



Evaluation of Knowledge and Attitudes by HealthCare Providers Regarding Pain in the ED and ICU

Dr. Milagros Tabije-Ebuen*, DNP, MNS-NE, RN, CEN, CPEN, PCCN, CCRN

Faculty, Nursing & Health Sciences, California State University Channel Islands, California 93012, USA

Abstract

Approximately 70 percent of patients present to the emergency department with pain as their main presenting symptom or complaint. Unfortunately, studies show that about 60-80% of patients that are in pain are undertreated for multiple reasons. Pain is a very costly health issue to treat and manage. Indeed, in the United States, the annual cost to manage and treat pain is estimated to be \$100 billion including the rising cost of health care, overuse of resources, lost income, and lost productivity. The purpose of this quantitative descriptive design project was to evaluate the knowledge and attitudes regarding pain by healthcare providers working in the emergency department (ED) and critical care services as a primary step to propose and develop educational and strategic management projects to achieve optimal results. A modified version of the Knowledge and Attitudes Survey Regarding Pain (KASRP) survey was used with permission and the response rate was 76%. Descriptive statistics and One-Way ANOVA were used to analyze and interpret the data. The findings indicated that there were no significant differences in the current level of knowledge and attitudes regarding pain between the ED and critical care healthcare providers. Additionally, there were no significant differences with regards to the total score of healthcare providers based on possession of board certification, number of years of experience, level of education, and specialty area. However, there was lack of knowledge surrounding pain medications since most of the pharmacological questions were answered incorrectly. These findings provided a guidance and insight to plan for educational and strategic management projects to address the needs of the patients experiencing pain.

Keywords: Knowledge, Attitudes, Pain assessment, Pain management, Healthcare providers, Emergency department, Critical care

Corresponding author: Dr. Milagros Tabije-Ebuen

Faculty, Nursing & Health Sciences California State University Channel Islands, California 93012, USA. Tel: (805) 248 -9986,

E-mail: milagros.ebuen@csuci.edu

Citation: Dr. Milagros Tabije-Ebuen (2018), Evaluation of Knowledge and Attitudes by HealthCare Providers Regarding Pain in the ED and ICU. *Int J Ane & Rel.* 2-3, 19-32.

Copyright: ©2018 Milagros Tabije-Ebuen. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Received: August 23, 2018

Accepted: September 02, 2018

Published: September 27, 2018

Background

Pain (acute or chronic) is one of the most common health problems, and it can be more debilitating compared to both cancer and heart disease. Pain is a very expensive health problem to treat and manage. In the United States, the annual cost of pain is estimated to be \$100 billion including the rising cost of health care, overuse of resources, lost income, and lost productivity (Duke, Haas, Yarbrough, & Northam, 2013). Approximately 70% of patients present to the emergency

department with pain as their main presenting symptom or complaint (Pretorius, Searle, & Marshall, 2015). Patients expect pain relief. However, it is often not met. Unfortunately, studies show that about 60-80% of patients that are in pain are undertreated for multiple reasons (Pretorius, et al., 2015). Therefore, it is important to assess the knowledge and attitudes of healthcare providers regarding pain to effectively manage pain. Failure of a clinician or healthcare provider to assess pain comprehensively can lead to poor management of pain, which can result in unnecessary suffering. Indeed, according to Pasero & McCaffery (2011), the most common causes of unrelieved pain include the inability of the clinicians to accept the level of pain as stated by the patient and failure to assess pain appropriately. Furthermore, the perceptions of clinicians, knowledge, patient perceptions, and the healthcare system itself are major barriers that hinder pain management (Duke, et al., 2013). Pain is always subjective. Therefore, self-report is the gold standard of caring for patients in pain (Pasero & McCaffery, 2011).

Direct practice improvement is of critical importance to evaluate the knowledge and attitudes of health care providers working in the emergency department and critical care services that will promote effective patient outcomes, and reflect upon the challenges of assessing and managing pain in a manner to improve patient health and wellbeing without placing them at further risk. This project explored additional insights, knowledge, and attitudes of health care providers to assess pain without delays or further complications to patients with a high level of efficiency and focus on improving pain for all patients.

Clinicians and providers are in unique position to address the needs of patients having pain by conducting thorough pain assessment and having the right knowledge and attitudes regarding pain. Indeed, knowledge deficits in pain assessment and management can result to negative attitudes that may interfere in providing safe and quality care (Uzucal & Dogan, 2014). These negative attitudes include inability of the clinician to accept the level of pain, lack of knowledge regarding pain medications, addiction concerns, and beliefs that diagnostic tests will be delayed due to pain treatment, and age and gender (Uzucal & Dogan, 2014). This is a critical reminder of the need to evaluate patient care needs with the best possible alternatives in mind, rather than to focus on the potential dangers and the hesitancy to administer medications for different reasons (Twycross, 2013).

In order to effectively manage the pain, nurses need to demonstrate their understanding of pain assessment and management to ensure that positive approaches and treatments are optimized (Voshall, Dunn, & Shelestak, 2013). In addition, there appear to be significant gaps in understanding the perception of nurses regarding pain management and how these impact the administration of different types of treatments (Twycross, 2013). Therefore, advocacy toward pain management must continue to improve and enable nurses to recognize their attitudes, behaviors, and perceptions toward pain management to ensure that the needs of all patients are addressed in a positive manner (Ware, Bruckenthal, Davis, & O'Conner-Von, 2011). In this context, a practice improvement plan must evaluate the conditions to enhance pain assessment and management (Ware, et al., 2011). Pain management education appears to be lacking in many areas that could ultimately provide support to nurses as they struggle through issues in pain management (Tse & Ho, 2014).

Problem Statement

In the United States, it is estimated that more than 76 million people suffer from acute or chronic pain (The Joint Commission (TJC), 2015). Pain management is very complex, yet it is given less attention despite the fact that it can result in suffering, loss of work time, increased readmissions, poor patient and family satisfaction, prolonged recovery from illnesses and surgical procedures (Finis, 2012). The ability of nurses to effectively assess and manage pain in patients is often challenging due to perceptions, attitudes, and lack of education and knowledge regarding pain assessment and management. Therefore, it is important to assess the healthcare providers' knowledge and attitudes regarding pain to prevent unnecessary risk or harm. Perceptions, ethical, and cultural considerations are often difficult for healthcare providers to manage in the context of pain management and may ultimately cloud their judgment and understanding of this practice (Varcoe, Pauly, Storch, Newton, & Makaroff, 2012).

Pain assessment is a task that is simple, yet it is a task that is not performed consistently and performed frequently (Pasero & McCaffery, 2011). Pain is considered as the fifth vital sign, therefore, pain must be assessed at least every shift, before administration of pain medication, and/or after pain medication is administered to evaluate the effect of the pain medication (TJC, 2015). However, at times when pain assessment is performed appropriately, healthcare providers have difficulty accepting the findings due to some beliefs, attitudes, and knowledge deficits. When this happens, pain that is not managed appropriately that can lead to unrelieved pain and unnecessary sufferings (Pasero & McCaffery, 2011).

Since attitudes, knowledge, and perceptions are highly variable, these may pose a challenge in aiming to educate nurses at an effective level that will satisfy their needs accordingly (Mathew, Mathew, & Singhi, 2011). At this level, pain management must improve through a coordinated effort to address barriers and other challenges that

impact the practice setting and ultimately patient care and potential outcomes (Luckett, Davidson, Green, Boyle, Stubbs, & Lovell, 2013).

Purpose of the Project

The purpose of this quantitative descriptive design project was to evaluate the knowledge and attitudes by health care providers regarding pain in the emergency department (ED) and critical care services as a primary step to propose and develop educational and strategic management projects to enhance pain assessment and management in the critical care and ED. A survey instrument was used to discover some of the knowledge and attitudes that influence patient care and require further evaluation to improve pain management in the practice settings. In addition, this project identified some barriers or gaps in pain management. According to Pasero and McCaffery (2011) there are misconceptions that can be barriers in assessing and treating pain. Some of the misconceptions include: 1) healthcare providers are the best judges of the existence and severity of pain; 2) clinicians should use their personal beliefs and opinions about the truthfulness of patients to determine patient's true pain; 3) clinicians must believe what patients say about pain; 4) there is uniformity of pain threshold; 5) when there is no physical cause of pain, there is no reason that patients will hurt; 6) analgesics should not be given until the cause of pain is diagnosed; and 7) patients that are knowledgeable about their pain medications such as opioids and tell the clinicians what medications work for them are considered addicts or drug seekers. These misconceptions are further outlined in Appendix C.

Advancing Scientific Knowledge

It is believed that pain assessment and management techniques must reflect an opportunity to promote healing and to improve quality of life, particularly for patients who experience chronic pain on a continuous basis. With cognitive and social support, however, it is believed that effective pain assessment and management practices will enhance care that will improve health and wellbeing of patients in pain as best as possible. The use of nursing theories particularly theories that are effective in pain management such as: The Roy's Adaptation Conceptual System, Leininger's Cultural Care Diversity and Universality Theory, and Gate Control Theory are integral since they enhance the work of nurses. Other theories or models that are effective in pain management include: Humanistic Theory: Maslow's Hierarchy Needs, Erikson's Theory of Personal Development, and King's Theory of Goal Attainment.

In addition, nursing theories provide a clearer understanding and explanation of nursing's relationship with the person, environment, and health (St. Marie, 2012). The role of the nurse is to assess the person's adaptive behavior, assess what is affecting the behavior such as pain, and then manipulate the stimuli in such a way that the person is able to cope. Moreover, the nurses' knowledge about the four adaptive modes such as physiological, self-concept, role function, and interdependence serve to guide actions in promoting positive coping responses (St. Marie, 2012). Nurses need to be culturally competent to assess and manage pain appropriately. In other words, nurses must understand the meaning of pain to the individual, the situation, and the meaning of pain based on the patient's cultural background to provide acceptable and appropriate pain management strategies.

Definition of Pain

Pain: Pain is a Latin word, poena meaning "punishment or penalty" (St. Marie, 2012). Pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (St. Marie, 2012, p. 10). In other words, pain is the presence actual or potential tissue damage that can cause unpleasant sensory and emotional experience that

can impair the individual's psychosocial and physical functions. In addition, The Joint Commission (TJC) has referred to pain as the fifth vital sign. TJC have created standards of care surrounding assessment and management of pain and must be followed and implemented by all accredited agencies (Copstead & Banasik, 2010). Pain is very subjective and highly personal; therefore, self-report of pain is the most reliable indicator that the person is in pain (Pasero & McCaffery, 2011). With this definition, it is then important to explore, understand, and differentiate the types of pain to provide guidance in assessing and managing pain effectively.

Types of Pain

Acute Pain/Nociceptive: Pain can be categorized as acute and chronic based on the onset and duration of symptoms. Acute pain is a result of a tissue injury or damage, it resolves as the tissue heals, and usually lasts up to three months (Copstead & Banasik, 2010). Individuals react differently when they are in pain, and can be exhibited by grimaced face, crying, moaning, pacing, pallor; and can be associated with signs and symptoms generated in the sympathetic nervous system such as sweating, elevated heart rate, tachypnea, and high blood pressure to name a few. It is critical to manage acute pain efficiently and effectively to prevent the development of chronic pain syndromes (Copstead & Banasik, 2010).

Chronic Pain: When pain lasts more than the expected healing time (six months), it is considered chronic pain, and not usually associated with the signs and symptoms of the nervous system. When the pain lasts this long, the nervous system becomes desensitized to noxious stimuli, and symptoms are more related to psychological. Therefore, it is important to assess and manage the pain effectively since it can create depression, sense of distrust to the healthcare providers, and sense of hopelessness (Copstead & Banasik, 2010).

Moreover, these two types of pain need to be handled as different entities. A well-planned approach is needed to achieve best outcomes. In addition, it is also important to explore, understand, and know the misconceptions about pain in children and elderly. It is thought that pain perception in the elderly population is decreased; therefore, less pain medication is required. In children and neonates, it is thought that they are unable to perceive pain since their central nervous system is not fully developed. As a result, the young and the elderly often receive substandard pain management that can lead to devastating effects and well-being. These misconceptions are further outlined in Appendix C and the types of pain are further outlined in appendix D.

Literature Review

Acute or chronic pain may have complications that can last long and may have a huge impact on wellbeing and quality of life; therefore, pain must be taken seriously and in the context of current literature and research. In the patient care environment, nurses are not always able to administer the best possible level of care and treatment to patients with pain, as this requires a high level of support and an understanding of the themes that will likely produce effective results in patients through pain management techniques (Gropelli & Sharer, 2013). The knowledge and perceptions of nurses, even at the earliest levels of development, are challenging on many levels because there are misconceptions regarding pain management that often dictate the practice setting (Gropelli & Sharer, 2013). In this context, nurses are not always able to set aside these perceptions in a direct care situation, thereby, creating discord among nurses in regards to pain management, particularly when their competency levels are lower than required. This poses a challenge to nurses and requires an understanding of their limitations and how this might influence their need for additional education in this area (Gropelli & Sharer, 2013).

Since pain management is a critical priority, it requires nurses to be proactive in their efforts to manage pain at a consistent level. However, this is not always the case when there are critical factors or perceptions that limit the use of plausible and effective pain management methods (Subramanian, Allcock, James, & Lathlean, 2011). These practices require nurses to identify their own barriers that may impact pain management and how these influence the practice environment and their administration of treatments to their patients. This is a critical step towards the discovery of approaches that emphasize patient care needs above personal values and beliefs regarding pain management (Pasero & McCaffery, 2011). Furthermore, guidelines for pain management must be closely adhered to by nurses, while also recognizing that a significant component of practice improvement involves the development of techniques to modify existing guidelines as necessary.

The literature search was conducted using CINAHL, ProQuest, Pub Med, Academic Search Premier, websites for various professional organizations, and Grand Canyon University library. There were various studies that support the issues surrounding pain assessment and management. Upon review of the literature, there are gaps and barriers in assessing and managing pain such as: 1) lack of knowledge and skills in pain assessment that leads to poor pain management; 2) lack of knowledge about clinical practice guidelines can lead to poor pain assessment and management; 3) inconsistent use of pain assessment tools; 4) lack of sufficient and effective education to healthcare providers in assessing pain; and 5) lack of evaluation in assessing an educational approach to pain assessment and management.

Lack of Knowledge and Skills Regarding Pain Assessment and Management

In the patient care environment, nurses are not always able to administer the best possible level of care and treatment to patients with pain, as this requires a high level of support and an understanding of the themes that will likely produce effective results in patients through pain management techniques (Duke, et al., 2013). The knowledge and perceptions of nurses, even at the earliest levels of development, are challenging on many levels because there are misconceptions regarding pain management that often dictate the practice setting (Duke, et al., 2013). According to Duke et al (2013), there are three major barriers can impact effective pain management: 1) clinician's perception; 2) patient perceptions; and 3) health care system. Duke et al (2013) conducted a descriptive study about junior and senior students as well as nursing faculty using the revised Knowledge and Attitudes Survey Regarding Pain (KASRP) created by Ferrell and McCaffery (2008) to assess the knowledge and attitudes of these students and faculty regarding pain management in hospitalized patients. Out of 292 surveys distributed, 182 were returned (62%). The final sample total was 178 that includes 162 junior students (32% first semester juniors; 38% second-semester juniors; and 20% first semester seniors) and 16 faculty members. It was found that there was a direct correlation between the levels of education and correct score percentage. It was concluded that the way pain assessment and treatment are taught need to be reevaluated across the curriculum, and develop a comprehensive plan to change curriculum (Duke, et al., 2013). This needs to be addressed since some of these future nurses will be working in the acute care setting, and they can impact the care they provide in assessing and managing pain appropriately. Another study that was done by Al-Shaer et al (2011) with 129 participants (nurses) to examine the nurses' knowledge and attitudes regarding assessing and managing pain revealed that pain assessment and management education need to be taken seriously and takes

precedence as reflected by greater than 60% of the respondents answered pharmacological interventions questions incorrectly.

Moreover, Krokmyrdal & Andenaes (2015) conducted a descriptive cross sectional study in two public hospitals in Norway (nurses at medical, n=64 and orthopedic, n = 34) to examine the Norwegian nurses' knowledge about pain and competence in managing pain in patients with opioids abuse. Their study revealed that 88% of nurses had insufficient knowledge in treating pain with patients that are addicted to opioids. Eighty-eight percent regarded workplace experience as the main source to their knowledge about pain treatment, 77% regarded colleagues as the main source of their knowledge as well. Ninety percent regarded that education played a minor role in obtaining knowledge about pain management, 70% literature, and 84% information technology. Fifty-four percent of the respondents could not evaluate the level of pain, but 65% had basic skills in assessing pain. About 62% of nurses did not trust the patient's self-reported level of pain that are opioid abusers (Krokmyrdal & Andenaes, 2015). The study concluded that patients that are addicted to opioids may not receive appropriate pain management due to nurses' incompetence and lack of knowledge to assess and manage pain (Krokmyrdal & Andenaes, 2015). In this context, nurses are not always able to set aside these perceptions in a direct care situation, thereby creating discord among nurses in regards to this practice, particularly when their competency levels are lower than required (Krokmyrdal & Andenaes, 2015). This poses a challenge to nurses and requires an understanding of their limitations and how this might influence their need for additional education in this area (Krokmyrdal & Andenaes, 2015).

These practices require nurses to identify their own barriers that may impact pain management and how these influence the practice environment and their administration of treatments to their patients (Czarnecki, Simon, Thompson, Armus, Hanson, & Berg, et al., 2011). This is a critical step towards the discovery of approaches that emphasize patient care needs above personal values and beliefs regarding pain management (Czarnecki, et al., 2011). Furthermore, guidelines for pain management must be closely adhered to by nurses, while also recognizing that a significant component of practice improvement involves the development of techniques to modify existing guidelines as necessary (Habich, Wilson, Thielk, Melles, Crumlett, Masterton, et al., 2012).

Lack of Evaluation in Assessing an Educational Approach to Pain Assessment and Management

Schreiber et al (2014), used a quasi-experimental study design before and after intervention to examine the effect of an educational intervention on nurses' management of pain in the acute care setting. Schreiber, et al. (2014), posted three questions that include 1) "Are the nurses charting the same pain score as patients report?" 2) "What is the knowledge level regarding the effective management of pain among medical-surgical and critical care nurses?" And 3) "what are the biases among medical-surgical and critical care nurses regarding pain control toward patient specific patient populations?" (p. 475). The study composed of 341 nurses (203 pre-and 138 post) and 60 patients participated in nurse/patient reports of pain and patient's documentation of pain. This study was conducted in a hospital in Kentucky that is a Magnet designated community hospital with 383 bed capacity. Convenience sampling, demographic data collected on the patients and nurses was less, homogenous patient sample limited the generalizability of the findings, and notable changes may not have been possible due to not enough time given between before and after data collection were the limitations of the study. Schreiber et al (2014) concluded pain management in the acute care setting remains a problem. There is a lack of individualizing treatment, inability to assess

pain correctly, and judging patient's pain. As a result of the study, projects were suggested such as external funding for Pain Center Excellence, a study that involves educational focus groups in the critical care units will be done to enhance knowledge about managing pain effectively and implement a less biased attitude towards patient population, and seeking an external funding to support a study about the 0-10 numeric pain rating scale. In addition, the authors suggested that future research needs to dig more on changing biases/attitudes (Schreiber, et al., 2014).

Inconsistent Use of Pain Assessment Tools

Topolovec-Vranic et al (2010), used qualitative and quantitative methods to evaluate the effect of implementing the new pain assessment tool which is the nonverbal pain scale (NVPS) in the trauma and neurosurgical intensive care unit (ICU). The study was conducted in a 17-bed regional neuro-surgical trauma in Toronto, Canada. The patients were classified into two, neuro-surgical include a primary diagnosis of brain tumor, subarachnoid, subdural, and intracranial hemorrhage, and spinal fracture or fusion and trauma include blunt or penetrating injury. There were at least 100 CRCU and 65 full time and part time registered nurses, and 90% of the nurses received in-service education about the tool. There were 53 surveys filled out by staff before implementation and 32 surveys completed after implementation. In addition, a total of 64 patients were surveyed about patient satisfaction (25 before and 39 after implementation). With regards to pain assessment documentation and administration of analgesics, there were a total of 72 charts (intubated and non-intubated patients) that were reviewed retrospectively. The limitations of the study include not matching surveys by respondents from pre-and post-intervention for analyses, selection bias in the patient's surveys towards patients that completed the interview within a shorter period of time, and the nonverbal pain scale (NVPS) tool that was used has coefficient alpha of 0.78. Topolovec-Vranic et al, concluded that the implementation of the adult NVPS tool improved the patient satisfaction, improved the nurses' documentation of pain assessment, and increased the confidence of nurses in assessing pain particularly nonverbal patients (2010).

Rose et al (2013), used hypothesis to determine the effect of documentation frequency in assessing pain and influence in the analgesics and sedatives administration. The study was conducted at a 600-bed capacity hospital located in Toronto, Ontario in the intensive care units (ICUs) that have a 20-bed mixed surgical/medical/ trauma and 14-bed cardiovascular, and with ICU yearly admission of 2,250 patients. A total of 189 patients recruited before implementation and a total of 184 were recruited after implementation of the Critical-Care Pain Observation Tool (CPOT). The limitations include performance bias, ascertainment bias, failure to appropriately evaluate response to analgesics since data collection was done retrospectively, and unaccounted confounders such as other initiatives going on, turn-over of physicians and nurses, and patient characteristic differences may have influenced the results. Rose et al concluded that implementing CPOT tool increased pain frequency assessment, and it aided in a timely administration of analgesics in the critically ill patients that are unable to self-report pain (2013).

Lack of Knowledge about Clinical Practice Guidelines

Subramanian et al (2011) explored the challenges of the nurses in managing pain in the critical care setting by using a qualitative prospective exploratory design in a large health care trust in the United Kingdom. They employed a semi structured interviews with the use of critical incident technique that involved 21 critical care nurses. The study revealed that nurses perceived that there are four main

challenges in pain management namely: 1) lack of clinical guidelines; 2) lack of structured pain assessment tool; 3) lack of autonomy in making decisions; and 4) condition of the patient itself (Subramanian, et al., 2011). They concluded that pain management and nurses' decision making can have a huge impact on the quality of care provided to patients that are critically ill. Therefore, there is a need to educate and update nurses surrounding pain management in order to reduce the challenges that the nurses are faced in managing pain of critically ill patients. Furthermore, it is very beneficial for nurses to have concise and structured pain management guidelines, and these guidelines need to be evaluated routinely (Subramanian, et al., 2011). Since pain management is a critical priority, it requires nurses to be proactive in their efforts to manage pain at a consistent level. However, this is not always the case when there are critical factors or perceptions that limit the use of plausible and effective pain management methods (Subramanian, et al., 2011).

Theoretical Foundations

The use of nursing theories particularly theories that are effective in pain management is integral since theories enhance the work of nurses that can lead to fulfillment and satisfaction as well as provide satisfying professional practice model. In addition, nursing theories provide a clearer understanding and explanation of nursing's relationship with the person, environment, and health (St. Marie, 2012).

Leininger's Cultural Care Diversity and Universality Theory: This theory was developed by Madeleine Leininger that includes concepts of care, caring, culture, cultural values, and cultural variations (Nursing Theories, 2013). This theory is helpful in pain management since nurses need to be culturally competent in order to assess and manage pain appropriately. In other words, nurses need to understand the meaning of pain to the individual, the situation, and the meaning of pain based from the patient's cultural background to provide acceptable and appropriate pain management strategies (St. Marie, 2012)

Gate-Control Theory: The Gate-Control theory was developed by Melzack and Wall in 1965 (St. Marie, 2010). This theory proposes that small diameter fibers carry messages of pain to the spinal cord particularly to the dorsal horn, a neural mechanism in the dorsal horn of the spinal cord acts like a gate, which can increase (facilitate) or decrease (inhibit) the flow of nerve impulses from peripheral fibers to the central nervous system (St. Marie, 2010). Large diameter fibers (which transmit thermal or touch messages) can close the gate, leading to reduced transmission of pain message (St. Marie, 2010). The gating mechanism is influenced by the amount of input from small and large fibers entering the spine from parallel pathways. In addition, when the gates are opened, intense non-painful stimuli can be perceived as pain (St. Marie, 2010). Furthermore, the gating mechanism is influenced by nerve impulses descending from the brain such as the control process of the brain which evaluates pain in terms of past experiences and specialized system that's called central intensity monitor which are parts of the motivational-affective, limbic, and reticular structures that modulates the gating system directly and indirectly (St. Marie, 2010). It is important to medicate patients in pain since it is believed that pain medications have an effect on the gating mechanism located in the substantia gelatinosa. Whenever pain medication is given before the onset of pain (before the gate opens), fewer pain impulses will pass through the gate and it keeps the gate closed longer. Therefore, prevention and management are linked to keeping the gate closed.

King's Theory of Goal Attainment: The theory was developed by Imogene King in the early 1960s. It includes three major interacting systems that included interpersonal, personal, and social with their own specific concepts. Self, perception, growth and development, body, image, space, and time are the concepts of personal system. The

concepts of interpersonal system include interaction, communication, role, transaction, and stress. And, the concepts of social system include authority, power organization, status, and decision making (Nursing Theories, 2013). This theory is very useful in pain management since it describes outcomes through individualizing the goals to be attained based on the patient's needs. The goal of relief from pain leading to an improvement of function is a goal that can be assessed and evaluated in determining effectiveness of nursing care (St. Marie, 2012).

Humanistic Theory: Maslow's Hierarchy Needs: This theory was founded by Abraham Maslow in 1943, and he focused on subjective experiences and free will (Nursing Theories, 2013). Freedom from pain or no pain is one of the physiologic needs, and this addresses the dominance of this need before other and more self-fulfilling needs can be met. Additionally, this theory helps the nurses prioritize the needs of the patient (St. Marie, 2012).

Erikson's Theory of Personal Development: It was founded by Erik H. Erikson. This theory guides the nurse to provide appropriate strategies based from the developmental stage in assisting the patient to cope successfully with stressful experiences such as pain (St. Marie, 2012).

Roy's Adaptation Conceptual System: Sr. Callista Roy developed this model. In this model, the role of the nurse is to assess the person's adaptive behavior, assess what is affecting the behavior such as pain, and then manipulate the stimuli in such a way that the person is able to cope. Moreover, the nurses' knowledge about the four adaptive modes such as physiological, self-concept, role function, and interdependence serve to guide actions in promoting positive coping responses (St. Marie, 2012).

Pain assessment is simple, yet it is a task that is not performed consistently and performed frequently. However, when assessments are performed appropriately, clinicians have difficulty accepting the findings due to some beliefs and knowledge deficits that can lead to managing pain inappropriately. Therefore, it is important to assess pain appropriately and accept the findings to relieve the pain and prevent unnecessary suffering.

Based on the results of the pain assessment knowledge and attitudes surveys that were conducted by Pasero and McCaffery (2011), misconceptions were identified that can be barriers to the assessment and treatment of pain. Some of the misconceptions include: 1) healthcare providers are the best judges of the existence and severity of pain; 2) clinicians should use their personal beliefs and opinions about the truthfulness of patients to determine patient's true pain; 3) clinicians must believe what patients say about pain; 4) there is uniformity of pain threshold; 5) when there is no physical cause of pain, there is no reason that patients will hurt; 6) analgesics should not be given until the cause of pain is diagnosed; and 7) patients that are knowledgeable about their pain medications such as opioids and tell the clinicians what medications work for them are considered addicts or drug seekers. The other barriers are listed in Appendix C.

Methodology

A quantitative approach to the chosen practice improvement project was essential to develop an understanding of how personal beliefs, knowledge, and attitudes either directly affect, indirectly affect, and/or have no affect or influence on pain management in the practice environment. Therefore, the use of a survey instrument known as the Knowledge and Attitudes Survey Regarding Pain (KASRP) by Betty Ferrell and Margo McCaffery was integral in evaluating attitudes, knowledge, and perceptions, and the information gained from the survey results will be useful in addressing the challenges of pain assessment and management for health care providers in the emergency department and critical care services.

The KASRP tool was chosen since it has proven its validity and reliability. This survey tool has been reviewed for many years by pain experts. It has been used as a pre-test and post-test in assessing nurses and other healthcare professionals in the acute care setting to evaluate knowledge and attitudes regarding pain (Al-Khawaldeh, Al-Hussami, & Darawad, 2013). It was developed in 1987, and it has been revised multiple times to address the changes in managing pain. The content of the tool is based from the current standards of pain management such as the American Pain Society, the World Health Organization (WHO), and the National Comprehensive Cancer Network Pain Guidelines (Pasero & McCaffery, 2011).

Construct validity has been established by comparing scores of nurses at various levels of expertise such as new graduates, students, oncology nurses, graduate students, and senior pain experts. In addition, 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 attitudes domains (Duke, et al., 2013).

Research Questions

The primary clinical questions are as follows: 1) What are the current knowledge and attitudes regarding pain management among healthcare providers working in the emergency department and critical care services and 2) Are there significant differences in knowledge and attitudes regarding pain management among registered nurses, physicians, physician assistants, and nurse practitioners between subgroups of demographics and other selected characteristics. Based on these clinical questions, it was necessary to consider the following variables: 1) type of nursing care environment; 2) nursing-related demographics; 3) providers' related demographics; and 4) type of education provided to healthcare providers regarding pain assessment and management. This project demonstrated a need for additional insight and guidance into the areas where care providers are able to assess pain without delays or further complications to patients with a high level of efficiency and focus on improving pain for all patients. Furthermore, this project provided a guide to propose and develop educational and strategic management projects to provide optimal pain management.

Procedure

Approval from the Internal Review Board from the study site and school were secured. A detailed verbal and written explanation with regards to the purpose and goals of the direct process improvement project were provided to the participants prior to participation and completion of the survey. The study was strictly voluntary and confidential. All responses were anonymous and no identifying personal information. Verbal consent was secured. Participants were asked to complete the survey during downtime and were given enough time to complete the survey.

Data were organized and prepared for analysis, and entered in a computer database with the use of Intellectus Solutions software to generate statistics. In addition, correct scores were converted to percentage. One-Way ANOVA was used to assess for the differences in a dependent variable by a single nominal independent variable. Pairwise comparisons were conducted to determine the overall differences after statistical significance was found in ANOVA. Shapiro-Wilk test was used to test the assumption of normality. The Levene's test was used to assess the assumption if the equality of variance was met. Equality of variance refers to the spread of the data for all groups. F (F ratio) was used with the two df values to determine the p value. The degrees of freedom for ANOVA (df) was used with the F to determine the p, and approximately reflected the number

of groups and sample size. In addition, the Sum of Squares (SS) was used with the df to determine the Mean of Square (MS). MS was used to determine the F ratio. Lastly, the Partial Eta Squared (Partial η^2) which is the effect size for the ANOVA, determined the strength of the difference between groups.

Design

The project design utilized a quantitative approach (descriptive design) to evaluate the knowledge, attitudes, and issues surrounding pain management of healthcare providers in the practice setting. A survey instrument identified some of the knowledge and attitudes that influence patient care and require further evaluation in order to improve pain management in the practice setting. The purpose of this quantitative project was to evaluate the knowledge and attitudes regarding pain of healthcare providers working in the ED and critical care as a primary step to propose an educational and strategic management projects to improve pain management in the practice environment.

This study utilized a survey instrument (KASRP) developed by Betty Ferrell and Margo McCaffery to evaluate knowledge and attitudes regarding pain management in the practice environment to determine their impact, if any, on the quality of pain management techniques and the level of support that patients receive in regards to pain. The surveys were completed via pencil and paper, and distributed during downtime and providers' monthly meeting.

Population and Sample Collection

This direct process improvement project was conducted in a hospital in Southern California, with 82-bed capacity. The hospital provides 24/7 emergency care, surgical services (inpatient and outpatient), intensive care unit, sub-acute unit, telemetry, medical/surgical, and direct observation unit (DOU). In addition, the hospital is a primary stroke center as well as chest pain center without percutaneous intervention accredited by the Society of Cardiovascular Patient Care (SCPC). There are approximately 38 registered nurses (RNs) in the emergency department (ED), 18 RNs in the intensive care unit (ICU), and 35 providers in the ED and ICU. The participation rate was 76% (70 returned surveys). This study was strictly voluntary and confidential with no retaliation or repercussion for not participating. The questionnaire surveyed the participants' demographics (age range, gender, ethnicity, educational attainment, years of experience in the current profession, board certifications; and years of experience in their specialty department); any educational pain assessment and management classes taken within 2 years; and familiarity of the survey. The key stakeholders of this direct process improvement project were registered nurses (RNs) and providers in the ED and critical care unit who provide direct patient care. In addition, collaboration with the leadership team in the units were integral to the success of this project as well as the support from the Dignity Health corporate office, Chief Nursing Officer, Vice President of Professional and Clinical Practice, and Chief Executive Officer.

Instrumentation

Quantitative data were gathered by using the KASRP and data were analyzed and interpreted using descriptive statistics. The KASRP tool was created by Ferrell and McCaffery in 1987 and revised by same authors in 2008, contains 38 questions that include 22 true/false, 14 multiple-choice items, and two case studies Ferrell & McCaffery (2008). For this study, the 22 true/false items were used. Construct and content validity have been established. The tool is currently used and tested in pain education classes or courses for psychometric properties. The test/retest scores were reported in percentage of correct responses, and a minimum score of 80% was considered satisfactory for this study.

The authors of the tool recommend to analyze individual items to separate those with the least number of correct responses and those with the best scores. Standard demographic data were collected as part of the study.

Validity and Reliability

The "Knowledge and Attitudes Survey Regarding Pain" tool has been reviewed for many years by pain experts. It has been used as a pre-test and post-test in assessing the nurses and other healthcare professionals in the acute care setting to evaluate educational programs. It was developed in 1987, and it has been revised multiple times to address the changes in managing pain. The content of the tool is based on the current standards of pain management such as the American Pain Society, the World Health Organization (WHO), 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 new graduates, students, oncology nurses, graduate students, and senior pain experts. In addition, 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 attitudes domains.

Ethical Considerations

Although this project did not involve patients, accessing patient information, and patient identifiers, it was still necessary to secure an approval from the site and school Internal Review Board (IRB). Verbal consent was secured prior to participation. The privacy of the participants was protected and there were no identifying numbers/objects/letters that were tied to reveal the identity of the participants. In addition, since the study was conducted in the workplace (hospital), it was important to inform the staff that the results of the survey will not affect their status, employment, and pay grade. The responses were kept in a box in a locked drawer in the office. Furthermore, a face to face meeting and a written authorization from the Chief Executive Officer (CEO) and Vice President of Professional & Clinical Practice of the hospital were obtained prior to starting any activity involving the study.

Results

Introduction: Pain (acute or chronic) continues to be a huge healthcare problem in the United States. Indeed, it is estimated that more than 76 million people in the United States suffer from acute or chronic pain (The Joint Commission (TJC), 2015). Pain is one of the common reasons patients seek medical attention particularly in the emergency department. Indeed, it is estimated that more than 70% of patients present to the emergency department as their primary chief complaint (Pretorius, Searle, & Marshall, 2014). Pain management is very complex, yet it is given less attention despite the fact that it can result

in suffering, loss of work time, increased readmissions, poor patient and family satisfaction, prolonged recovery from illnesses, and surgical procedures (Finis, 2012). The ability of nurses and other healthcare providers to effectively assess and manage pain in patients is often challenging due to perceptions, attitudes, and lack of education and knowledge regarding pain assessment and management. Therefore, it is important to assess the healthcare providers' knowledge and attitudes regarding pain to prevent unnecessary risk or harm. Perceptions, ethical, and cultural considerations are often difficult for healthcare providers to manage in the context of pain management and may ultimately cloud their judgment and understanding of this practice (Varcoe, Pauly, Storch, Newton, & Makaroff, 2012). Pain is considered as the fifth vital sign (TJC, 2015). Therefore, pain must be assessed at least every shift, before administration of pain medication, and after pain medication is administered to evaluate the effectiveness (TJC, 2015). However, at times when pain assessment is performed appropriately, healthcare providers have difficulty accepting the findings due to some beliefs, attitudes, and knowledge deficits. When this happens, pain is not managed appropriately and can lead to unrelieved pain and unnecessary sufferings (Pasero & McCaffery, 2011).

Intellectus Statistics version v1.16.1.13 was used to analyze and interpret the data. The survey variables consisted of age, gender, ethnicity, educational level, specialty area, years of work experience, possession of board certification, completion of same survey within the past two years, and participation to educational update about pain assessment and management within the past two years. There were 70 returned surveys out of approximately 92 healthcare providers working in the ED and ICU.

Frequencies and Percentages

The majority of the participants were female (38, 55%). The age groups were categorized between the ages of 20-30, 31-40, 41-50, 51-60, 61-70, and greater than 71. Most of the participants fell into the category of 51-60 (22, 32%). The majority of respondents were White/Caucasian for ethnicity (40, 59%), followed by Hispanic/Latino (14, 21%), Asian/Pacific Islander (12, 18%), and then Black/African American (2, 3%). Many of the participants fell into the category of RN Associate Degree for educational level (24, 34%), followed by RN Bachelor of Science (16, 23%), emergency room physicians (14, 20%), critical care MD (7, 10%), physician assistant (5, 7%) and RN, Master of Science (4, 6%). The majority of participants fell into the category of emergency department for specialty area (47, 67%). The most frequent response for experience was 11-15 (17, 24.29%). More than half of the participants are not board certified in their specialty area (40, 57%). All of the participants (70, 100%) have not completed the same survey within the past two years and most of them (56, 80%) received an educational update about pain assessment and management within the past two years. Frequencies and percentages for nominal variables are presented in Table 3.

Variables	N	%
Age		
20-30	5	7
31-40	19	28
41-50	19	28
51-60	22	32
61-70	4	6
Gender		
Female	38	55
Male	31	45
Ethnicity		
Asian/Pacific Islander	12	18
Black/African American	2	3
Hispanic/Latino	14	21
White/Caucasian	40	59
Educational level		
MD Critical Care	7	10
MD Emergency Medicine	14	20
Physician Assistant	5	7
RN Associate Degree	24	34
RN Bachelor of Science	16	23
RN Master of Science	4	6
Specialty Area		
Emergency Department	47	67
Intensive Care Unit	23	33
Experience		
< 1	5	7
11-15	17	24
1-5	11	16
16-20	9	13
> 21	15	21
6-10	13	19
Board Certified		
No	40	57
Yes	30	43
Completed Same Survey		
No	70	100
Received Educational Update		
No	14	20
Yes	56	80

Table 3: Frequencies and Percentages for Nominal Variables
 Note. Due to rounding error, percentages may not add up to 100.

Means and Standard Deviations

For Q1, observations ranged from 0.00 to 1.00, with an average observation of 0.94 (SD = 0.23).
 For Q2, observations ranged from 0.00 to 1.00, with an average observation of 0.75 (SD = 0.43).
 For Q3, observations ranged from 0.00 to 1.00, with an average observation of 0.84 (SD = 0.37).
 For Q4, observations ranged from 0.00 to 1.00, with an average observation of 0.84 (SD = 0.37).
 For Q5, observations ranged from 0.00 to 1.00, with an average observation of 0.61 (SD = 0.49).
 For Q6, observations ranged from 0.00 to 1.00, with an average observation of 0.39 (SD = 0.49).
 For Q7, observations ranged from 0.00 to 1.00, with an average observation of 0.94 (SD = 0.23).
 For Q8, observations ranged from 0.00 to 1.00, with an average observation of 0.54 (SD = 0.50).
 For Q9, observations ranged from 0.00 to 1.00, with an average observation of 0.43 (SD = 0.50).
 For Q10, observations ranged from 0.00 to 1.00, with an average observation of 0.81 (SD = 0.39).
 For Q11, observations ranged from 0.00 to 1.00, with an average observation of 0.51 (SD = 0.50).
 For Q12, observations ranged from 0.00 to 1.00, with an average observation of 0.97 (SD = 0.17).
 For Q13, observations ranged from 0.00 to 1.00, with an average observation of 0.99 (SD = 0.12).
 For Q14, observations ranged from 0.00 to 1.00, with an average observation of 0.87 (SD = 0.34).
 For Q15, observations ranged from 0.00 to 1.00, with an average observation of 0.94 (SD = 0.23).
 For Q16, observations ranged from 0.00 to 1.00, with an average observation of 0.99 (SD = 0.12).
 For Q17, observations ranged from 0.00 to 1.00, with an average observation of 0.94 (SD = 0.23).
 For Q18, observations ranged from 0.00 to 1.00, with an average observation of 0.30 (SD = 0.46).
 For Q19, observations ranged from 0.00 to 1.00, with an average observation of 0.77 (SD = 0.42).
 For Q20, observations ranged from 0.00 to 1.00, with an average observation of 0.94 (SD = 0.24).
 For Q21, observations ranged from 0.00 to 1.00, with an average observation of 0.63 (SD = 0.49).
 For Q22, observations ranged from 0.00 to 1.00, with an average observation of 0.99 (SD = 0.12).
 The total score observations ranged from 13.00 to 21.00, with an average observation of 16.86 (SD = 2.14). Means and standard deviations for continuous variables are presented in Table 4.

Variable	M	SD
Q1	0.94	0.23
Q2	0.75	0.43
Q3	0.84	0.37
Q4	0.84	0.37
Q5	0.61	0.49
Q6	0.39	0.49
Q7	0.94	0.23
Q8	0.54	0.50
Q9	0.43	0.50
Q10	0.81	0.39
Q11	0.51	0.50
Q12	0.97	0.17
Q13	0.99	0.12
Q14	0.87	0.34
Q15	0.94	0.23
Q16	0.99	0.12
Q17	0.94	0.23
Q18	0.30	0.46
Q19	0.77	0.42
Q20	0.94	0.24
Q21	0.63	0.49
Q22	0.99	0.12
Total Score	16.86	2.14

Table 4: Means and Standard Deviations for Continuous Variables

Anova

To examine the research questions, an analysis of variance (ANOVA) was conducted to determine whether there were significant differences in total score by educational level, specialty area, experience, and possession of board certification. A Shapiro-Wilk test was conducted to determine whether the values of the total score could have been produced by a normal distribution. The results of the Shapiro-Wilk test were significant, $W = 0.96, p = .042$. This suggests that the values of the total score are unlikely to have been produced by a normal distribution, thus normality cannot be assumed. The

results of the main effect of educational level were not significant, $F = 1.64, p = .164$, suggesting that there were no differences in total score by educational level. The results of the main effect of the specialty area were not significant, $F = 0.78, p = .381$, suggesting that there were no differences in total score by specialty area. The results of the main effect of experience were not significant, $F = 1.17, p = .336$, suggesting that there were no differences in total score by experience. The results of the main effect of possession of board certification were not significant, $F = 0.05, p = .821$, suggesting that there were no differences in total score by being board certified. The results are summarized in Table 5.

Variable	Partial η^2	SS	df	F	P
Educational Level	0.13	36	5	1.64	.164
Specialty Area	0.01	3	1	0.78	.381
Experience	0.09	26	5	1.17	.336
Board Certified	0	0	1	0.05	.821
Residuals		250	57		

Table 5: Results for ANOVA for total score by educational level, specialty area, experience, and possession of board certification.

Independent-Sample t-Test

An Independent Sample t-test was conducted to determine if the mean of total score (providers) was significantly different from total score (registered nurses). Prior to the analysis, the assumption of normality was assessed. A Shapiro-Wilk test was conducted to determine whether the values of total score could have been produced by a normal distribution. The results of the Shapiro-Wilk test were significant, $W = 0.96, p = .042$. This suggests that the values of total score are unlikely to have been produced by a normal distribution,

thus normality cannot be assumed. However, the mean of any random variable will be approximately normally distributed as sample size increases according to the Central Limit Theorem (CLT). Therefore, with a sufficiently large sample size, deviations from normality will have little effect on the results. The results of the Independent Sample t-Test were not significant, $t(32.89) = 1.43, p = .162$, suggesting that the mean of total score (providers) was not significantly different from total score (registered nurses). Results of the Independent Sample t-Test are presented in Tables 6 and 7.

Variable	Total score (providers)		Total score (registered nurses)				
	M	SD	M	SD	t(32.89)	p	Cohen's d
Total Score	17.45	2.24	16.62	2.08	1.43	.162	0.38

Table 6: Independent Sample t-Test for the difference between total score (providers) and total score (registered nurses)

Variable	Total Score
Board Certified	
No	16.63
Yes	17.58
Experience	
>21	17.53
1-5	16.91
11-15	16.33
16-20	17.25
6-10	16.80

< 1	17.80
Educational Level	
MD Critical Care	18.00
MD Emergency Medicine	17.92
Physician Assistant	15.60
RN Associate Degree	16.63
RN Bachelor of Science	16.46
RN Master of Science	18.75
Specialty Area	16.87
Emergency Department	17.39
Intensive Care Unit	
Employment Type	
Providers	17.88
Registered Nurse	16.70
Received Educational Update Within the Past Two Years	
No	17.14
Yes	16.98

Table 7:

Descriptive statistics and ANOVA were utilized to evaluate the knowledge and attitudes by healthcare providers working in the ED and critical care services. One-Way ANOVA was used to assess for differences in a dependent variable by a single nominal independent variable. Normality referred to the distribution of the data, and the assumption was that the data follows the bell-shaped curve. Shapiro-Wilk test was used to assess if the assumption of normality was met, and if statistical significance was found, the data was not normally distributed. The Levene's test was used to assess if the assumption of equality of variance was met.

There were no significant differences or findings of the providers' and nurses' (board certified, non-board certified, specialty area, educational level, received educational update within the past two years, and total score) knowledge and attitudes regarding pain. However, the most frequently missed questions pertain to pain medications' mechanism of actions, indications, dosages, and side effects. The most frequently missed questions include: 1) Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastasis (False); 2) Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months (True); 3) The usual duration of analgesia of 1-2mg morphine IV is 4-5 hours (False); 4) Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics (False); 5) Morphine has a ceiling dose (i.e., a dose above which no greater pain relief can be obtained) (False); 6) Vicodin (hydrocodone 5mg + acetaminophen 500mg is approximately equal to 5-10mg of morphine PO); and 7) Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasms (True). On the other hand, the healthcare providers showed knowledge on the following questions as reflected with a score of 80% or greater: a) Vital signs are not always reliable indicators of the intensity of patient's pain (Question 1 (Q1),

False); b) Patients who can be distracted from pain usually do not have severe pain (Q3, False); c) Patients may sleep spite of severe pain (Q4, True); d) Combining analgesics that work by different mechanisms (e.g., combining an opioid with an NSAID) may result in better pain control with fewer side effects than using a single analgesic agent (Q7, True); e) Opioids should not be used in patients with a history of substance abuse (Q10, False); f) Elderly patients cannot tolerate opioids for pain relief (Q10, False); g) Patients should be encouraged to endure much pain as possible before using an opioid (Q13, False); h) Children less 11 years old cannot reliably report pain so nurses should solely rely on the parent's assessment of the child's pain intensity (Q14, False); i) Patient's spiritual beliefs may lead them to think pain and suffering are necessary (Q15, True); j) After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response (Q16, True); k) If the source of 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 (Q19, False); l) Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose (Q20, False); and m) Narcotic opioid addiction is defined as a chronic neurologic 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 (Q22, True).

In summary, the providers' and nurses' (board certified, non-board certified, specialty area, educational level, received educational update within the past two years, and total score) knowledge and attitudes regarding pain suggested that there were no differences/ not significant. However, there was inadequate knowledge about pharmacological agents that can result in unmanaged pain leading to unnecessary suffering, dissatisfaction of care, readmission to the emergency department/hospital, prolonged hospital stay, and increased costs to name a few.

Discussion

This project is significant because it demonstrated the importance of pain assessment and managing pain in the practice setting and how it may be defined and limited by specific beliefs, attitudes, knowledge, and perspectives that influence patient care quality. This has a significant influence on patient care resources and in the development of new methods to improve the practice setting by minimizing barriers and in supporting a practice setting where pain assessment and management are well understood by nurses.

Freedom from pain or no pain is one of the physiologic needs, and this addresses the dominance of this need before other and more self-fulfilling needs can be met (St. Marie, 2012). Nurses need to provide appropriate strategies based on the developmental stage in assisting the patient to cope successfully with stressful experiences such as pain. Therefore, it is important to assess the knowledge and attitudes of healthcare providers in the acute care setting regarding pain to improve pain management in the practice environment by using a survey instrument.

The ability of nurses to effectively assess and manage pain in patients is often challenging due to perceptions, attitudes, and lack of education and knowledge regarding this practice. Therefore, it is important to provide educational tools to assist them improve the knowledge, and the same time understand the cultural and developmental stage of the individual (Voshall, Dunn, & Shelestak, 2013).

Healthcare providers' knowledge and attitudes about pain is important since most of the patients that are experiencing pain are undertreated due to personal beliefs, attitudes, and knowledge. When pain is not managed effectively, it can result to long lasting negative effects on the physical, emotional, and social wellbeing of the individual. In addition, unrelieved pain can be very costly since it increases hospital length of stay; increases hospital acquired infections; increases recovery time; increases post traumatic syndrome decreases patient satisfaction as well as staff satisfaction (Madenski, 2014).

A failure of a clinician or healthcare provider to assess pain comprehensively can lead to poor management of pain or untreated pain, which can result to unnecessary suffering. Indeed, according to Pasero & McCaffery (2011), the most common causes of unrelieved pain are the ability of the clinicians to accept the level of pain as stated by the patient and failure to assess or ask the patient about their pain. Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (St. Marie, 2010, p. 10). Pain is always subjective. Therefore, self-report is the gold standard of caring for patients in pain (Pasero & McCaffery, 2011). Pain management is a complex phenomenon that requires healthcare providers' complete knowledge of patients who experience acute pain to ensure that their treatment is appropriate and timely in meeting their specific needs. Healthcare providers must demonstrate their ability to appropriately assess patients and treat them at the necessary level to alleviate pain. At the same time, their attitudes, knowledge, and perceptions in pain management must also be considered to provide patients with the best possible means of assessing pain that will effectively accommodate patients in the practice settings. It is necessary to identify the areas in which patients might benefit from the efforts made by nurses to improve the practice environment effectively.

The ability of nurses to effectively assess and manage pain in patients is often challenging due to perceptions, attitudes, and lack of education and knowledge regarding pain assessment and management. Therefore, it is important to assess the healthcare providers' knowledge and attitudes regarding pain to prevent unnecessary risk or harm.

Perceptions, ethical, and cultural considerations are often difficult for healthcare providers to manage in the context of pain management and may ultimately cloud their judgment and understanding of this practice (Varcoe, Pauly, Storch, Newton, & Makaroff, 2012).

Pain assessment is a task that is simple, yet, it is a task that is not performed consistently and performed frequently. However, at times when pain assessment is performed appropriately, healthcare providers have difficulty accepting the findings due to some beliefs, attitudes, and knowledge deficits. When this happens, pain that is not managed appropriately can lead to unrelieved pain and unnecessary sufferings (Pasero & McCaffery, 2011).

Since attitudes, perceptions, and knowledge are highly variable, these may pose a challenge in aiming to educate nurses at an effective level that will satisfy the needs of nurses and patients accordingly (Mathew, Mathew, & Singhi, 2011). At this level, pain management must improve through a coordinated effort to address barriers and other challenges that impact the practice setting and ultimately patient care and potential outcomes (Lockett, Davidson, Green, Boyle, Stubbs, & Lovell, 2013).

Assumptions, Limitations, and Delimitations

It was assumed that survey participants were not deceptive with their answers, and that the participants answered the questions truthfully and to the best of their ability. It is believed that the participants were an accurate representation of the current situation in Southern California considering the bed capacity of the hospital and the population of the patients they see. In addition, it is believed that assessing the knowledge and attitudes regarding pain was of importance in proposing an educational and strategic management plan in pain assessment and management.

The limitations of the study include: 1) convenience sampling rather than random sampling; 2) conducted in one institution; and 3) accessibility of the survey tool (with answers) online weakened generalizability. However, although the survey tool can be accessed online, the participants did not get a chance to check for the correct answer since the survey was completed in real time.

Implications

Pain management is a complex phenomenon that requires healthcare providers' complete knowledge of the patient that experience acute or chronic pain to ensure that their treatment is appropriate and timely in meeting their specific needs. Healthcare providers must demonstrate their ability to appropriately assess patients and treat them at the necessary level to alleviate pain.

Theoretical Implications: Managing pain effectively is integral in enhancing patient outcomes. The Gate Control theory by Melzack and Wall in managing pain is grounded on the premise that medicating patients in pain before the onset of pain (before the gate opens), fewer pain impulses will pass through the gate keeping the gate closed longer. Therefore, sufficient knowledge of pharmacological interventions is important to ensure that patient's pain is managed and treated accordingly. Prevention and management are linked to keeping the gate closed. In addition, the King's Theory of Goal Attainment by Imogene King is useful in pain management since it focuses through individualizing the goals to be attained based on the patient's needs.

Practical Implications: This study demonstrated the differences in knowledge and attitudes of healthcare providers based on their educational level, years of experience, possession of board certification, and specialty area. This project provided an insight about the current knowledge and attitudes regarding pain of healthcare providers working in the emergency department and critical care that

will serve as a guide to propose and develop educational and strategic management projects to achieve optimal outcomes.

Future Implications: The results of this study indicate a strong emphasis on pain management education particularly the pharmacological aspect. Moreover, the questions that were answered incorrectly can be used as a guide for educators to propose an educational and strategic management plans for the emergency department and critical care units. Future research in larger sample groups as well as the study to be conducted in different nursing areas such as telemetry, medical/surgical, cancer, and orthopedic units will yield a more robust and definitive results.

Recommendations

Unrelieved pain can cause unnecessary suffering, increases hospital length of stay, increases cost, decreases quality of life, and impacts overall health and wellbeing. Knowing the current and differences of knowledge and attitudes of healthcare providers regarding pain is critical in organizing a well-planned educational project. Therefore, education on pain management, particularly pharmacological intervention is necessary to achieve optimal results.

Recommendations for Future Projects: This project demonstrated a need to: 1) evaluate the knowledge and attitudes of healthcare providers working in different settings such as telemetry, medical/surgical, cancer, and orthopedic units to ensure that patient's admitted in pain are managed appropriately; 2) include the pharmacy department in the survey to assess their knowledge about the pharmacological agents; 3) utilize the whole survey rather than just the true/false section; 4) revise the true/false section of the survey and include an option such as "I do not know" since participants clearly verbalized lack of knowledge about the questions being asked.

Recommendations for Practice: Managing pain in adults is a serious concern that requires further evaluation to better understand the scope of this practice and its impact on health and wellbeing. It is critical to identify the tools and resources that the healthcare providers must have to perform their job effectively that will positively influence outcomes that will alleviate pain through specific recommended therapies. Pain management must be taken seriously since pain can result in debilitating effects both physically and mentally. Therefore, a well-coordinated effort and collaboration between nurses, physicians, palliative care services/ pain management department, and clinical education as well as the pharmacy department must be implemented to enhance patient outcomes.

Conclusions

The two clinical questions in this study include: 1) What are the current knowledge and attitudes regarding pain management among healthcare providers working in the emergency department and critical care services and 2) Are there significant differences in knowledge and attitudes regarding pain management among registered nurses and providers between subgroups of demographics such as board certification, years of experience, specialty area, and educational level. The findings indicated that there were no significant differences in the current level of knowledge and attitudes regarding pain between the ICU and ED healthcare providers and there were no significant differences with regards to the total score of healthcare providers based on possession of board certification, number of years of experience, level of education, and specialty area. However, there was a vast lack of knowledge about pain medication side effects, mechanism of actions, dosages, and medication equivalent. This finding showed that pain management with emphasis on pain medications need to be taken seriously as reflected by incorrect responses with regards to pharmacological questions. This finding is congruent with a study by Al-Shaer (2011) that pain management education need to

take precedence to ensure that patients are given the appropriate medication to relieve and manage their pain. Furthermore, a study that was conducted by Tse & Ho (2014) found that education appears to be lacking that could ultimately provide support to nurses as they struggle through issues of pain management and assessment.

Pain management continues to be a huge problem despite of various past findings and recommendations. Although the findings indicated high scores with regards to attitudes regarding pain, healthcare providers continue to demonstrate inadequate knowledge surrounding pain management particularly pharmacological agents. This finding provided a guidance to plan an educational and strategic management project in managing pain particularly for healthcare providers working in the emergency department and critical care services. Furthermore, this finding highlighted the importance of collaboration between nurses, physicians, palliative care services, clinical education including the pharmacy department to address the needs of patients in pain.

Dedication

This study is very close and dear to my heart. I dedicated my project to my mother, Elena. She is a very strong woman who survived multiple surgeries due to multiple aneurysms (head, femoral, and abdominal). Unfortunately, her pain and other issues were not managed adequately, and 24 hours post-op, she got agitated and she extubated herself. This resulted damaged to her upper airway that necessitated an emergency tracheostomy at the bedside due to inability to reinsert an endotracheal tube. Furthermore, this prolonged her stay in the intensive care unit (overall hospital stay), developed multiple hospital-acquired infections (HAI), and she went through unnecessary sufferings. She passed away last year (October 2017) but she is always in my heart and she remains as my inspiration to seek solutions for enhancing patient outcomes.

Acknowledgment

First of all, I am grateful to God for guiding me to pursue and complete this project. I would like to express my deepest gratitude to my DPI chairperson, Dr. Deborah Terry, and my committee members, Dr. Ann Quinlan-Colwell, Dr. Rajan Bhatia, and Chris Pasero who have the attitude, knowledge, and skills; they were always there for me from the beginning to the end. Without their guidance, perseverance, and diligence this project would have been possible. I wanted to thank my husband (Neil), my son (Matthew), my brothers and sisters, nephews and nieces, and my friends for their love, support, patience, and understanding in completing my doctorate degree and this project. Most importantly, I am very thankful to all the participants in this study.

Finally, I hope that this study will provide a better insight and understanding about the needs of healthcare providers in managing pain, and I am hopeful that this study will be a valuable tool to plan for educational and strategic management projects in enhancing patient outcomes.

References

1. Al-Kahwaldeh, O. A., Al-Hussami, M., & Darawad, M. (2013). [Knowledge and attitudes regarding pain management among Jordanian nursing students](#). *Nurse Education Today*, 33(4), 339-345. doi: 10.1016/j.nedt.2013.01.006
2. Al Samaraee, A. (2010). [Factors contributing to poor post-operative abdominal pain management in adult patients: a review](#). *Surgeon-Journal of the Royal Colleges of Surgeons of Edinburgh and Ireland*, 8(3), 151-158.
3. Barr, J., Fraser, G. L., Puntillo, K., Ely, W., Gelin, C., Dasta, J. F., et al (2013). [Clinical practice guidelines for the management of pain](#),

- agitation, and delirium in adult patients in the intensive care unit: Executive summary. *70*, 53-8.
4. Bernard, H. Russell, and Ryan, Gery W. (2010). *Analyzing qualitative data: Systematic approaches*. Thousand Oaks, CA: SAGE Publications.
 5. Copstead, L. C. & Banasik, J. L. (2010). *Pathophysiology (4th ed.)*. Saunders Elsevier. St. Louis, Missouri.
 6. Czarnecki, M. L., Simon, K., Thompson, J. J., Armus, C. L., Hanson, T. C., Berg, K. A., et al. (2011). *Barriers to pediatric pain management: A nursing perspective*. *Pain Management Nursing*, *12*(3), 154-162.
 7. Duke, G., Haas, B. K., Yarbrough, S., & Northam, S. (2013). Pain management knowledge and attitudes of baccalaureate nursing students and faculty. *Pain Management Nursing*, *14*(1), 11-19.
 8. Finis, N. M. (2012). Pain management approach to improving quality and safety. Retrieved from <http://www.jcinc.com>
 9. Grantham, D., & Brown, S. (2012). *Pain Assessment and Management: Clinical Practice Guidelines*. Winnipeg Regional Health Authority. Retrieved from <http://www.whra.mb.ca>
 10. Gropelli, T., & Sharer, J. (2013). *Nurses' perceptions of pain management in older adults*. *MEDSURG Nursing*, *22*(6), 375-382.
 11. Habich, M., Wilson, D., Thielk, D., Melles, G. L., Crumlett, H. S., Masterton, J., et al. (2012). *Evaluating the effectiveness of pediatric pain management guidelines*. *Journal of Pediatric Nursing*, *27*(4), 336-345.
 12. Hadjistavropoulos, T., Hunter, P., & Fitzgerald, T. (2009). *Pain assessment and management in older adults: Conceptual issues and clinical challenges*. *Canadian Psychology*, *50*(4), 241-254
 13. Helfand, M. (2009). *Assessment and management of acute pain in adult medical inpatients: A systematic review*. *Pain Medicine*, *10*(7), 1183-1190
 - Klassen, B. L. (2009). *Pain management best practice with older adults: Effects of training on staff knowledge, attitudes, and patient outcomes*. *Physical and Occupational Therapy in Geriatrics*, *27*(3), 173-197
 14. Howell, D. C. (2010). *Statistical methods for psychology (7th ed.)*. Belmont CA: Wadsworth Cengage Learning.
 15. Krokmyrdal, K. A., & Andenæs, R. (2015). *Nurses' competence in pain management in patients with opioid addiction: A cross-sectional survey study*. *Nurse Education Today*.
 16. Lockett, T., Davidson, P. M., Green, A., Boyle, F., Stubbs, J., & Lovell, M. (2013). *Assessment and management of adult cancer pain: a systematic review and synthesis of recent qualitative studies aimed at developing insights for managing barriers and optimizing facilitators within a comprehensive framework of patient care*. *Journal of Pain and Symptom Management*, *46*(2), 229-253.
 17. Mahar, P. D., Wasiak, J., O'Loughlin, C. J., Christelis, N., Arnold, C. A., & Spinks, A. B, et al., (2012). *Frequency and use of pain assessment tools implemented in randomized controlled trials in the adult burns populations: A systematic review*. *Burns*, *38*(2), 147-154
 18. Mathew, P. J., Mathew, J. L., & Singhi, S. (2011). *Knowledge, attitude and practice of pediatric critical care nurses towards pain: Survey in a developing country setting*. *Journal of Postgraduate Medicine*, *57*(3), 196.
 19. McLiesh, P., Mungall, D., & Wiechula, R. (2009). *Are we providing the best possible pain management for our elderly patients in the acute-care setting?* *International Journal of Evidence Based Healthcare*, *7*, 173-180
 20. *Nursing Theories: A comparison to nursing theories and models* (2013). Retrieved from http://currentnursing.com/nursing_theory/introduction.html
 21. Pasero, C., & McCaffery, M. (2011). *Pain assessment and pharmacologic management*. St. Louis, Missouri: Elsevier.
 22. Pretorius, A., Searle, J., & Marshall, B. (2015). *Barriers and enablers to emergency department nurses' management of patients' pain*. *Pain Management Nursing*, *16*(3), 372-379.
 23. Reid, M., Bennett, D., Chen, W., Eldadah, B., Farrar, J. T., & Gallagher, R. M. (2011). *Improving the pharmacologic management of pain in older adults: Identifying the research gaps and methods to address them*. *Pain Medicine*, *12*(9), 1336-1358.
 24. Rose, L., Smith, O., Gélinas, C., Haslam, L., Dale, C., Luk, E., et al. (2012). *Critical care nurses' pain assessment and management practices: a survey in Canada*. *American Journal of Critical Care*, *21*(4), 251-259.
 25. Rose, E., Haslam, L., Knetchel, L., & McGillion, M. (2013). *Behavioral pain assessment tool for critically ill adults unable to self-report pain*. *American Journal of Critical Care*, *22*(3), 246-254. Doi: 10.4037/ajcc2013200
 26. Statistics Solutions. (2014). *Intellectus Statistics (Version v1.16.1.13)* [Online computer software]. Retrieved from <http://ssp.statisticsolutions.com/>
 27. Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences (5th ed.)*. Mahwah, NJ: Routledge Academic.
 28. St. Marie, B. (2012). *Core curriculum for pain management nursing (2nd ed.)*. American Society for Pain Management Nursing: Kendall Hunt Publishing: USA
 29. Subramanian, P., Allcock, N., James, V., & Lathlean, J. (2012). *Challenges faced by nurses in managing pain in a critical care setting*. *Journal of Clinical Nursing*, *21*(9-10), 1254-1262.
 30. The Joint Commission (TJC) (2015). *Facts about pain management*. Retrieved from http://www.jointcommission.org/pain_management/
 31. Topolovec-Vranic, J., Canzian, S., Innis, J., Pollman-Mudryj, M. A., McFarlan, A. W., & Baker, A. J., et al., (2010). *Patient satisfaction and documentation of pain assessments and management after implementing the adult nonverbal pain scale*. *American Journal of Critical Care*, *19*(4), 345-355
 32. Tracy, B., & Morrison, S. R. (2013). *Review article: Pain management in older adults*. In *Clinical Therapeutics*, *35*(11), 1659-1668. doi: [10.1016/j.clinthera.2013.09.026](http://dx.doi.org/10.1016/j.clinthera.2013.09.026)
 33. Tse, M. M. Y., & Ho, S. S. (2014). *Enhancing knowledge and attitudes in pain management: A pain management education program for nursing home staff*. *Pain Management Nursing*, *15*(1), 2-11.
 34. Twycross, A. (2013). *Nurses' views about the barriers and facilitators to effective management of pediatric pain*. *Pain Management Nursing*, *14*(4), e164-e172.
 35. Varcoe, C., Pauly, B., Storch, J., Newton, L., & Makaroff, K. (2012). *Nurses' perceptions of and responses to morally distressing situations*. *Nursing Ethics*, *19*(4), 488-500.
 36. Voshall, B., Dunn, K. S., & Shelestak, D. (2013). *Knowledge and attitudes of pain management among nursing faculty*. *Pain Management Nursing*, *14*(4), e226-e235.
 37. Ware, L. J., Bruckenthal, P., Davis, G. C., & O'Conner-Von, S. K. (2011). *Factors that influence patient advocacy by pain management nurses: Results of the American society for pain management nursing survey*. *Pain Management Nursing*, *12*(1), 25-32.
 38. Wilson, M. (2014). *Integrating the concept of pain interference into pain management*. *Pain Management Nursing*, *15*(2), 499-505