consent/Assent: The IRB has reviewed and approved the consent and/or assent process, waiver and/or alteration described in this protocol as required by 45 CFR 46 and 21 CFR 50, 56, (if FDA regulated research). Only the versions of the documents included in the approved process may be used to document informed consent and/or assent of study subjects; each subject must receive a copy of the
approved form(s); and a copy of each signed form must be filed in a secure place in the subject's medical/patient/research record.

8. **Completion of Study:** Notify the IRB when your study has been stopped for any reason. Neither study closure by the sponsor or the investigator removes the obligation for submission of timely continuing review application or final report.

9. The Investigator(s) did not participate in the review, discussion, or vote of this protocol.

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APPENDIX I:

Education Intervention

Rutgers, The State University of New Jersey, School of Nursing

Capstone Chair: Dr. Amita Avadhani
Capstone Committee Member: Dr. Peijia Zha
Soledad G. DeJa Merced
Doctor of Nursing Practice
Rutgers University

Pain Management
A Project to Improve Nurses' Knowledge and Attitudes
Learning Objectives

- To engage medical surgical nurses in understanding the value and high priority of pain control.

- To increase knowledge and attitude change regarding pain management through an education session.

- Describe current trends in Pain Management

Background and Significance

- Pain is a universal problem
  Estimated annual cost $500-635 billion in medical treatment and lost of productivity
  Pain affects approx. 100 million Americans
  1 in 5 adults suffer from pain

  (IOM, 2011)

- Pain management is a human right

  (IASP, 2011)
Pain Perception: What is pain?

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage

(JASP, 2011)

Pain is “whatever the person experiencing says it is, whatever says it does”

(McCaffery, 1998)

Assessment of Pain

Pain is always subjective

Patient report is the gold standard

Chose appropriate pain scale for assessment

• Numerical Rating Scale
• Wong-Baker Faces Scale
• Behavioral pain scale
Pain Assessment P-Q-R-S-T

- Provoking factors
- Quality
- Radiation and region
- Severity and symptoms associated with pain
- Timing

Comprehensive pain history
Done on a regular basis: every 2 hours or every shift
using a pain assessment scale
Acute vs Chronic

<table>
<thead>
<tr>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a symptom</td>
<td>Is a disease, with underlying pathology</td>
</tr>
<tr>
<td>Has identifiable source and physical findings</td>
<td>Often without a clear source or physical findings</td>
</tr>
<tr>
<td>Decreases w/ healing of the injury</td>
<td>Can be continuous or intermittent</td>
</tr>
<tr>
<td>Often associated with autonomic response</td>
<td>Typically does not resolve with treatment</td>
</tr>
<tr>
<td>Resolves with treatment</td>
<td></td>
</tr>
</tbody>
</table>

APS, 2007

Types of Pain

Nociceptive Pain = normal pain process, damage to somatic and visceral tissue, the CNS is functioning appropriately.
Ex: surgical incision, broken bones, arthritis,

Somatic Pain = arises from skin, mucous membrane, and S/C tissue. Sharp or burning pain or prickly

Visceral Pain = arises from the internal organs and lining of body cavities such as thoracic and abdominal cavities.
Poorly localized, deep, aching, colicky,

Neuropathic Pain or Pathologic pain caused by abnormal signals/damage in CNS and PNS. Causes may include inflammation, trauma, infections, toxins, tumor or neurological diseases.
Shooting, numbness, stabbing

APS, 2007
## Consequences of Inadequate Treatment of Pain

<table>
<thead>
<tr>
<th>Physiological</th>
<th>Psychological</th>
<th>Socio-Economic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase HR</td>
<td>Feelings of helplessness</td>
<td>Disability/unemployment</td>
</tr>
<tr>
<td>Systemic vascular resistance</td>
<td>Disturbed/Impaired sleep</td>
<td>Poor control of pain/ poor QOL</td>
</tr>
<tr>
<td>Risk of MI, Stroke</td>
<td>Suffer from depression and anxiety</td>
<td>High economic cost due to re-admission</td>
</tr>
<tr>
<td>Impaired GI and Pulmonary functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impaired ability to perform ADL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delayed time to ambulate/TOM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended recovery time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased hospital LOS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

( Sinatra, 2010)

### WHO Ladder Assessment of Pain

( WHO analgesic ladder)

- **Step 1:** Non-opioid - acetaminophen or NSAID
- **Step 2:** Non-opioid + weak opioid (e.g., codeine or hydrocodone)
- **Step 3:** Non-opioid + strong opioid (e.g., oxycodone or fentanyl)

Schaffer, 2010
PAIN MANAGEMENT: AN EDUCATIONAL INTERVENTION

Pain Treatment

<table>
<thead>
<tr>
<th>Pharmacologic</th>
<th>Non Pharmacologic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonopioids</td>
<td>Heat and cold</td>
</tr>
<tr>
<td>Opioids</td>
<td>ROM or PT/Massage</td>
</tr>
<tr>
<td>Adjuvants</td>
<td>Repositioning</td>
</tr>
<tr>
<td></td>
<td>Relaxation techniques &amp;</td>
</tr>
<tr>
<td></td>
<td>Guided imagery</td>
</tr>
<tr>
<td></td>
<td>Acupuncture &amp; TENS/TDCS</td>
</tr>
<tr>
<td></td>
<td>Music &amp; aromatherapy</td>
</tr>
<tr>
<td></td>
<td>Immobilization</td>
</tr>
</tbody>
</table>

Schaefer, 2010

Opioids Analgesics

Patient-controlled analgesia (PCA) and epidural routes of administration are superior to intramuscular (IM) injections when pain intensity and relief is considered for postop. Observe for hypotension and respiratory depression.

Shared Goals of care discuss with family, doctor and nurse and properly documented.
PAIN MANAGEMENT: AN EDUCATIONAL INTERVENTION

OPIOID USE DISORDER (OUD)
2012 AMERICAN SOCIETY FOR PAIN MANAGEMENT
NURSING POSITION STATEMENT

"every patient with pain, including those with substance abuse
disorder, has the right to be treated with dignity, respect and
high-quality pain assessment and management"

Caring for patient with OUD
• Treat all patients with compassion and respect
• Consider pain assessment and management a priority
• Educate and correct colleagues misconceptions
• Challenge negative attitudes directed towards OUD  (AIN, 2015)

Adjunct Medication

NSAIDS: common analgesics used for mild pain, reduce inflammation
Ex: Ibuprofen, Naproxen, Ketorolac, aspirin.

Antiemetics:
• May have analgesic effects of their own
• Ex: Phenergan, Compazine, Reglan, Zofran

Muscle relaxants
• Use for muscle spasms
• Ex: Diazepam, Flexeril, Lioresal, Skelaxin.

Steroids: for neuropathic pain, bone pain, migraines, burning pain, inflammatory pain
• Ex: Prednisone and Dexamethasone
Cont. Adjunct Medications

Antispasmodics
- For GI or bladder spasm
- Ex: Imodium, Lomotil

Antidepressants- effective for neuropathic, w/mild analgesic effect
- For migraines, chronic pain along with neuroleptics and lithium
- Ex: Elavil, Desyrel, SSRIs, (Prozac).

Anticonvulsants- can provide sedation and an analgesic effect
- For neuropathic pain and neuropeptides
- Ex: Tegretol, Neurontin, Lyrica, Depakote, Klonopin, valproic acid

Beta Blockers- used to prevent migraine headaches
- Ex: Propranolol and Timolol

Principle of Analgesic Management of Pain

- When continuous pain is anticipated, a fixed-dose schedule (around the clock) should be used.
- A PRN order of a rapid onset analgesic may be necessary to control activity-related (breakthrough) pain.
- To ensure opioids are safely administered, begin with a low dose and titrate to comfort.
- Patients respond differently to various opioid and nonopioid analgesics; therefore if one drug is not providing adequate pain relief, another in the same class may result in better pain control.
- Assessment of effect should be based upon the onset of action of the drug administered; for example, IV opioids are reassessed in 15-30 minutes, whereas oral opioids and nonopioids are reassessed 45-60 minutes after administration.
PAIN MANAGEMENT: AN EDUCATIONAL INTERVENTION

Nursing Responsibilities

A. Ask about pain regularly
B. Believe the patient’s pain and/or family reports of pain
C. Choose appropriate pain approaches
D. Deliver interventions in a coordinated manner
E. Empower patients and their families.

APS Guidelines (2007)
1. Recognize and treat pain promptly.
2. Involve patients and families in pain management plan.
3. Improve treatment patterns.
4. Reassess and adjust pain management plan as needed.
5. Monitor processes and outcomes of pain management.

Rutgers

Pain Management: Patients’ Outcomes and Satisfaction

• Reduce pain to improve function
• Acceptable and manageable pain
• Increase comfort and improved sleep
• Balanced treatment and reduced side effects
• Shortened hospital LOS...decreased costs
• Rapid recovery
• Lower readmission rates
• Discharge Planning and Referral
Conclusion

A thorough pain history and shared goal setting are critical components of effective pain management that leads to beneficial outcomes.

Nursing education, patient care, and physician responsiveness will be key to the success of any pain management improvement initiative.

To make an effective contribution to patient comfort, nurses need appropriate knowledge, skills and the right attitudes in pain management.

References


Schaffer, G. (2010). Is the WHO analgesic ladder still valid? Canadian Physician, 56 (6), 514-517.1

Sample Demographics
Table 1.

*Sample Demographics*

<table>
<thead>
<tr>
<th>Measure</th>
<th>n</th>
<th>Percentage</th>
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<td>77</td>
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<tr>
<td>Male</td>
<td>7</td>
<td>3</td>
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<tr>
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<td>21-30</td>
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<td>23</td>
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<td>9</td>
<td>30</td>
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<td>41-50</td>
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<td>51-60</td>
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<td>11-20</td>
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<tr>
<td>31-40</td>
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<td>10</td>
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<tr>
<td>Critical care</td>
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Race

<table>
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<td>2</td>
<td>7</td>
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<td>African American</td>
<td>9</td>
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<td>18</td>
<td>60</td>
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<tr>
<td>Other</td>
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Prior Pain Management

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<th>Education</th>
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<tr>
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<tr>
<td>No</td>
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Means and Standard Deviations

Table 2

*Means and Standard Deviations for the Test Scores*
### Table 3

<table>
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<th>SD</th>
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<td>30</td>
<td>24.77</td>
<td>3.901</td>
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<tr>
<td>Post test</td>
<td>30</td>
<td>30.43</td>
<td>2.254</td>
</tr>
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</table>

*Note. SD = Standard Deviation*

**Five Most Frequently Correctly Answered**

*Five Most Frequently Correctly Answered True/False Questions on NKASRP*
<table>
<thead>
<tr>
<th>Test Questions</th>
<th>Frequency Pre</th>
<th>Frequency Post</th>
<th>% Correct Pre</th>
<th>% Correct Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Patients who can be distracted from pain usually do not have…</td>
<td>20</td>
<td>28</td>
<td>66</td>
<td>93</td>
</tr>
<tr>
<td>7. Combing analgesics that work by different mechanism may….</td>
<td>22</td>
<td>26</td>
<td>73</td>
<td>86</td>
</tr>
<tr>
<td>11. Patient should be encouraged to endure as much pain as possible..</td>
<td>24</td>
<td>29</td>
<td>80</td>
<td>96</td>
</tr>
<tr>
<td>13. Patients’ spiritual beliefs may lead them to think pain and suffering..</td>
<td>23</td>
<td>28</td>
<td>76</td>
<td>93</td>
</tr>
<tr>
<td>15. After an initial dose of opioid analgesic is given, subsequent doses..</td>
<td>20</td>
<td>26</td>
<td>66</td>
<td>86</td>
</tr>
</tbody>
</table>

*Note. Complete sets of questions are presented on Appendix C*

---

**Five Most Frequently Incorrectly Answered**

Table 4

*Five Most Frequently Answered True/False Questions on the NKASRP*
5. Aspirin and other non-steroidal anti-inflammatory agents are NOT

6. Respiratory depression rarely occurs in patients who have been receiving

8. The usual duration of analgesia of 1-2 mg morphine is 4-5 hours

17. If the source of patient’s pain is unknown, opioids should not be used

19. Benzodiazepines are not effective pain relievers and are merely

<table>
<thead>
<tr>
<th>Test Questions</th>
<th>Frequency</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study Patient A Question A</td>
<td>27</td>
<td>90</td>
</tr>
<tr>
<td>Case study Patient A Question B</td>
<td>13</td>
<td>43</td>
</tr>
</tbody>
</table>

*Note.* The complete set of questions is presented on Appendix C
Case study Patient B Question A  
27  90

Case study Patient B Question B  
15  50