

PATIENT SATISFACTION WITH PAIN MANAGEMENT BY NURSES IN  
POSTOPERATIVE CARDIAC PATIENTS

A RESEARCH PAPER

SUBMITTED TO THE GRADUATE SCHOOL  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

MASTERS OF SCIENCE

BY

SHERRI CLARKE

Dr. DEBRA SIELA- ADVISOR

BALL STATE UNIVERSITY

MUNCIE, INDIANA

DECEMBER 2009

## Table of Contents

Table of Contents .....	i
Chapter I: Introduction	
Introduction.....	1
Background and Significance.....	3
Problem Statement.....	5
Purpose.....	6
Research Question.....	6
Theoretical Framework.....	6
Summary.....	6
Chapter II: Literature Review	
Literature Review.....	8
Theoretical Framework.....	8
Pain Experiences.....	10
Effective Pain Management.....	23
Nurses Pain Management.....	37
Summary.....	61
Chapter III: Methodology and Procedures	
Method and Procedures.....	63
Problem Statement.....	63
Research Question.....	63
Population, Sample and Setting.....	64
Protection of Human Subjects.....	64

Procedures.....	65
Definition of Terms.....	66
Limitations.....	67
Assumptions.....	67
Methods of Measurement.....	67
Research Design.....	69
Intended Method of Data Analysis.....	70
Summary.....	70
References.....	71

## Chapter I

### *Introduction*

Coronary artery disease, a common type of heart disease, affects about 15 million Americans and is the leading cause of death for men and women (Agency for Healthcare Research and Quality, 2007). Cardiovascular disease claimed 864,480 lives in 2005 which is 35.3 percent of all deaths or 1 of every 2.8 deaths (American Heart Association, 2009). Coronary artery bypass graft (CABG) operations (N= 448,000) were done in the United States in 2006.

Almost 35 million patients were discharged from U.S. hospitals in 2004; of these patients, 46% had a surgical procedure and 16% had one or more diagnostic procedures (Wells, Pasero, & McCaffery, 2005). Recent data suggest 80% of patients experience pain postoperatively with between 11% and 20% experiencing severe pain (Wells et al.). Thus, acute pain is a common occurrence in U.S. hospitals associated with diagnostic and surgical procedures and remains inadequately managed for many patients.

Research literature was reviewed by a multidisciplinary 18 member panel of pain experts under the sponsorship of the Agency for Healthcare Research and Quality through the U.S. Department of Health and Human Services. After analyzing the results of more than 7,000 published studies, the panel concluded 6 points. The first point stated half of all patients given conventional therapy for pain-most of the 23 million surgical cases each year-do not get adequate pain relief and continue to feel moderate to severe pain (Agency for Healthcare Research and Quality [AHRQ, 1992]). Guidelines

were developed to assist surgeons, nurses and anesthesiologist to manage acute postoperative pain more effectively with four major goals.

1. To reduce the incidence and severity of acute postoperative and posttraumatic pain.
2. To educate patients about the need to communicate about unrelieved pain.
3. To enhance patient comfort and satisfaction.
4. To reduce postoperative complications and, in some cases, shorten stays after surgical procedures (Agency for Healthcare Research and Quality).

Beginning in 2000, The Joint Commission made pain assessment and management a priority in its national standards and accreditation process. According to the Joint Commission standards health care organizations have a responsibility to develop processes to help support improvements in pain management, including methods to ensure: (a) recognition of patients' right to appropriate pain assessment and management; (b) appropriate assessment of the severity of pain; (c) regular pain assessment, recording, and follow-up; and (d) establishment of policies and procedures that support the appropriate prescription of pain medications (Frasco, Sprung, & Trentman, 2005). Effective pain management is a crucial component of good health care, and treating pain is the responsibility of all caregivers (The Joint Commission, 2009).

It is common for most postoperative cardiac patients to experience the symptom of pain. Continuing pain is associated with morbidity and delayed discharge (Sherwood, McNeill, Starck, & Disnard, 2003). Inadequate assessment, individual variability in the experience and exhibition of pain, poor communication among members of the health care team and their patients, negative attitudes toward the use of opioids, and

misconceptions about pain are the most frequently cited factors accounting for unsatisfactory treatment (Drayer, Henderson, & Reidenberg, 1999).

Evidence indicates that in spite of readily available pain management guidelines, the care of postoperative patients lags in effective pain management, surgical patients lack information, clinicians often misjudge pain intensity, and vulnerable populations remain at higher risk (Sherwood et al., 2003). Such findings raise important questions about the kind, source, and adequacy of the clinical knowledge used by professionals to assess pain (Kim, Schwartz-Barcott, Tracy, Fortin, & Sjostrom, 2005). Continued study is needed to determine levels of patient satisfaction with pain management by nurses.

#### *Background and Significance*

Inadequate pain relief has been repeatedly documented for more than 20 years since Marks and Sachar's seminal work to recent studies such as those by Watt-Watson & Stevens, (1998). Surgical patients continue to report moderate to severe pain in spite of advances in pain literature, education, and treatment options (Watt-Watson & Stevens). Pain assessments therefore require the use of comprehensive practices that accurately reflect an individual's pain (Manias, Bucknall, & Botti, 2004).

Evidence-based guidelines to help clinicians monitor and manage pain have been distributed widely by concerned organizations, such as the American Pain Society; the Agency for Healthcare Research and Quality (AHRQ), formerly known as the Agency for Health Care Policy and Research; and the Oncology Nursing Society (Sherwood et al., 2003). Beginning in 2000, The Joint Commission made pain assessment and management a priority in its national standards and accreditation process (The Joint Commission, 2009). A report from nine acute care hospitals revealed no difference in

either short-term outcomes of patient-rated pain or patient satisfaction with pain management 1/2 to 2 years after the advent of AHRQ guidelines (Sherwood et al.).

Throughout history, nurses have demonstrated their commitment to evaluating clinical practice patterns and identifying opportunities to improve care (Soderham & Idavall, 2003). It must be regarded as unethical to let patients suffer from pain without adequate efforts to treat it (Soderham & Idavall). By solely examining pain assessment by outcomes obtained on rating scales, past investigators have utilized a narrow and limited means of examining the complex dimensions of pain and the environment in which it was experienced (Manias et al., 2004). Pain is a multidimensional phenomenon that varies with each individual and each painful experience, therefore, the assessment of another's pain is not easy, because pain is subjective, and responses to pain are highly variable (Melzack & Wall, 1996). To provide effective pain relief, nurses need to attend to this subjective quality of pain (Watt-Watson et al., 2000).

Pain relief has been studied since ancient times, but patient satisfaction as an outcome measure is a recent focus in health care (Sherwood et al., 2003). Interest in patient satisfaction has outpaced advances in its conceptualization and measurement (Yellen, 2003). To make patient satisfaction truly indicative of nursing care and useful in tracking quality, nurses, along with other health care providers and representative consumers, must agree on a definition of patient satisfaction, and data collection instruments must include reliable, standardized items that measure the defined concept of patient satisfaction (Yellen). Yellen added that by isolating and studying pain and its association to patient satisfaction, improved patient outcomes can be obtained.

The variability in patients' responses to pain is not being recognized consistently by nurses as patients report moderate to severe pain after CABG surgery (Watt-Watson & Stevens, 1998). Most nurses rated their pain knowledge and management competence as excellent, despite moderate knowledge scores and minimal or no recent pain-related inservice (Watt-Watson et al., 2001). Because assessment and management of postoperative pain represents an important domain of nursing practice, nurses must be adequately prepared to undertake an active role in postoperative pain management, but few studies have shown how nurses actually fulfill this role (Dihle, Bjolseth & Helseth, 2004). This study is significant because findings will provide information for the improvement of pain management practices by nurses to improve patient satisfaction in postoperative pain management.

#### *Problem Statement*

Patients undergoing cardiovascular surgery have reported considerable unrelieved pain. Most nurses rated pain knowledge and management competence as excellent, despite moderate knowledge scores and minimal or no recent pain-related inservice (Watt-Watson et al., 2001). The impact of nurses' pain knowledge on pain management outcomes with assigned postoperative cardiac patients is not known (Watt-Watson et al., 2001). Nurses' pain-related knowledge and practices may be related to patient satisfaction with pain. Therefore, more information is needed on how nurses recognize and manage postoperative pain in postoperative cardiac patients.



### *Purpose*

The purpose of this study is to examine the relationship between nurses' knowledge about pain for postoperative cardiac patients and quality and intensity of patients' pain. This is a modified replication study of (Watt-Watson et al., 2001).

### *Research Question*

1. Is there a relationship between pain knowledge of nurses and pain management outcomes for post-operative cardiac patients?

### *Theoretical Framework*

The theoretical framework for this study is Melzack's and Wall's Gate Control Theory published in 1965. The gate control theory acknowledges the influence of external actors and expands its interpretation of pain to include the existence of sensory, affective and cognitive dimensions (Montes-Sandoval, 1999). According to Melzack (1993) the theory's emphasis on the modulation of inputs in the spinal dorsal horns and the dynamic role of the brain in pain processes had a clinical as well as a scientific impact. Psychological factors became an integral part of the process of the pain experiences. The Gate Control Theory is appropriate for this study because it acknowledges that the pain response is unpredictable and varies with each individual.

### *Summary*

Effective postoperative pain management continues to be a significant problem despite efforts in the advancement of research, guidelines, national standards, institutional requirements, treatment options and educational literature. Unrelieved pain is associated with morbidity and prolonged hospital stays. The Gate Control Theory will be used for this study. The purpose of this study is to examine the relationship between

nurses' knowledge about pain for postoperative cardiac patients and quality and intensity of patient's pain. This study is significant because findings will provide information for the improvement of pain management practices by nurses to improve patient satisfaction in postoperative pain management.

## Chapter II

### *Literature Review*

Cardiac surgical procedures are among the most commonly performed operations in the United States (Doering, McGuire, & Rourke, 2002). Although nurses play a major role in assessing and managing pain, difficulties have been identified with nurses' recognition and response to patients' pain. Most nurses rated their pain knowledge and management competence as excellent, despite moderate knowledge scores and minimal or no recent pain-related inservice (Watt-Watson et al., 2001). The purpose of this study is to examine the relationship between nurses' knowledge about pain for postoperative cardiac patients and quality and intensity of patient's pain (Watt-Watson et al.). This chapter contains selected research studies on the pain experience and pain management. The literature review is divided in four sections: (a) theoretical framework, (b) pain experiences, (c) effective pain management, and (d) nurses pain management.

#### *Theoretical Framework*

The theory of pain which we inherited in the 20<sup>th</sup> century was proposed by Descartes three centuries earlier (Melzack, 1993). Descartes' specificity theory proposed that injury activates specific pain receptors and fibers which, in turn, project pain impulses through a spinal pain pathway to a pain center in the brain (Melzack). This concept of a spinal pain pathway did not consider psychological issues such as, past experience, attention or the meaning of the situation. "Pattern theories" emerged as an opponent to specificity but were generally vague and inadequate. According to Melzack (1993) in none of the theories was there an explicit role of the brain other than as a

passive receiver of messages. Nevertheless, the successive theoretical concepts moved the field in the right direction: into the spinal cord and away from the periphery as the exclusive answer to pain (Melzack). This led Melzack and Wall to develop the Gate Control Theory.

The theoretical framework for this study is Melzack's and Wall's Gate Control Theory published in 1965. The gate control theory acknowledges the influence of external actors and expands its interpretation of pain to include the existence of sensory, affective and cognitive dimensions (Montes-Sandoval, 1999).

The theory is based on the following propositions (Melzack, 1993):

1. The transmission of nerve impulses from afferent fibres to spinal cord transmission (T) cells is modulated by a spinal gating mechanism in the dorsal horn.
2. The spinal gating mechanism is influenced by the relative amount of activity in large-diameter (L) and small-diameter (S) fibres: activity in large fibres tends to inhibit transmission (close the gate) while small-fibre activity tends to facilitate transmission (open the gate).
3. The spinal gating mechanism is influenced by nerve impulses that descend from the brain.
4. A specialized system of large-diameter, rapidly conducting fibres (the Central Control Trigger) activates selective cognitive processes that then influence, by way of descending fibres, the modulating properties of the spinal gating mechanism.
5. When the output of the spinal cord transmission (T) cells exceeds a critical level, it activates the Action System-those neural areas that underlie the complex, sequential patterns of behavior and experience characteristic of pain.

According to Melzack (1993) the theory's emphasis on the modulation of inputs in the spinal dorsal horns and the dynamic role of the brain in pain processes had a clinical as well as a scientific impact. Psychological factors became an integral part of the process of pain experiences. The International Association for the Study of Pain (IASP) has defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (Watt-Watson & Stevens, 1998). According to Gate Control Theory, pain is not a simple, sensory experience but a complex integration of sensor, affective, and cognitive dimension.

### *Pain Experiences*

Pain and patient satisfaction with pain management after surgery, is important to patients experiencing surgery. Sherwood, McNeill, Starck, and Disnard (2003) conducted a study to describe the pain experience as reported by surgical patients and determine what factors influenced patient satisfaction with pain management.

The setting for the study was a large urban tertiary care teaching hospital in a medical center and a smaller rural hospital along the United States-Mexican border. Study A occurred over a 12 month period in the settings of both hospitals. Study B occurred 3 years later with the same protocol in the urban medical center only. In both studies participants were selected from medical and surgical areas by the unit manager using the study criteria. Criteria required that participants be 18 years of age or older, have been hospitalized at least 24 hours, have undergone surgery or experienced another painful condition, be English speaking, and be cognitively aware (Sherwood et al., 2003).

Study A included 35% male and 65% females with a total of 277 patients, and 24% of the participants were older than 65 years of age. The sample consisted of 167 surgical patients. Study B had 59% males with a mean age of 54 years, 30% were older than 65 years of age and only 35% were surgical patients. This study consisted of 263

hospitalized patients. The secondary analysis included only surgical patients from both studies. Study A consisted of 258 surgical patients, with the primary gender as female and a mean age of 45. The education level was predominantly high school graduate or general equivalency diploma. Study B consisted of 91 surgical patients with a mean age of 55 and was predominantly male. Half of the study B participants had an education level of high school or less and half received college or graduate level education.

Sherwood et al. (2003) included demographic data related to: occupation, age, gender, diagnosis, ethnicity, religion and other pertinent information. Information from a modified American Pain Society patient outcome questionnaire was collected by nursing students and faculty members after participating in a 2 hour standardized training protocol. This questionnaire consisted of 16 items and assisted in collecting information about participants' pain experience. Self-report ratings of pain intensity, interference pain, and in satisfaction with pain management were obtained using a scale of 0 to 10. In addition the participants were asked questions related to a change in medication, wait times for analgesia, and whether a health care professional gave information on the importance of pain management.

A World Health Organization analgesic ladder was also used to obtain information to classify the regimen of analgesics. To ensure inter-rater reliability regarding medical record data, two raters examined every 10<sup>th</sup> chart, and correlations were demonstrated by uniformity of the process (Sherwood et al., 2003). Data collection was done at consistent times of the day to avoid variability. Descriptive statistics were used to describe the characteristics of the pain experience and the sample. Logistic regression was used to analyze the contributing independent variables in determining the dependent variable, patient satisfaction.

Findings from Sherwood et al. (2003) report the pain experience include adequacy of pain management and patient satisfaction with pain management. Mean patient ratings for pain intensity are slightly lower for participants in study B compared to study A. Study A reported the least interference was with interpersonal relationships ( $x = 2.9$ ,  $SD = 3.2$ ) and the most interference, participation in activities related to recovery ( $x = 7.1$ ,  $SD = 2.5$ ). Study B used a global interference item ( $x = 6.0$ ,  $SD = 3.3$ ), indicating a moderate interference related to pain. Sherwood et al. (2003) report satisfaction was correlated inversely and significantly with pain intensity, meaning the lower the pain rating, the greater the patient's satisfaction. This indicated an association between the level of pain experienced and satisfaction with pain management. Findings in this study also showed participants reported high satisfaction with pain management when experiencing moderate pain and interference pain. Satisfied participants indicated that timeliness of health care professionals' response to need for change in medication or complaints of pain along with interest and skillfulness in decreasing pain contributed to satisfaction with pain management. Neither gender nor age was influencing factors. Despite greater attention to the issues involved in pain management this study spanning 3 years showed that patient expectations did not change appreciably during this period.

Sherwood et al. (2003) concluded that the patients had high satisfaction with pain management when experiencing moderate pain and interference pain. The factors that influenced patient satisfaction were: timeliness of health care professionals' response to need for change in medication, complaints of pain along with interest and skillfulness in decreasing pain. The authors also concluded unrelieved postoperative pain should be treated as a serious adverse effect and no longer an expectation of surgery.

It is well documented that current treatments for acute post-operative pain are inadequate. A study by Chung and Lui (2003) was conducted to examine postoperative

patients' current pain intensity, most intense pain experienced, differences regarding pain and satisfaction levels, and satisfaction with postoperative pain management.

The setting for the study was a 1,200 bed hospital in Hong Kong. All adult patients admitted to the hospital for surgery were invited to participate in the study. Additional criteria for inclusion in the study were consciousness, ability to communicate in Chinese, and with no known history of cancer or mental illness. Approval for the study was given by The Human Subjects Review Committees. Informed consent was obtained. Patients receiving local anesthesia were excluded. Participants (n = 249) were selected to take part in the study. Males totaled 141 (48%). Females totaled 153 (52%).

Chung and Lui (2003) developed a demographic data sheet that was used for the first questionnaire. This included age, marital status, education, religion and occupation. The researcher added additional data from chart reviews which included: (a) type of anesthesia received; (b) clinical unit where the patients' care occurred; (c) the approach of the surgical intervention; and (d) whether this was an emergency or a scheduled intervention. The patients were asked to take part in the study by completing questionnaires. The data collection was between October 1, 2001 and November 15, 2001.

Chung and Lui (2003) used a second questionnaire to assess patient outcomes regarding pain. This questionnaire was developed by the American Pain Society (1995) and endorsed by the AHCPR for use as a tool to measure patient satisfaction with pain management. It contains a number of questions on pain severity, level of satisfaction, amount of time taken to receive pain medication, and attitude of staff. One additional open-ended question was added which asked the subjects to freely state opinions on the pain management experienced. The Likert rating scale was used with the majority of questions, while yes/no responses were used in the remainder. Prior investigations using



this instrument demonstrated an internal consistency of a Cronbach's alpha ranging from 0.72 to 0.81 (Chung & Lui). An inter-rater reliability test was conducted with a Spearman Rho coefficient of 0.98.

Descriptive statistics were computed to analyze the subjects' demographic data, pain levels and level of satisfaction with pain management. Mann-Whitney U-tests were used to examine the differences in reported pain intensity. ANOVA were used to examine the differences among clinical units regarding pain ratings and satisfaction levels. A 10-point numerical rating scale was used to rate subjects satisfaction with attitudes of the health care personnel.

Findings for pain severity were significant. Chung and Lui (2003) indicated that 88% of the subjects viewed pain as acute and temporary. Results indicated a significant difference in pain intensity between female and male subjects ( $Z = -2.43$ ,  $p = 0.02$ ). The NRS scores for the worst pain experienced were multimodal and well distributed. Additional findings indicated that 20.9% of the total subjects were extremely satisfied and 65% were satisfied with the degree of pain relief obtained. Participants that totaled 11.2% were fairly satisfied and 0.4% was extremely dissatisfied. Pain management intervention was also evaluated with 19.7% being extremely satisfied, 67.9% were satisfied, 8.8% fairly satisfied and 3.6% were dissatisfied. Less than half of the participants indicated that physicians and nurses stressed concern for pain relief.

Chung and Lui (2003) concluded that patients experiencing pain were satisfied with pain management. This is a lowered incidence of reported pain as compared to Western studies. There is a low expectation that pain relief will occur efficiently, but a high expectation regarding the pain experience from surgical patients, which could have influenced the results of this study. It is also possible that the Chinese people may be hesitant to display pain in public. Chung and Lui (2003) also suggested that

empowerment of both patients and health care providers in pain management would help achieve optimal pain management to ensure that no one suffers from pain.

Pain relief for optimal recovery is important and has been repeatedly emphasized. There are advances in pain management and the improvement of pain experiences of hospitalized patients. Studies are needed to identify groups of patients that are unnecessarily experiencing high levels of pain. Yates et al. (1998) stated the aim of this paper was to examine prevalence and perceptions of pain amongst a representative sample of hospitalized patients.

The setting for this study was a major hospital located in Brisbane, Australia. The subjects were all in-patients, over 18 years of age, fully conscious, able to read and converse in English, in stable condition and without cognitive impairment. From the total number of eligible patients ( $n = 246$ ), (41) did not consent to participate. The patients ( $n = 205$ ) that did respond to the questionnaire were included in the study. Ages 18 to 40 years comprised 20.5%. Ages from 47 to 60 years comprised 23.4% and greater than 60 years consisted of 56.1%. Male subjects totaled 51.2% and female subjects totaled 48.3%. There was one missing case. Demographics included three groups to identify reasons for admission. Surgical admissions contained 35.1%, non-surgical 64.4, and 0.5 unknown admissions.

A structured 65-item questionnaire was developed for this study. The questionnaire developed by Yates et al. (1998) included measure of prevalence and severity of pain, the impact of pain on well-being, demographic details, perceptions about pain and pain management, communication about pain, and perceived effectiveness of pain management. A verbal descriptor scale (VDS) and a visual analogue scale (VAS)

was used to measure the severity of patients' pain. The VAS scale was a 100mm horizontal line representing extreme levels of pain, 'no pain' to 'pain as bad as it could get.' Studies employing the VAS to measure pain have established concurrent and discriminate validity (Gift, 1989) and test-retest reliability (Scott & Huskinson, 1979; Yates et al.).

The VDS contained six words that were ranked numerically, which described various levels of pain from 0 (no pain) to 5 (excruciating pain). The VDS was derived from Melzack's (1983) research. Yates et al. reported the correlation between the two scales in this study was  $r = 0.50$ . Two indices were used to measure the impact of pain on the subjects' well-being. Eight questions were asked indicating whether pain made it difficult to sleep, move about or eat, and whether the pain made patients feel alone, angry, exhausted, worried or depressed. The questions were coded to create an index of psychological and physical impact relating to pain. Perceptions about pain and pain management were measured by using questions focused on four main concepts, which included: (a) perceptions of personal control over pain; (b) willingness to tolerate pain; (c) willingness to ask for help with the management of pain; and (d) concern with becoming addicted to pain medication.

To improve validity and internal consistency of the measures, inter-item correlations were examined, and items which appeared to be measuring these four concepts were grouped together to form multi-item scales (Yates et al., 1998). The authors stated the Cronbach's alpha coefficients for the indices are adequate (all were above 0.61). To measure communication about pain the subjects were asked whether patients

had talked to a doctor, physiotherapist, nurse, or other staff members about pain. The responses on the questionnaire were dichotomized as 'yes' or 'no.' To measure perceived effectiveness of pain management a question was developed with a four point response. Subjects were asked the question: How effective has your pain relief been? Responses were based on a 4 point index: (a) 1 (extremely effective); (b) 2 (moderately effective); (c) 3 (somewhat effective); and (d) 4 (not effective). To measure the use of pain management strategies, six dichotomous questions coded for analysis as one (yes) or two (no) were used. The pain management strategy questions included: (a) injections; (b) other pain killers; (c) massages; (d) relaxation; (e) hot or cold packs; and (f) doing something to take one's mind off the pain.

Findings by Yates et al. (1998) were that an overall 78.6% (n = 156) of the sample had an experience of pain in the 24 hour period prior to the survey. To examine the differences in reports of pain severity, the responses to the VDS were dichotomized as one (mild or discomforting) or two (distressing, horrible or excruciating) (Yates et al.). From the total number of subjects (n = 156), 33.5% described the severity of pain as 'distressing.' Men (76.7%) and women (81.4%) in similar proportions reported levels of pain ranging from mild to excruciating. Males (20.3%) reported less pain that was 'distressing to excruciating.' Females (46.8%) reported the same degree of pain significantly more frequently ( $\chi^2 = 12.52$ , d.f. = 1  $P < 0.001$ ). The VAS scores confirmed the difference. The mean VAS score for females was 63.8 ( $F = 12.44$ ,  $P < 0.001$ ). The mean for males was 46.9. Yates et al. reported no significant differences between the age groups ( $\chi^2 = 3.8$ , d.f. = 2,  $P = 0.14$ ) and no interaction between age and gender ( $F =$

0.17,  $P = 0.84$ ). The impact of pain on well-being for both females and males was reduced mobility (reported by 64.3%).

Other impacts of pain on well-being included the inability to sleep (59.3%), feelings of worry (57.3%) and exhaustion (53.9%). In measuring perceptions about pain and pain management females reported significantly less willingness to ask for help with pain management than males. Females (29.2%) were concerned about the possible addiction to pain medication as compared to males (16.9%). There were no significant age differences. In measuring communication about pain there was a trend for a higher percentage of females communicating pain ( $P = 0.07$ ). Females report having spoken with a doctor about pain more often than males, although not significantly different. In measuring perceived effectiveness of pain management the authors report most subjects indicated that pain relieving strategies had some degree of effectiveness. Moderate pain relief was reported by 75% and 18.9% indicated pain relief was extremely effective. Ineffective pain relief was reported by 5.4%. No significant gender or age differences were observed. Many (84.2%) of the subjects experiencing pain reported the pain had been managed in some way. Use of pain management strategies included 41% received injections and 78.4% had received other pain killers. From other pain relieving strategies the most common was relaxation (45%) and distraction (50.0%).

Yates et al. (1998) concluded a number of patients continue to experience substantial levels of pain. This study highlights the fact that communication about pain and pain expression are complex issues. There is clearly a need to develop measures of key perceptions of how patients respond to pain. It is unclear how the findings can be

generalized to other settings. It is evident that there continues to be much scope for improving pain management practice (Yates et al.).

Individuals experience a crucial and uncertain time in their life after cardiac surgery. Patients in the ICU experience multiple stressors that may produce a special care need (Godfrey, Parten, & Buckner, 2006). Nurses can provide satisfactory care by identifying the special care needs of individual patients. Godfrey et al. (2006) conducted a study to explore and describe the concept of special needs further in the context of the patient's ICU experience.

The setting for the study was a CICU and cardiac step-down unit in a metropolitan research hospital in the Southeast. The CICU was a 20 bed open-ward unit. The nurse to patient ratio for the CICU was 1:1 or 1:2. The cardiac step-down unit had 8 suites and 22 private beds. The nurse to patient ratio was 1:4 or 1:5 on the step-down unit. The most common procedures and diagnoses included: (a) coronary artery bypass grafting; (b) congenital heart disease surgery; (c) valvular repair; (d) thoracic aortic dissection/aneurysm repair; (e) ventricular assist device implantation; (f) heart and lung transplants; and (g) cardiac research procedures (Godfrey, Parten, & Buckner, 2006).

The patient population consisted of the patients with a stay of less than 48 hours in the CICU and also dependent on the participants nurses' willingness to participate in the study. The criteria for inclusion in the study included: (a) being at least 19 years of age; (b) must speak, read, and write English; (c) no ventricular assist device; (d) had non-emergent surgery; (e) stable condition before surgery; and (f) willing to discuss study with the student. The nursing criteria for inclusion in the study stipulated each nurse must

be an RN, have taken care of the patient for at least four hours after extubation and are willing to participate. The research protocols and consent were reviewed for expedited Institutional Review Board approval (Godfrey et al., 2006).

The final patient sample consisted of three women and six men. The age range was 30 to 82 years of age. The average age for the women was 43 years and the average age for the men was 64.6 years. The mean age of all patient participants was 57.4 years. The patient population consisted only of white ethnicity. Nurse data were obtained for six patient participants (Godfrey et al., 2006).

The authors used two surveys of open-ended questions for this qualitative study with linked data to describe the special care needs as identified by the nurses and patients in the CICU. The researchers developed the CICU Nurse Survey of Identification of Special Care Needs Tool which addresses the needs a nurse identifies for the patient which can be met by nursing. The second tool developed is the CICU Patient Survey of Identification of Special Care Needs Tool which addresses the needs the patient identifies that could have been met or addressed by nursing. The two tools were reviewed for content validity by three experienced nurse educators. Patient survey questions regarding nursing care were generated from the University of Alabama CICU Patient and Family Satisfaction Survey (Godfrey et al., 2006). The nursing survey was created to correspond with the patient survey.

Findings by Godfrey et al. (2006) identified the primary need identified by the nurse was pain and its management. Additional identified needs by the nurses were comfort and support, controlling hypertensive episodes and pulmonary toileting. Patient

identified needs included: (a) pain; (b) nausea; (c) need to relax; (d) anxiety concerning foley catheter and endotracheal tube; and (e) details of drug administration. In general, all the patients believed that the identified needs were met by the nurses during the stay in the CICU and the nurses believed the needs of the patients were met. Godfrey et al. stated there was a relationship identified between the patients' perception of special care needs and the nurses' perception of special care needs in the CICU. The special care needs were pain, caring, and support.

Godfrey et al. (2006) concluded that individualized care is being received by the CICU patients and that CICU nurses do in fact identify the same needs as their patients do. Patients that have their needs met will have less anxiety and faster recovery time. There were limitations in the nurse survey which identified a need for consistency in the use of commonly used terms in ICU nursing practice. The interview method for the patient survey proved more effective. This study showed that more patient preparation and education on events following surgery is needed.

Cardiac surgical procedures are among the most commonly performed operations in the United States (Doering, McGuire, & Rourke, 2002). Many changes are associated with cardiac surgery but few reports have addressed how patients perceive the quality of nursing care. The purpose of this study was to examine patients' perceptions of the quality of the nursing and medical care received during hospital stay after cardiac surgery (Doering et al., 2002). This is a qualitative, descriptive sub-study. Donabedian's framework was selected because it offered a multidimensional evaluation of patients'



perceptions of care and because it has proven applicability in the evaluation of quality of care (Doering et al.).

The setting was a single urban university-affiliated medical center. The sample consisted of 109 patients that had undergone cardiac surgery and participated in two structured telephone interviews after discharge. Patients responding to an open-ended question on the concerns about nursing and medical care in the hospital totaled 89 ( $n = 89$ ). The mean age 57.6 ( $SD = 13.9$ ). The females totaled 23 (25.8%). The patients gave consent. Non-responders and responders did not differ significantly in sex, age, preoperative mortality risk, type of procedure or length of hospital stay.

The patients participated in two structured telephone interviews after discharge. The first interview was conducted within the first week. The second interview was conducted 5 to 6 weeks after discharge. At the end of the interviews, each of which lasted approximately 20 minutes, patients were asked the following question: “What do you want your nurses and doctors to know to help them do a better job?” (Doering et al., 2002). Registered nurses trained in interviewing recorded the patient’s responses verbatim.

Findings by Doering et al. (2002) included 4 major themes and 12 subthemes. The themes included: (a) being satisfied (having a positive experience), (b) not being cared for (feeling depersonalized, having expectations that did not match recovery experiences, not being listened to, experiencing unprofessional behavior by care providers, experiencing continued care needs after going home), (c) physical needs unmet (sleep, pain, physical environment), and (d) informational needs unmet (needing more or

different information). The findings by Doering et al. (2002) were integrated with the quality-of-care framework by Donabedian which includes structure, process and outcome.

Doering et al. (2002) concluded that there was a possible limitation to the external validity of the study and an elite bias was possibly introduced. Important information is gained concerning structures, processes, and outcomes of the patients' care that can be applied clinically. Structures of care that need attention which are related to the transition from hospital to home are availability of medications, discharge instructions, appropriately trained home health care workers and the facilitation of follow-up care. Processes of care also need attention which include; active listening, personalization, and offering patients realistic expectations of postoperative experiences. Outcomes of care issues involve providing individualized pain management and sleep management plans of care. Doering et al. stated continued study of patients undergoing cardiac surgery to monitor what patients value in the structures, processes and outcome of their care is warranted.

### *Effective Pain Management*

Postoperative pain management remains a major challenge and could be alleviated with careful strategic pain management. Mac Lellan (2004) conducted a study to introduce a nurse-led intervention to improve pain management after surgery and evaluate its effectiveness by measuring patients' pain scores. One aspect of this study is described which compares the pain scores in intervention hospitals and control hospitals

before and after introduction of a nurse-led intervention. The study design was experimental in design using pretest-posttest.

The setting of the study involved two teaching hospitals in Ireland. The hospitals have similar patient populations, nurse education and hospital history and are geographically close. The hospitals also shared similar socio-economic groups, age groups and unemployment groups. A convenience sample ( $n = 800$ ) of orthopedic, gynecological, urological, and general surgical patients was selected. Patients were excluded if admitted to the intensive care unit, high dependency unit, confused, unable to use the 10cm Visual Analogue Scale or did not consent. Study approval was obtained from the Joint Research Ethics Committees. Patients were given information about the level of commitment involved in the study, assurance of confidentiality and anonymity. Consent was obtained from each participant. Two hundred patients were interviewed in each hospital before and after the intervention.

Mac Lellan (2004) used a 10-cm Visual Analogue Scale to measure pain of the participants ( $n = 800$ ) five times a day with no pain at one end and worst pain imaginable at the other end. The range of pain scores was 0 to 10 on the VAS. The initial measurements were taken on the day of surgery and were on-going for 2 days postoperatively. Phase one consisted of 200 patients preintervention in both control and intervention hospitals ( $n = 400$ ). Phase one data were compared with subsequent data collected after the introduction of the nurse-led intervention in the intervention hospital [200 patient in both control and intervention hospitals ( $n = 400$ ) (phase 3)]. Phase two

consisted of the development and implementation of a pain policy. Associations were tested with chi-square tests, and the level of significance for all tests was set at 0.05.

Findings reported by Mac Lellan (2004) consisted of a total of 9,138 pain scores. The pain scores were aggregated for three 24 hour periods; 0 to 24 hours, 25 to 48 hours, and 49 to 59 hours after surgery into days 1 to 3. The t-test for the intervention hospital showed statistically significant reduction in the mean pain scores which were equivalent to 0.73 cm on the 10cm VAS scale providing a 73% reduction in pain. There were no significant reductions in mean pain scores in the control hospital.

Mac Lellan (2004) concluded that patients continue to suffer pain after surgery, some of which is moderate to severe (mean 3.2 to 4.9 cm, range 0 to 10 cm, VAS scale). The author stated that the study highlights the positive effects that a nurse-led intervention had on patients' pain experiences and demonstrates the importance of the role of nurses in pain management. The author suggested the probability of a theory-practice gap and if theory were transferred to practice the acute pain experiences would be improved. The author also suggested that time and resources maybe spent more wisely on looking for methods to reduce the theory-practice gap instead of searching for new drugs or new methods of administration.

Acute pain occurs when a person sustains an injury. Inadequate treatment of pain complicates recovery and contributes to compromised immune response, increased oxygen consumption and reduced gastrointestinal motility. Little, however, has been reported at the unit level on how to determine whether patients are receiving successful pain management care (Tapp & Kropp, 2005). This study examined a quality assurance

project to develop a quality assurance tool based on nursing research to track the effectiveness of pain management outcomes at the unit level, determine whether the data collected by the tool would enhance managers' abilities to identify weakness and strengths of a pain management delivery system, and facilitate improvements in the pain delivery system on a general surgical unit (Tapp & Kropp, 2005).

The study took place on a surgical unit at an urban community teaching hospital. The community teaching hospital is a member of a 1,200 licensed inpatient beds multihospital system. The Institutional Review Board and the Nursing Research Committee gave approval for the study. A total of 23 nurses participated in the study. The nurses consisted of 1 male, 22 females, 16 RNs and 7 LPNs. One RN had a diploma degree, 2 had associate degrees, and 13 had bachelor's degrees. Thirty charts of patients on the second surgical postoperative day were reviewed and data collected. Patients selected for the study were on the unit for the entire second postoperative day. Patients that had been admitted to the ICU were excluded.

An investigator-modified version of the 1997 Ferrell and McCaffery's Knowledge and Attitudes Survey Regarding Pain was used to test the nurses (Tapp & Kropp, 2005). It had an internal reliability greater than 0.70 and a test-retest reliability greater than 0.08. One question was added to obtain information about environment barriers that may contribute to the nurses' inability to deliver pain management care effectively. The variables investigated were nursing interventions for pain and pain medication side effects, nurses' knowledge and attitudes toward pain management, environmental barriers, and pharmacologic management. The Chart Audit Tool was developed to collect

data related to nursing care delivery and pharmacologic management. The data for the Chart Audit Tool were scored according to an adapted scoring format used by The Joint Commission, which assigned an overall score to elements collected. An overall score of 8 signified the nursing interventions and the pharmacological interventions met the second postoperative day standards.

Findings reported by Tapp and Kropp (2005) showed the average score for the nurses was 69.4% on the knowledge survey. The test does not distinguish between attitudes and knowledge. The RNs mean score of 70% was not significantly different ( $p = 0.59$ ) than the LPNs mean score of 67%. The investigator identified three subscales from the knowledge survey which consisted of general pain management, pain assessment, and use of analgesics. Questions on pain assessment were answered correctly 74% of the time. Better knowledge of pain management assessment was demonstrated by the nurses than the use of analgesics. Tapp and Kropp also stated the nurses knew only 7.6 of 15 questions pertaining to the pharmacologic management of pain. The authors stated a need for education about the pharmacology of analgesics was identified. A range of acceptable scores for the Chart Audit Analysis Tool was 8 to 15 with an ideal score of 8. The initial 30 charts reviewed had a range of 16 to 28. Better compliance was on the method of medication delivery (83%), route of medication administration (80%), type of medication (93%), and medication timing (80%). Several environmental barriers were report by the nurses which consisted of; inadequate staffing (91%), caring for too many patients (74%), and specific times of the day nurses were too busy (44%).

An educational plan was developed after reviewing these results. A mandatory educational session was conducted on all shifts. The objectives were to describe the JCAHO standards for pain management, identify the nurse's role in maintaining JCAHO standards, and recall dosage and side effects of drugs for acute pain management (Tapp & Kropp, 2005). The same general surgical unit was used to collect data from 30 charts in the same manner as the first set 14 months earlier. The nurses' care delivery improved significantly with a 5.8-point improvement in total score after educational intervention ( $P < 0.001$ ). The internal consistency of the chart audit before the inservice was  $\alpha = 0.52$  and after the inservice,  $\alpha = 0.62$  (Tapp & Kropp).

Tapp and Kropp (2005) concluded the Chart Audit Analysis Tool, coupled with a valid test of the nursing staff's knowledge of pain management, could be used for assessing pain management at the unit level. This study also implied pain management has not been a priority and nurses may have been more consistent in the delivery of care after the educational intervention. Tapp and Kropp also found lack of time and staff, a nationwide problem, was the primary environmental issue reported by the nurses as affecting pain management care delivery.

Pain management will determine pain relief and patient outcomes. Carr (1990) conducted a study to elicit factors that contribute to the effective or ineffective management of postoperative pain. This author acknowledged that pain relief is an important contributor to a patient's psychological and physiological wellbeing.

The setting of the study was a surgical unit comprising four wards, one urological, one 5-day stay and two general surgery wards. The patients considered for inclusion in

the study were patients having cholecystectomy, open renal surgery and sigmoid colectomy surgery. Other possible subjects were identified from admission lists, accident lists and emergency lists. Criteria for inclusion in the study included the ability to use the Visual Analogue Scale (VAS) and the ability to complete a Questionnaire. Twenty-one patients participated in the study, with ages ranging from 33 to 82. The mean age was 58 years. Twelve were female and nine were male.

The suitable patients were approached by the researcher the day before surgery and given details of the study. Only one patient declined to participate. Initially, a Simple Descriptive Scale (SDS) was used to assess expected post-operative pain. After a pilot study this scale was replaced by the Visual Analogue Scale (VAS). The pilot study showed that the Simple Descriptive Scale was not adequate in detecting relatively small changes in the patients' pain. Improvement in discrimination could be achieved by using a VAS. The VAS is a line approximately 10 cm long (vertical or perpendicular) which has an infinite amount of points between the extremes. Each patient's pain level was assessed on the first postoperative day with the use of the VAS.

Pain was assessed using the VAS on the first post-operative day when patients experience the most pain during ambulation and participation in daily activities. The VAS is a vertical or perpendicular line with an infinite number of points between the extremes. Pain scores were collected at 4 hour intervals. More frequent scores over a 24 hour period would be disturbing to the patient. Carr (1990) also used a short semi-structured questionnaire and included a variety of topics that were related to the management of pain. Topics included what factors made the pain better or worse,



whether the patient had been given preoperative information and how individuals prefer pain managed. The questionnaire included closed and open ended questions. This was given to the patients on the fourth postoperative day with a request to return it via internal mail. An addressed envelope accompanied the questionnaire. Twenty questionnaires were returned, a return rate of 95%.

Carr (1990) used a Student t-test to test the null hypotheses, that there was no difference between preoperative expectation of pain and postoperative experience. A correlation coefficient was obtained for the number of narcotic analgesics given on the first day and average pain score (Carr, 1990). The remainder of the data was analyzed using frequencies, tables and bar charts. Due to the small sample obtained there was no further statistical analysis.

Findings by Carr (1990) were that preoperative expectations and postoperative pain scores differed statistically. A majority of the patients underestimated the amount of postoperative pain by about 20 points on the VAS. The mean preoperative score was 47.6 with a standard deviation of 17.9. The postoperative mean was 63.1 with a standard deviation of 18.4. Findings also indicated a majority of patients (53%) preferred to ask the nurse for pain medicine, instead of the nurse giving the pain medicine as ordered. The majority of patients received pain medicine within 5 to 10 minutes after it was offered. Sixty-seven per cent of patients experienced worsened pain at particular times of the day. Eight patients (44%) denied having pain when asked, but actually had pain when moving.

Carr (1990) concluded that the majority of patients underestimated the pain experience on the first postoperative day, due to inadequate preoperative information.

Preoperative education by nurses can reduce anxiety and pain. Many patients experience severe pain on the first postoperative day despite the availability of prescribed narcotic analgesia. If nurses do not perceive that the patient is experiencing pain and the patient expects the nurse to give analgesia when deemed appropriate, a patient may well experience severe pain and not receive appropriate analgesia (Carr, 1990). The author suggested there is a need to explore the nurses' knowledge in pain assessment and analgesia.

Pain management is a universal topic of interest in research and practice. Reimer-Kent (2003) conducted a study to evaluate a pain management guideline developed at the Royal Columbian Hospital, New Westminster, British Columbia, to prevent pain after cardiac surgery.

The setting for this study was the Royal Columbian Hospital in New Westminster, British Columbia. This is a 400 bed acute care facility, where 600 cardiac surgeries are performed annually. The study was conducted between January and the end of March 2000. The study included 153 cardiac surgery patients. Participants (n = 133) were selected to take part in the study. Coronary artery bypass grafting patients totaled 119. Valve replacement or repair patients totaled 14. The mean age was 67 years (range 47 to 79) for patients with valve surgery and 65 years (range 38 to 83) with bypass surgery. Men totaled 80%.

Reimer-Kent (2003) evaluated the pain management plan from data collected from: (a) preprinted medication records; (b) health records; and (c) clinical pathways. The preprinted medication records gave information on use of nonopioids and opioids.

The health records provided information on adverse reactions. The clinical pathways contained data on effective pain relief. Patients rated the postoperative pain by using a 0 to 10 point verbal numerical pain-rating scale, with 0 indicating no pain and 10 indicating the worst pain. Pain was rated during movement, at rest, deep breathing, and coughing. A pain rating greater than 3 was treated as breakthrough pain, because mild pain corresponds to a pain rating of 1 to 4. Our definition of effective pain relief was a pain rating throughout a 12 hour shift that never exceeded 3 (Reimer-Kent, 2003).

Findings by Reimer-Kent (2003) were that immediately after surgery, 128 (96%) of the 133 patients received around-the-clock, regular doses of acetaminophen rectally. Additionally 117 (89%) were started on the around-the-clock regular doses of indomethacin. All participants (n = 133) received around-the-clock doses of intravenous morphine on an intermittent schedule. Findings showed only 1 of 133 patients experienced an adverse effect and 12% experienced postoperative nausea. Findings for effective pain relief were significant. Reimer-Kent indicated that 95% of the subjects had effective pain relief on every shift for either the first 6 days after surgery or for the entire postoperative stay if the patient was discharged in 6 days or less.

Reimer-Kent (2003) concluded that the results support using this approach to manage patients who have acute pain after cardiac surgery, although this review may be limited due to the method used and the lack of comparison data. The clinical practice guideline is based on a wellness model that is predicated on the WHO 3-step analgesic ladder and unites theory with practice.

Introduction Surveys of hospitalized patients conducted over the past 15 years continue to demonstrate the inadequacy of post operative pain control (White, 1999). Nurses are the major group of healthcare professionals that spend the most time with patients in pain. The clinical nurse specialist is in an influential position to improve nursing practice related to pain assessment and management. The purpose of this study was to report on the pain management program developed for a group of surgical patients. This report uses The Gate Control Theory of Pain as a conceptual basis for the assessment and treatment of pain.

The target group consisted of patients ( $n = 35$ ) undergoing spinal surgery. The majority of the surgical patients were male (57.1), with a mean age of 51 years (SD, 11.3). The duration of pain ranged from 2 weeks to 14 years, with a mean duration before surgery of 2.6 years. The surgical procedures included: (a) lumbar discectomy/laminectomy (40%); (b) lumbar laminectomy (22.8%); (c) cervical laminectomy (28.6%); and (d) anterior cervical discectomy (8.6%). After the completion of the formal education program, two additional chart assessments were conducted. This included the same population as the baseline group.

The Clinical Nurse Specialist assessed the pain experience of all 35 patients over a 2 month period. The Present Pain Index (PPI), a component of the McGill Pain Questionnaire is used to measure pain intensity. The PPI is an indicator of overall pain intensity by a number-word combination scale from 0 (no pain) to 5 (excruciating pain). The PPI has established reliability and validity in adult patients with acute surgical pain. The equivalence table from the Agency for Health Care Policy and Research Guidelines

for Acute Pain Management is used to compare the data on the analgesics administered. Using this equivalence table, codeine 75mg intramuscular (IM) is equivalent to morphine 10mg IM, as is meperidine 100 mg (White, 1999).

A modified version of the Pain Management Audit Tool is used to evaluate the nursing documentation of 15 patients over a 1 month period. The tool addresses: (a) documentation of regular pain assessments; (b) use of pharmacological intervention; (c) use of nonpharmacological interventions; and (d) evaluation of the effects of the interventions. After the completion of the formal education program, two further chart assessments, the first at 3 months (Follow-up Assessment) and the second at 2 years (Follow-up Assessment 2), were conducted (White, 1999). The same Pain Audit Tool and the PPI, self-reported pain scale were used.

Findings by White (1999) reported a mean pain intensity level of 3.4 and patients received the equivalent of 14 mg of morphine on the day of surgery. On the day after surgery, the mean pain intensity level was 4.2, and the patients received, on average, the equivalent of 29 mg of morphine (White, 1999). Patients reported high pain levels with low analgesic administration throughout the hospital course. The cervical laminectomy group reported higher levels of pain, however the difference between the groups were nonsignificant ( $F = 2.404$ ;  $p = 0.09$ ).

The findings from the modified Pain Management Tool showed 50% of the charts had at least one pain assessment using a self-reporting scale during the entire hospitalization and no charts contained documentation of the daily use of a self-report pain scale. Patients were administered only 50% of the ordered analgesia. Findings report

inconsistent documentation related to nonpharmacological interventions for pain relief. All charts lacked documentation signifying a self-report pain scale assessment before and after an intervention. After the completion of the formal education program further chart documentation assessments included: (a) all (100%) charts contained at least one use of a pain rating scale, with mean intensity levels below 3; (b) increased use of “around-the-clock” analgesia administration and patients received 85% of ordered analgesics; (c) nonpharmacological interventions were inconsistent, with marginal increases; and (d) the effects of interventions were documented 25%-33% of the time.

White (1999) concluded the evaluation of a comprehensive pain management program led by a CNS showed both statistically significant and clinically important improvements both in the documentation related to pain management and in patient pain outcomes. The program required a multidisciplinary team approach. Documentation may not always reflect practice which may show bias. The patient’s self-report is the most reliable indicator of the existence and the intensity of pain (White). The small sample size limits the generalizability of the findings. Although there were significant improvements in nursing documentation, the impact on the outcomes of the patients were not as dramatic as expected. The results supported the continued progress in the goal of improving pain management practices in our institution (White).

The literature reports that some practitioners lack knowledge of pain management and have misconceptions of pain relief methods that are not conducive to high-quality care. The aim of this study is to analyze the links between levels of acute pain management knowledge, perceptions of clinical skills and the acute pain management

education history of doctors and nurses working in orthopedics and general surgery in an acute hospital (Coulling, 2005).

A convenience sample ( $n = 82$ ) was taken from one acute care hospital in the trust. The sample consisted of 101 permanent, trained nurses and doctors from two surgical and three orthopaedic wards. The sample was purposefully selected to coincide with the end of the junior doctors' 6-month appointments, when doctors should have had greatest knowledge of the trust's standards (Coulling, 2005). Gynecological medical staff, who followed a different syllabus were excluded from the sample. There are no vulnerable subjects, therefore ethical approval was not obtained. The authors's method of inquiry was scrutinized and registered by the trust's research and development department.

Coulling (2005) used a structured questionnaire designed to identify professional demographics and educational input, barriers to acute pain management, perceived competence in clinical skills and to test knowledge using an abridged version of McCaffery and Ferrell's (1999) validated questionnaire which was annotated to trust standards. To check for validity, colleagues working in acute pain, research and education were administered the pilot questionnaire. Two supervisors monitored research governance. The Scale was used to rate and rank opinions. The scale identified the strength of feelings from lesser to higher degree, poor to excellent, strongly disagree to strongly agree. The questions related to sources of learning, perceived barriers and perceived skills were ranked from not competent to expert. Knowledge questions had only one correct answer and were administered as true or false and multiple choice.

Demographic findings report (n = 82) were representative and 73% had trained in the UK. Only a few of the junior doctors had training in the UK. The questionnaire showed that most staff felt inadequately trained. Coulling (2005) stated there was a slight increase in nurses' knowledge on wards that had received more educational input, those who had attended the trusts' acute pain management course and those who had trained in the UK. Identified barriers to good acute pain management were statistically significant and included: (a) staff being too busy; (b) inadequate staff knowledge; (c) staff opioid phobia; and (d) patients' reluctance to take analgesics. Nurses 24 (n = 49) had greater perceived clinical skills than doctors 10 (n = 33). Nursing staff better than doctors in the knowledge test scores (Coulling, 2005). Nurses were specifically more knowledgeable in the area of assessment and analgesic delivery. Doctors were more knowledgeable in the pharmacology aspect. The knowledge test results averaged 71%, which falls short of the 100% pass standard, which is recommended by the RCoA.

The author concluded the stand-alone case study approach was contextually valid and useful in forming practice and local education development plans. A 100% pass rate may be unrealistic given the international background of the workforce, barriers in the clinical setting and the lack of mandatory status concerning evidence of competency (Coulling, 2005). The most important aspect of measuring pain is the patients self-report.

### *Nurses Pain Management*

Patients experience pain as a multidimensional phenomenon that varies with each individual. Nurses need to attend to this subjective quality of pain to provide effective pain relief. Watt-Watson, Garfinkel, Gallop, Stevens, and Streiner (2000) conducted a



study to examine the relationship between nurses' empathic responses and their patients' pain intensity and analgesic administration after cardiac surgery. The following primary research question was addressed: Do nurses with greater empathy have patients experiencing less pain and receiving adequate analgesia?

Watt-Watson et al. (2000) chose three large metropolitan teaching hospitals for the setting of this study. Convenience samples were used consisting of nurses and patients from four cardiovascular surgical units. The 94 nurse participants included 8 men and 86 women. Patients ( $n = 240$ ) having the first uncomplicated coronary bypass surgery were asked to participate in an interview on the third postoperative day. Participants (15%) were excluded due to refusal to participate, fatigue, nausea, or not fluent in English. The 225 patient participants included 52 women and 173 men. The mean age for men was 60 years and the mean age for women was 65 years. The sample size was based on an effect size of 0.30, and alpha of 0.05 and power level of 0.8. Nurses randomly completed the TPMI, SPIRS, and the SDS. Patients were given the NAPS and MPQ-SF.

The Staff-Patient Interaction Response Scale (SPIRS) was used to assess the nurses' empathetic behaviors. This included four pages with a patient context and five randomly ordered patient statements. The nurses responded in writing. Responses were scored by the principle investigator and a rater, with an inter-rater reliability maintained at over 90% ( $ICC = 0.94$ ) (Watt-Watson et al., 2000).

The Toronto Pain Management Inventory (TPMI) was used and includes 23 visual analog scales (VAS). The VAS is rated on a scale of 0 to 100. The individual VAS scores were totaled and converted to a percentage. Nurses' beliefs and knowledge about

pain management, analgesia, patients' responses and experiences to pain, and professional issues were examined. Pilot testing established test-retest reliability over a 2 week period (ICC = 0.81) (Watt-Watson et al., 2000).

The Social Desirability Scale was used which includes statements concerning personal attitudes and traits. It measures responses that focus on impressing the investigator rather than the construct being tested. If the construct is being measured the correlations between the SDS, SPIRS and TPMI should not be significant (Watt-Watson et al., 2000).

The McGill Pain Questionnaire-Short Form (MPQ-SF) was used to obtain data about the quality and intensity of the patients' pain. It has established reliability and validity. The MPQ-SF has 15 verbal descriptors ranked on a severity scale. The Nurse Attends to Pain Scale (NAPS) was used to rate the degree to which the assigned nurse was a resource for pain. This incorporated three VAS. The NAPS was pretested for validity.

Findings reported by Watt-Watson et al. (2000) indicated that empathy did not explain any of the variance. The SPIRS scores ranged from 2 to 32 (SD = 5.88) which is in the moderate range. A large number of participants (53%) scored 20 or less on a scale of -20 to -40 and 3% scored in the upper range. Pain knowledge and beliefs explained 5% of the variance on the SPIRS. Nurses with greater empathy did not have patients who experienced less pain or received more analgesia. The mean difference in TPMI scores between the least and the most empathetic nurses were not large (66% versus 71%). There were no significant correlations between the SIRS or the TPMI and the Social

Desirability Scale. Nurses with greater empathy did not have patients experience less pain. Pain ratings from the MPQ-SF for 3 hour and 24 hour pain correlated highly ( $r = 0.82, p < 0.0001$ ). Findings also showed that the nurses did not explore beyond general questions about the patients pain. The NAPS indicates 72% of patients did not see the nurse as a resource who attended to the pain. According to the NAPS a large percentage of patients (66%) did not remember nurses asking a specific question about pain. The patients that remembered indicated the nurse was more attentive (NAPS,  $r = 0.85, p < 0.001$ ). Most patients (72%) did not identify the nurse as a resource for pain. Analgesic data showed that patients were under-medicated due to being under-prescribed and under-administered.

Watt-Watson et al. (2000) concluded there are few significant differences between the most and least empathetic nurses in relation to patients' pain and analgesia. The authors also indicated there may be a lack of specific assessment about pain by nurses. Educational strategies that emphasize the variability in patients' pain perceptions and responses may help nurses move beyond standardized expectation of postoperative pain (Watt-Watson et al., 2000). Future research should include a stratified sample related to nurses' level of education, to understand the contribution of pain knowledge and empathy more clearly.

Pain is a complex, multidimensional reaction to real or potential tissue damage (Manias, Bucknall, & Botti, 2004). Much research has been conducted in a variety of patient populations to evaluate the validity of pain assessment tools. Comprehensive practices of the assessment of pain are needed to accurately reflect a patient's experiences

of pain. Manias et al. conducted a study to determine how nurses make decisions in their assessment of patients' pain in the postoperative clinical setting. A single-group, non-comparative study design was used.

Manias et al. (2004) chose two surgical units of a metropolitan teaching hospital in Melbourne, Australia as the setting for the study. All registered nurses involved in direct nursing care and on roster during the study were invited to participate ( $n = 76$ ). A total of 66 nurses gave consent to participate (86%). Two male and 50 female nurses participated in the study with ages ranging from 21 to 55 years ( $M = 27.5$  years,  $SD = 7.3$  years) and time of practice varied from 4 to 408 months ( $M = 63.5$  months,  $SD = 76.5$  months). The positions held by the nurses included: (a) nurse manager (1.9%) (b) clinical nurse specialist (3.87%) (c) clinical educator (1.9%) (d) associate nurse manager (13.5%) and (e) clinical nurse (78.8%). Patients eligible for the study were 18 years of age or older and had undergone a surgery requiring a skin incision. The number of eligible patients for the study was 364. The total number of consenting patients was 312. Approval of 52 patients (14.3%) was not obtained due to difficulties with the informed consent. The patient's ages ranged from 17 to 97 years ( $M = 56.7$ ,  $SD = 18.9$  years). Confused or demented patients consisted of 12 or 3.8%. The study was approved by the hospital and the university ethics committees.

Observations together with interviews were chosen by Manias et al. (2004) as the means of examining pain activities. Six fixed observation times were identified as key periods for pain activities (Manias et al., 2004). The chosen times covered: (a) change of shift (b) staff overlap times (c) high activity morning periods, (d) pre-sleep patient

assessment times, (e) night shift, (f) ward round, (g) nursing handover, (h) availability of medical staff for consultation, and (i) staff breaks. Each fixed time period included at least 12 observations which resulted in 74 total observations. A portable audio recorder was used in all observations. After each observation the research assistant asked clarifying questions of the participating nurse. The interview was also audiotaped and transcribed verbatim.

Manias et al. (2004) identified five themes relating to pain assessment: simple questioning, use of a pain scale, complex assessment, the lack of pain assessment, and physical examination for pain. Three hundred sixteen (316) pain activities were detected. Simple questioning was the most common and occurred in 143 (45.3%) of the pain activities. In 28 (8.9%) of the 316 pain activities a numerical rating scale was used. The scale consisted of making judgments about pain from figures 1 to 10. There were inconsistencies in how the pain scale was interpreted. A more complex assessment of the location and type of pain was conducted in 4 (1.3%) of the pain activities. A complex assessment includes a pain scale and a verbal description of the pain. There was no pain assessment observed in 138 (43.7%) of the pain activities. Physical examination of a painful site for signs for wound complication was conducted on 3 (0.9%) of the pain activities.

Manias et al. (2004) concluded that the observation findings of this study provided new knowledge on how nurses deal with the assessment of postoperative pain. The data obtained from the study provides description of nurses' assessment practices. Nurses and patients do not have the same meanings for validated pain assessment using

the numeric tools. It is important for nurses to be more aware of patients' pain and learn to listen for better understanding of the pain experience. The key to ensuring that nurses value pain assessment as a critical aspect of work practices is to develop a system-wide, collaborative, and multidisciplinary approach to assessment (Manias et al.).

Sloman, Rosen, Rom, and Shir (2005) reported that postoperative pain continues to be under-treated in a large portion of cases. Inaccurate pain assessment by nurses may contribute to the problem. The aims of this study were: (a) to compare nurses' ratings of pain intensity and suffering (affect) in adult surgical patients with the patients' own ratings of these variables, and (b) to investigate whether pain ratings are significantly influenced by cultural and ethnic differences (Sloman et al.). The authors used a descriptive comparative design.

Sloman et al. (2005) selected participants from four hospitals in Jerusalem, Israel. A convenience sample of 95 patients and 95 Registered Nurses in an adult surgical unit was obtained. The 95 patients consisted of 52 men and 43 women with an average age of 50 and a range in age of 18 to 78 years. The categories of patients' surgeries included: 44.2% abdominal, 37.9% orthopaedic, and 17.9% thoracic. The ethnicity of the patients included: 59% Middle Eastern, 35% Western (European, Russian, American), and 6% Ethiopian. The religious affiliation consisted of 67% Jewish, 15% Muslim, 11% Christian and 7% identified as other or none. The 95 Registered Nurses consisted of 22 men and 73 women and all worked in surgical nursing with academic diplomas or degrees in nursing. The Registered Nurses in the study had an average age of 33 years and a range in age of 20 to 64. The nursing group had a range of 1 to 31 years of nursing experience with an

average of 10.5 years. The ethnic distribution of the nurses included 64.2% Middle Eastern, 33.8% Western, and 2% Ethiopian. The religious affiliation was 69.5% Jewish, 19.5% Muslim, 9% Christian, and 2% other or none. The sample size was considered appropriate with a medium effect of 0.5 at a power of 0.8 and a significance level of 0.5.

Each patient was paired with a nurse that was assigned to care for that patient. Patients were included if receiving postoperative nursing care and experiencing postoperative pain. The sample included only Registered Nurses. Study approval was gained by the ethics committee of all participating hospitals and the charge nurse from each clinical area. All participants were informed that participation was voluntary and confidential. Consent to participate was based on the participants willingness to fill in the questionnaire.

Sloman et al.'s. (2005) study used the Short-Form McGill Pain Questionnaire which included both Hebrew and English text. The Hebrew translation was cross-validated by four fluent Hebrew speakers who were clinicians in the field of pain. The SF-MPQ consisted of 11 sensory pain descriptors and 4 affective pain descriptors. Three pain scores are derived from an intensity scale 0 = none, 1 = mild, 2 = moderate, 3 = severe. An additional present pain intensity (PPI) index of the standard MPQ was obtained. Sloman et al. reported that Melzack (1987) conducted a series of validation studies and obtained high correlations between the standard form of the MPQ ( $r = 0.84$ ,  $p = 0.001$  for postsurgical pain, and  $r = 0.87$ ,  $p = 0.001$  for dental pain and therefore has been shown to be a valid and sensitive instrument.

Three visual analogue scales were also used for this study by Sloman et al. (2005), which included: (a) for overall pain intensity; (b) for suffering and distress associated with pain; and (c) for patients' satisfaction with their pain treatment. The visual analogue scales each consisted of a 10cm straight horizontal line with descriptor terms at each end representing the limits of the variable being measured. The scale of pain intensity showed no pain to worst pain possible. The scale for pain affect indicates no suffering to extreme suffering. The third scale for satisfaction with treatment of pain included not satisfied to completely satisfied. Sloman et al. reported that visual analogue scales have been used in clinical situations for many years and have reported to be sensitive, valid and reliable. In addition, the researchers also used a questionnaire to obtain information on demographics, personal information, cultural issues, age, gender, education, ethnic background, type of employment, family situation, years of nursing experience, country of birth, religion and religiosity.

Findings reported by Sloman et al. (2005) showed that nurses significantly underrated pain as compared to patients on pain sensation ( $t = 3.131$ ,  $p = 0.002$ ), pain affect ( $t = 4.410$ ,  $p = 0.0001$ ), PPI at rest ( $t = 3.498$ ,  $p < 0.0001$ ), PPI on movement ( $t = 6.278$ ,  $p < 0.0001$ ), overall pain intensity ( $t = 2.235$ ,  $p = 0.028$ ), and patient suffering due to pain ( $t = 3.774$ ,  $p < 0.0001$ ). Patient and nurse ratings of satisfaction with treatment ( $t = -1.368$ ,  $p = 0.175$ ) showed no statistically significant difference. Pearson's correlations were calculated as a check of validity between patients' responses on the SF-MPQ and the VASs (Sloman et al.).



The results from the questionnaire used showed the demographic and cultural variables did not have a statistically significant effect using the multivariate analysis with the Wilks' Lambda criterion at the 0.05 level. Nurses working in different clinical areas showed no statistically significant differences. The level of nursing education did not show a statistically significant difference in pain assessment.

Sloman et al. (2005) concluded that Israeli nurses underestimate postoperative pain. This is consistent with other studies and is a worldwide problem. This highlights a need for better education for nurses about pain. The authors suggested it may be that patients and nurses have different cognitive frameworks for describing and rating pain and recommend further studies in the area for nurses' assessment of pain be conducted. The possible differences between nurses and patients in how pain is conceptualized need to be studied, which could involve a comparison of nurses' and patients' cognitive frameworks. Sloman et al. further suggested that nursing curricula be reviewed regarding pain. Further studies are needed before any conclusions can be drawn on the relationship between patients' level of religious faith and reporting of pain.

Numerous researchers have documented that unrelieved postoperative pain persists and the initial assessment of pain is frequently suboptimal. Kim, Schwartz-Barcott, Tracy, Fortin, and Sjostrom (2005) conducted a study to identify the criteria nurses actually use to assess postoperative pain and the kind of knowledge drawn on from past experiences. This was a qualitative descriptive study.

The setting was a large urban hospital in New England. The sample included 10 nurses and 30 patients from two postoperative units. Strategic sampling was used to

identify five nurses with less than 6 years of experience (the less experienced group) and five with more than 6 years (the more experienced group) because it was anticipated that the length of professional experience on surgical units might be an important factor in differentiating the kind of criteria nurses used to assess pain (Kim et al., 2005). All patients had undergone surgery in the last 24 hours, were experiencing pain, and had been assigned a participating primary nurse. Exclusion criteria included patient's use of a patient-managed pain medication pump, diagnosed with metastatic cancer, confusion, or an altered level of consciousness. The University of Rhode Island and the participating hospital gave the study human subjects approval. All participants signed consent forms to participate.

Kim et al. (2005) used data collected from 1998 to 1999 and generated a series of highly interactive and probing semi structured audio-taped interviews. Each nurse had a total of five interviews. The first interview dealt with the nurse's professional role, previous work experiences and personal attitudes toward postoperative care. The next three interviews were conducted after each pain assessment of three different patients. The interviews focused on how the nurses judged the patient's pain and the nurse's perceptions of the patient's situation. The interview started with broad-based, open-ended questions and was followed with a series of direct short-ended questions. The concluding interview addressed the role of experience and the nurse's general concepts of pain management.

Findings reported by Kim et al. (2005) included criteria on how the patient looks (relying on appearance and observable data); what the patient says (relying on the content

of communication); and how it usually is (relying on pre-knowledge and group affiliation). The three categories used constituted a field and provided a frame of reference from which the nurses formulated variations in pain assessment (Kim et al.). The nurses drew on past experiences: (a) related to a typology of patients; (b) a focus on listening to patients; (c) what to do for the patient; and (d) what to look for. Overall the strategies varied from nurse to nurse with the pain assessment and drawing on knowledge from past experience. Eight of the 10 nurses used more than one than one strategy to assess the pain of three patients. Only one strategy was used consistently by two nurses across all three patient assessments. The most frequent strategy used by the nurses was the criteria related to “how the patient looks” and drew from past experience on “what to look for.” The nurses that learned from past experience “to listen to the patient” relied on criteria related to “what the patient says.”

Kim et al. (2005) concluded that the findings from this study provide the first empiric identification of criteria and sources of past knowledge nurses used while actually assessing a patient for pain on a postoperative unit. The authors also stated this study was small and may not be exhaustive or representative. The ability to quantify the use of different pain assessment strategies across a large number of nurses is important for examining the practice impact of the strategies used on pain management techniques by nurses and for increasing the representativeness of these findings.

Soderhamn and Idvall (2003) reported that patient satisfaction with nurses’ treatment of pain is an important factor influencing patient satisfaction with pain relief and pain management. Nurses play a pivotal role in assuring good pain control and are in

a position to evaluate and assess the effectiveness of pain treatments. The goals of the study were to describe a group of nurse' influence on the quality of care in postoperative patients' pain management and to clarify the meaning of the influence.

Soderhamn and Idvall (2003) selected 233 clinical registered nurses experienced in postoperative pain management. The nurses were contacted by mail and asked to participate in the study. The nurses were registered participants in six training courses in acute pain management. The medical company Abbott Scandinavia Inc. and the Swedish Nurses Association for Pain Management had arranged the training courses over a two day period between 1995 and 1997. Twenty-eight nurses gave consent to participate in the study.

Nurses were asked to describe a complex postoperative pain situation where actions essentially influenced the outcome and performance (Soderhamn & Idvall, 2003). Twenty-eight nurses responded, but all answers were not complete. Fourteen nurses wrote 15 narratives that satisfied the request and were used for this study. The nurses' background variables were collected from a questionnaire.

Soderhamn and Idvall (2003) chose the empirical phenomenological psychological (EPP) method for analysis which aims at describing meaning structures of psychological phenomena and is grounded in Husserl's Phenomenological philosophy. The EPP-method consisted of five steps that were applied in the analysis. In this study a nursing perspective replaced the psychological perspective. The results of the analysis are also presented as themes or constituents of the phenomenon. Theories about pain

management, quality of care and other relevant phenomena were bracketed in the analyses.

Soderhamn and Idvall (2003) chose a hermeneutical approach to analyze data based on the philosophy of Ricoeur. The rules for interpretation of a text are combined with methods from other sciences. Ricoeur's philosophy is grounded in phenomenology and implies that the discourse of human beings can be fixed as texts, and if all discourse can be actualized as an event, all discourse is understood as meaning (Soderhamn & Idvall). The phenomenological-hermeneutical research method consists of three steps: naïve reading, structural analysis and interpreted whole.

Soderhamn and Idvall (2003) reported that the findings resulted in two major themes: (a) elements of performance- observation of patients' signs and assessment of pain with assistance of a numerical scale, preventative treatment, comfort care, communication with physicians, and education of patients; and (b) prerequisites- competence and knowledge, attitudes, and teamwork. Five additional themes were found: basic mistrust, autonomy, initiative, industry, and inferiority. The nursing behavior was lead by the nurses' competence, the patients' suffering and teamwork.

Soderhamn and Idvall (2003) concluded that the general meaning structure of the nurses' influence on the quality of care in postoperative pain management consisted of: (a) the nurses' perception of an unsatisfactory situation concerning the pain management of the surgical patients; (b) that the nurses personally intervened; and (c) that changed the outcome of the situation in a positive direction (Soderhamn & Idvall). Nurses have an aspiration to relieve the patient from pain by use of knowledge and professional skill in a

caring, problem-solving process. A combination of goal-directed nursing actions and true presence is an important aspect of nursing care in postoperative pain management.

Pain management is identified as an important predictor of patient satisfaction (Yellen, 2003). Yellen conducted this study to explore the influence of selected nurse-sensitive variables on patient satisfaction and compare the reliability and validity of existing instruments that measure patient satisfaction.

The setting for the study was a 300 bed ambulatory surgical department, located in an urban area of south Texas. A sample of 132 participants was drawn from oriented and alert patients 18 years of age or older, who entered the ambulatory surgical department during a 6 week period. There were 50 female and 80 male participants with two participants that did not report gender. The mean age of the participants was 45.96 years ( $SD = 22.22$ ) (Yellen, 2003). The diagnostic groups were general surgery, biopsy, and urology patients. A sample size of 106 participants was required by a pre-study power analysis on the patient satisfaction variable. All participants gave consent to participate in the study.

The participants were randomly assigned to one of two groups. After surgery one group completed the Patient Satisfaction Instrument (PSI) and the other group completed the Ambulatory Surgery Survey. Two instruments were used to measure patient satisfaction and a third form was used to collect demographic data. All participants completed the patient data form.

Yellen (2003) used the Patient Satisfaction Instrument (PSI) to assess patients' attitudes toward nurses and nursing care. A four-point Likert-type scale was used by the

respondents to indicate agreement or disagreement with the instrument statements. In previous studies of in-hospital patients, reported alpha reliability for the total scale was 0.91 (Yellen). Based on a previous psychometric test in a study of ambulatory surgical patients, the PSI used in this study was shortened to 15 items. The PSI had an alpha reliability of 0.96 in this study.

The Ambulatory Surgery Survey was the second instrument used to measure patient satisfaction. Questions were categorized to measure satisfaction with laboratory, registration, x-ray, and electrocardiogram procedures. Questions also included events before surgery, events after surgery and overall impressions. Participants ( $n = 78$ ) responded to instrument statements by using a 5 point, Likert-type scale with responses ranging from 1 “very poor” to 5 “very good.” Every item on the questionnaire was completed by 16 participants for an alpha reliability of 0.97. Reported internal reliability coefficients for the separate subscales were greater than 0.86. The data form collected demographic information and self-reported cultural material.

Findings reported by Yellen (2003) indicated that the scores on the PSI and the Ambulatory Surgery Survey were not significantly different. Patients that reported more effective nurse communication indicated greater patient satisfaction ( $r = 0.39, p < 0.01$ ). Older patients reported greater patient satisfaction ( $r = 0.20, p < 0.05$ ) and patients that reported greater satisfaction with pain management indicated greater patient satisfaction ( $r = 0.19, p = 0.05$ ). The distribution of patient satisfaction was negatively skewed with multiple peaks. Spearman’s rank order correlation coefficient test was used to examine the relationships between patient satisfaction and gender, age, previous hospital

admissions, culture, nurse communication, pain, and satisfaction with pain management. Communication between nurse and patient was identified as a nurse-sensitive indicator, which had the highest correlation of significance in this study. The second significant variable associated with patient satisfaction was satisfaction with pain management. Additional findings were that older patients reported greater patient satisfaction, Hispanic patients reported lower patient satisfaction, Hispanics reported higher pain levels, and male patients were less satisfied with pain management.

Yellen (2003) concluded that nurse-sensitive quality indicators are a key determinate of overall patient satisfaction with hospitalization. Hospitals collect patient satisfaction data without consideration for nurse-sensitive variables. Nurses need to participate in defining patient satisfaction and quality of care so that their contributions will be measured in promoting improvements in patient care (Yellen).

Yellen (2003) also concluded that although the two instruments did not differ statistically the instruments may be measuring differing concepts, due to varying questions. A reliable tool to measure patient satisfaction that is sensitive to the age and culture of patients is needed to promote improvements in care (Yellen).

Nurses are important members of the health care team and have a unique opportunity to assess pain and evaluate treatment. Assessment and management of postoperative pain represent an important domain of nursing practice. Dihle, Bjolseth, and Helseth (2004) conducted a study to increase understanding about how nurses contribute to postoperative pain management.



The setting for the study included two hospitals in Oslo, Norway. Hospital A had 25 surgical beds, a staff of 23 nurses, and five nursing assistants. Hospital B had one ward with 18 surgical beds, 17 nurses, and 3 nursing assistants. The second ward had 30 surgical beds, 22 nurses, and 6 nursing assistants. The study was carried out from May to November 2001 and approved by the Regional Committee for Medical Research Ethics in Norway. The patients and nurses rights were safeguarded through confidentiality and written informed consent. A strategic sample of nine nurses was selected from Hospital A and Hospital B. The inclusion criteria included nurses with experience, interest in the topic, and nurses familiar with the pain routines on the ward. Participants (n = 7) were selected to take part in the study. Males totaled two and females totaled five. Ages averaged 27-35 years and average experience on the ward was 1 to 6 years.

Dihle et al. (2004) developed semi-structured observation and interview guides based on theory of pain and postoperative pain management, earlier research and clinical experience. Two nurses were selected for pilot interviews and observations to ensure validity of the guides. The interview guide developed by Dihle et al. asked the question: Could you please tell me about an ordinary postoperative period with regard to pain and pain treatment, describing a patient you have been responsible for, before and after operation? Additional questions included information on four topics: (a) preoperative information; (b) assessing postoperative pain; (c) treatment of postoperative pain; and (d) evaluation of treatment. The observation guide focused on the nurse's actions in relation to postoperative pain. The observations also included information on four topics: (a)

preoperative information; (b) assessing postoperative pain; (c) treatment of postoperative pain; and (d) evaluation of treatment.

The nine interviews were transcribed verbatim from audiotapes. The observational notes were rewritten immediately after each observation. To ensure interpretations were reasonable and valid, we reread parts of the material and the third author, not directly involved in the data gathering, read parts of the material and discussed the interpretations (Dihle et al., 2004). A hermeneutic mode of understanding was used following Kvale's (1996) guidelines for qualitative research.

Dihle et al. (2004) reported the overall finding presented here is a gap between what nurses say they do and what they actually do in postoperative pain management. Additional findings were given on four topics: (a) nurses value the importance of preoperative information about pain, but observation showed preoperative information was rarely given; (b) nurses assessed pain by communication and observation, however observation showed varying degrees of attentiveness to patient's signs of pain; (c) nurses claimed to treat pain according to recent knowledge, but observation revealed this was not always true; and (d) nurses stated pain was evaluated by asking the patients, however observation revealed inadequate and unsystematic pain evaluation.

Dihle et al. (2004) concluded that this gap seemed smaller when nurses took an active approach and an active approach towards patient about pain seemed to enhance better postoperative pain management. This study underlines the significant role of the nurse in management of postoperative pain. Dihle et al. recommended to enhance postoperative pain management: (a) promotion of knowledge and empathy in relation to

pain; (b) improvement of collaboration between education and practice; (c) improve effective education in preoperative period on patients role; (d) incorporation of a patient pain self-reporting tool as a vital sign; and (e) introduction of a common goal for pain relief. The guidelines may be used to develop national guidelines in Norway. Further research is needed to address complex pain problems and the accompanying interventions in order to obtain more effective pain relief for patients experiencing postoperative pain.

Information on acute pain management is widely documented. Despite advances in knowledge, we have failed as practitioners to translate this information into a workable clinical practice (RCS/RCA, 1990). The aims of the study were to answer the questions: (a) How much pain were patients experiencing post-operatively? and (b) How was pain managed in the immediate post-operative period (0 to 72 hours)? (Briggs & Dean, 1998). The Gate Control Theory was the theoretical Framework for this study which acknowledges that pain perception was not just a sensory event, but a multidimensional phenomenon which can be influenced by cultural learning, past experiences, attention, anxiety and a variety of psychological and cognitive variables.

The setting for this study was the orthopaedic directorate of a large teaching hospital in the north of England, which consists of three wards. The physicians perform a variety of surgeries, which included: (a) foot surgery; (b) joint replacement surgery; (c) spinal surgery; and (d) miscellaneous surgeries. It is a prospective study and part of a trust-wide practice development project. A convenience sample included all patients undergoing elective orthopaedic surgery in one month. Each participant (n = 65) was told would be interviewed post-operatively about pain and nursing notes relating to pain

would be copied. The patients' ages varied with 5% under 20 years and 17% over 70 years. All other participants were between 20 to 69 years of age. Patient confidentiality was maintained. Patients having day surgery were excluded. Patients were excluded if unable to give consent or unable to participate in the pain assessment tool.

A standardized tool was used to obtain a systematic and accurate pain assessment which allowed for comparison. Pain was assessed every 10 to 15 minutes using a verbal rating scale which categorized pain into four separate groups (0, no pain on movement; 4, very severe pain on movement). The nursing documents were transcribed with the amount of analgesia also recorded. To assess reliability, the researcher checked the transcription with the original record at regular intervals. Briggs and Dean (1998) stated, in this study, manifest content analysis was considered to be the most appropriate for analysis of the data generated. The data were first divided into the four sections which included: (a) problem statements; (b) goals of care; (c) care plans; and (d) evaluation. Manifest content analysis is used when the researcher surveys the transcript of words or phrases central to the research topic.

The findings by Briggs and Dean (1998) showed 65 records were analyzed and reported that 22 (34%) patients identified pain as a problem post-surgery. During the interviews 59 (91%) patients experienced pain post-operatively. Therefore, 37 (57%) of the patients did not have documentation of pain. Conversely, six patients (9%) did not experience pain following surgery.

Findings from the documentation showed each plan of care ( $n = 22$ ) was analyzed for seven distinct phrases and one goal was identified. The majority of the goals was non-

specific, broad and did not reflect patient involvement in care. Care plans were reviewed for interventions with the emergence of four themes which included: (a) responsibility of pain identification with the patients; (b) responsibility for pain control by nursing staff; (c) reliance predominately on pharmacological methods; and (d) day time care plans. In the majority of the documents (73%) the only reliable index of pain severity is the patient report, which shows no active involvement from the nurse. Phrases like “give prescribed analgesia p.r.n.” and “nurse in comfortable position” were used regularly to describe nursing interventions, although provided little evidence of a partnership in care between nurse and patient (Briggs & Dean, 1998). All care plans described the use of analgesia administration for pain relief; however, non-pharmacological interventions were not included. Lack of sleep and pain during the sleeping hours were not mentioned in the care plans. The interview reflected 41% of the patients experienced the worst pain at night. Briggs and Dean stated, although only 22 nursing records had pain identified as a problem in the care plan, all 65 records mentioned aspects of post-operative pain management within the evaluation/progress section of the nursing documentation.

Briggs and Dean (1998) concluded that without observations of nurses at work, it is difficult to comment on the care given with a high-level of confidence. The documentation may not reflect total care and the amount of documentation produced may be reduced when there is a high workload. Additional conclusions are a need for increased patient involvement and further study is needed observing nursing practice.

The pain experience is a subjective and complex phenomenon which is elusive and difficult to define. Evaluation of an individual’s pain is the product of a dynamic,

interactive process that frequently results in ineffective pain management (Wilson & Mc Sherry, 2006). The goal of this study was to establish the influence of nurses' inferences of patients' physical pain through post-registration education and clinical experience.

Wilson and Mc Sherry (2006) selected a sample that allowed for a meaningful comparison in terms of the level of clinical experience and education with identifiable difference in the type of clinical experience and the focus of the knowledge base. One hundred nurses were selected to include equal numbers of specialist nurses and general nurses. The specialist nurses were chosen due to the focus on pain and pain management. All the specialist nurses had attended courses on pain and pain management. The general nurses were chosen due to the focus on the use of pain management knowledge. The general nurses that attended pain courses were discounted from the study. One hundred questionnaires were distributed. The nurses' response rate was 86%. The selected sample consisted of 72 nurses with 35 specialist nurses and 35 general nurses. The Research Governance Committee for the local trust gave approval for the study. The British Psychological Society Ethical Guidelines were followed.

Wilson and Mc Sherry (2006) used a self-administered questionnaire consisting of six vignettes describing children and adults experiencing pain within a hospital setting. A likert scale measuring 13 cm in length, with five equally appearing intervals, representing pain: no pain, (1) slight pain, (2) moderate pain, (3) strong pain, and (4) extreme pain. Participants could also provide a rationale for the response. The information in the vignettes contained information related to issues that have engendered myths and bias relating to pain management. The issues included: reliance on physiological

measurements, behavioral expressions, pain in children, use of distraction techniques, cultural diversity, addiction, and influence of postoperative status of patients. It was the intention that the vignettes should measure and explore the participants' inferences of physical pain based on implicit beliefs and knowledge base, rather than measure a response to a statement that yield a correct or incorrect answer (Wilson & Mc Sherry).

Wilson and Mc Sherry's (2006) reported a significant difference between the specialists' and general nurses' inferences of pain when the responses for all six vignettes were considered as a total score using the Mann-Whitney U-test (observed  $U = 176$ ,  $Z = -5.345$ ,  $p < 0.01$ ). The specialists and the general nurses did not agree in the inferences of physical pain. The specialist nurses tended to infer lower levels. Both groups had the same order of ranking of the patients' pain from most severe to the least pain. The authors found no significant difference in terms of years of experience between both groups of nurses.

Wilson and Mc Sherry (2006) concluded there were observed trends within and between the groups. A tentative explanation is that nurses develop shared common beliefs about certain illnesses and injuries, resulting in a mythical pain inventory. The authors also conclude the specialist nurses knowledge and clinical experience did not transfer to practice. Survival strategies of the nurses may be used as a defense against coping with feelings of inadequacy and helplessness of not being able to deal with the patient's pain. These cognitive strategies have a potential to ease cognitive dissonance for the nurse, but may increase patient suffering (Wilson & Mc Sherry).

### *Summary*

The pain experience is complex and unique for each individual. A study by Yates et al. (1998) examined the differences in reports of pain severity. The females reported pain more frequently than males and more severe pain than males. The authors also found the impact of pain on well-being for both females and males was reduced mobility (reported by 64.3%). According to Sherwood et al. (2003) the pain experience included adequacy of pain management and patient satisfaction with pain management. Findings by Sherwood et al. indicated an association between the level of pain experienced and satisfaction with pain management, meaning the lower the pain rating, the greater the patient's satisfaction.

Effective pain management is influenced by many factors. A study by Tapp and Kropp (2005) identified three subscales from a knowledge survey of nurses which consisted of general pain management, pain assessment, and use of analgesics. The nurses demonstrated better knowledge of pain management assessment than of the use of analgesics (Tapp & Kropp). After a mandatory educational session the nurses' care delivery improved significantly. Reimer-Kent (2003) conducted a study on postoperative patients that received around-the-clock doses of scheduled pain medications. The findings showed significant effective pain relief. A study by Coulling (2005) identified barriers to good acute pain management included staff being too busy, inadequate staff knowledge, staff opioid phobia and patients' reluctance to take analgesics. A study by White (1999) found that patients reported high pain levels with low analgesic



administration throughout the hospital course. This study also showed patients were administered only 50% of the ordered analgesia.

Nurses' pain management is dependent upon many variables. A study by Watt-Watson et al. (2000) indicated that nurses with greater empathy did not have patients who experienced less pain or received more analgesia. This study also found that the nurses did not explore beyond general questions about the patients pain. Sloman et al. (2005) conducted a study that showed nurses statistically significantly underrated pain as compared to patients. This study also showed the level of nursing education did not show a statistically significant difference in pain assessment. A study by Yellen (2003) showed patients that reported more effective nurse communication indicated greater patient satisfaction. A study by Dihle et al. (2004) reported the overall findings presented is a gap between what nurses say they do and what they actually do in postoperative pain management. Additional findings from this study revealed inadequate and unsystematic pain evaluation. Briggs and Dean (1998) reported that of the majority of documents analyzed (73%), the only reliable index of pain severity was the patient report, which showed no active involvement from the nurse. Wilson and Mc Sherry (2006) reported a significant difference between the specialist and general nurses' inferences on pain. The specialist nurses tended to infer lower levels. In additions the authors found no significant difference in terms of years of experience between both groups of nurses.

## Chapter III

### *Methodology and Procedures*

Effective postoperative pain management is problematic despite growing evidence of untoward consequences for recovery (Watt-Watson et al., 2001). The purpose of this study is to examine the relationship between nurses' knowledge about pain for postoperative cardiac patients and quality and intensity of patients' pain.

#### *Problem Statement*

Patients undergoing cardiovascular surgery have reported considerable unrelieved pain. Most nurses rated their pain knowledge and management competence as excellent, despite moderate knowledge scores and minimal or no recent pain-related inservice (Watt-Watson et al., 2001). The impact of nurses' pain knowledge on pain management outcomes with assigned postoperative cardiac patients is not known (Watt-Watson et al.). Nurses' pain-related knowledge and practices may be related to patient satisfaction with pain. More information is needed on how nurses recognize and manage postoperative pain in postoperative cardiac patients.

#### *Research Question*

1. Is there a relationship between pain knowledge of nurses and pain management outcomes for post-operative cardiac patients?

### *Population, Sample and Setting*

This study will be conducted in a Midwest Hospital. The population for this study will be drawn from the hospitals' cardiovascular surgical unit. A convenience sample will be selected from the consenting patients and nurses in the cardiovascular surgical unit. The sample will consist of 60 post-operative cardiac patients and 30 registered nurses working with the post-operative patients.

Inclusion criteria in this study for patient participants are that the patients must be on the third day following their initial uncomplicated coronary artery bypass graft surgery, 18 years of age, and able to communicate effectively. Inclusion criteria in the study for nurses will be that the participant will be assigned to the selected patients and be working on the participating cardiovascular surgical unit.

### *Protection of Human Subjects*

Permission will be obtained from the Institutional Review Board of Ball State University and the participating hospital Institutional Review Board. This study will be conducted ethically with the protection of the human rights of each subject, which include: (a) self-determination, (b) privacy, (c) anonymity and confidentiality, (d) fair treatment, and (e) protection from discomfort and harm.

Each patient and nurse participant will be given a verbal and written explanation of the study. The patients will be given the information preoperatively. The nurses will be given the information at a pre-arranged staff meeting. Additional explanation will include the potential for no risk or harm, the ability to choose to participate or withdraw at any time, inherent provisions for privacy and confidentiality of information, the potential

benefits from the collected data, fair treatment with the opportunity to have questions answered at any time during the study. Each patient and nurse questionnaire will contain a statement: “Your completion of this questionnaire indicates your consent to participate in this study.”

### *Procedures*

Approval from Ball State University and the participating hospital will be obtained prior to the initiation of the study. The projected completion time for the study will be approximately 5 months.

The Vice President of Nursing for the participating institution will be contacted approximately 8 weeks prior to the beginning of the study to plan an informational meeting to distribute written information and provide discussion on the process of the study. The individual Unit Manager will be invited to attend. Time will also be used during the meeting to collect information on the units’ routine and pertinent policies. Available dates will be obtained from the Unit Manager for plans to attend the nurse’s staff meetings for study explanation and data collection. The plan for the daily identification of potential patient participants by the unit leader will be discussed.

The potential patients will be screened for participation in the study during the pre-operative appointment by the Unit Manager. The list of patients willing to participate will be shared with the primary researcher of the study by the Unit Manager. The researcher will confirm patient willingness to participate prior to data collection. The data collection process will take place on the third post-operative day during a 12 hour period between the hours of 8am and 8pm. The McGill Pain Questionnaire-Short Form (MPQ-

SF) will be used as the interview tool by the researcher for measurement of the quality and intensity of the patients' pain.

The Toronto Pain Management Inventory (TPMI) questionnaire will be used to collect data from the participating nurses on nurses' pain knowledge. The nurse questionnaire will be distributed and collected by the researcher at pre-arranged staff meetings. The questionnaire will be collected in sealed envelopes to provide confidentiality and anonymity. The participating patient records will be examined by the researcher for data collection on the patient's use of analgesia over the previous 24 hours.

#### *Definition of terms*

##### *Pain Management Outcomes.*

*Conceptual:* Pain relief is evaluated by patient self-report of pain intensity, worst pain, interference with activities, and overall pain (Sherwood et al., 2003).

*Operational:* The McGill Pain Questionnaire-Short Form (MPQ-SF) provides information about both the quality and intensity of pain within a limited time period and has established reliability and validity (Melzack 1987, Dudgeon et al.).

##### *Pain Knowledge of Nurses.*

*Conceptual:* Questions examined nurse's knowledge about pain management including analgesia, patients' experiences of and responses to pain, and professional issues such as nurses' perceived competence and colleague support (Watt-Watson et al., 2001).

*Operational:* The Toronto Pain Management Inventory (TPMI) was developed for this study from previous research (Watt-Watson, 1987) and includes 23 VAS, each rated on a scale of 0 to 100 (Watt-Watson et al., 2001).

#### *Limitations*

This study will use a small convenience sample. The sample represents only one healthcare institution in the Midwest and may decrease the generalizability of the findings.

#### *Assumptions*

1. The cardiac patients' postoperative pain requirements need to be well managed.
2. The cardiac patients will be able to report pain post-operatively using the MPQ-SF.
3. The nurses will be able to fill out the TPMI.
4. The cardiac patients' pain level will vary due to individualized experiences and perceptions.
5. Postoperative cardiac patients' pain will be better managed from the findings

#### *Methods of Measurement*

The McGill Pain Questionnaire-Short Form (MPQ-SF) created by Melzack and Wall in (1987) will be used as the patients interview instrument. The MPQ-SF has been developed to obtain information about both the quality and intensity of pain within a limited period and has established reliability and validity (Watt-Watson et al., 2000). Sloman, Rosen, Rom, and Shir (2005) stated that Melzack obtained high correlations between the standard form and the short form of the MPQ ( $r = 0.84$ ,  $p = 0.0001$  for post

surgical pain, and has also been shown to be a valid and sensitive instrument in recent studies of postoperative pain. Pain quality is evaluated by 15 verbal descriptors, and pain intensity by the present pain intensity (PPI) and a visual analogue scale (VAS) (Watt-Watson et al., 2001). Watt-Watson et al. (2000) explain that pain quality is evaluated by patient chosen adjectives on a severity scale with ratings summed to obtain scores of sensory, affective, and combined sensory and affective subscales.

The PPI describes the overall pain intensity and is a number-word combination scale from 0 (no pain) to 5 (excruciating pain). It is a widely used method for measurement of pain and has established reliability and validity estimates in adult patients with acute surgical pain (White, 1999). Additional VAS pain intensity items will be added to the general VAS of the MPQ-SF which will measure pain intensity on movement related to time periods with a VAS score rating of 0-100. Watt-Watson et al. (2001) stated there are four additional patient self-administered VASs used to rate the degree to which their assigned nurse listened to them, understood, helped with pain and how often would ask the nurse voluntarily for medication for pain. The four additional visual analogue scales were rated on a 0 to 100 scale.

The Toronto Pain Management Inventory (TMPI) was developed for Watt-Watson et al. (2001) from previous research (Watt-Watson, 1987) and includes 23 VAS, each rated on a scale of 0 to 100 (Watt-Watson et al.). The TMPI will be used for the nurse data collection instrument. Watt-Watson et al. stated the questions examined nurses' knowledge about pain management including analgesia, patients' experiences of and responses to pain, professional issues such as nurses' perceived competence,

colleague support and evidenced-based knowledge as well as common beliefs. The VAS score values ranged from 0 (less knowledge) to 2300 or 100% (most knowledge) with the summed total score converted into a percentage.

The TMPI has established validity and reliability. Face and content validity were established by nine nurse and four medical experts in surgical pain (Watt-Watson et al., 2001). The measure was pretested for face and content validity and clinical utility with 37 graduating BScN students, including 14 diploma prepared nurses (Watt-Watson et al.). In addition, the measure was piloted over a 3 month period with 33 surgical nurses, and test-retest reliability was established over a 2 week period (ICC = 0.81) (Watt-Watson et al.).

The patient chart will be audited on the third postoperative day for nursing pain assessment, analgesic prescription, and analgesic administration. Only data from the previous 24 hours will be collected.

### *Research Design*

A descriptive correlational design will be used for this modified replication study. According to Watt-Watson et al. (2001) the degree to which pain knowledge influences pain outcomes such as pain and analgesic administration is unknown. The purpose of a descriptive correlational design is to examine the relationships that exist in a situation which facilitates the identification of many interrelationships in a situation in a short time (Burns & Grove, 2005). Therefore, this type of design is appropriate for obtaining information about the relationship between nurses' knowledge about pain for postoperative cardiac patient and the quality and intensity of the patient's pain. Through



this design the study will be conducted with clearly identified and defined variables without the attempt to control or manipulate the situation.

#### *Intended Method of Data Analysis*

A standard packaged computer analysis program, SPSS, will be used as the source for the data analysis along with statistical consultation as needed. Descriptive statistics will be tabulated. Descriptive statistics are a summary that allow the researcher to organize the data in ways that give meaning and facilitate insight, such as frequency distributions and measures of central tendency and dispersion (Burns & Grove, 2005). The Pearson correlation coefficient is the most commonly used measure which is a parametric test used to determine the relationship between two variables (Burns & Grove).

#### *Summary*

The purpose of this study is to examine the relationship between nurses' knowledge about pain for postoperative cardiac patients and quality and intensity of patient's pain. The study will be a descriptive correlational design. The sample will include 30 registered nurses and 60 postoperative cardiac patients in a Midwest hospital. The framework for this study is Melzack's and Wall's Gate Control Theory. The McGill Pain Questionnaire-Short Form and the Toronto Pain Management Inventory will be the instruments used for data collection. Data analysis will be comprised of descriptive statistics, Pearson correlation coefficients and statistical consultation as needed. Findings from this study will provide information for nurses who manage cardiac surgical patients.

## References

- Agency for Healthcare Research and Quality. (11, November 2007).  
*Outcomes/Effectiveness Research*. Retrieved August 11, 2009, from U.S.  
 Department of Health & Human Services Web Site: <http://ahrq.gov/>
- Agency for Healthcare Research and Quality. (1992). *Acute Pain Management: Operative or Medical Procedures and Trauma*. Retrieved September 8, 2009, from U.S. Department of Health and Human Services Web Site: <http://ahrq.gov/clinic>
- American Heart Association. (2009). *American Heart Disease and Stroke Statistics*. Retrieved August 11, 2009, from <http://americanheart.org>
- Arnstein, P. (2002). Optimizing perioperative pain management. *Association of Operating Room Nurses Journal*, 76(5), 812.
- Briggs, M., & Dean, K. (1998). A qualitative analysis of the nursing documentation of post-operative pain management. *Journal of Clinical Nursing*, 7, 155-163.
- Burns, N., & Grove, S. K. (2005). *The practice of nursing research conduct, critique, and utilization* (5 ed., Rev.). St. Louis, Missouri: Elsevier Saunders.
- Carr, C. J. (1990). Postoperative pain: Patients' expectations and experiences. *Journal of Advanced Nursing*, 15, 89-100.
- Chung, J. W., & Lui, J. C. (2003). Postoperative pain management: Study of patients' level of pain and satisfaction with health care providers' responsiveness to their reports of pain. *Nursing and Health Sciences*, 5, 13-21.
- Commission on the provision of Surgical Services (1999). Report of the working party on pain after surgery. Retrieved September 8, 2009, from The Guidelines for the Provision of Anaesthetic Services, <http://rcoa.ac.uk/doc/glines>

- Coulling, S. (2005). Nurses' and doctors' knowledge of pain after surgery. *Nursing Standard, 19*(34), 41-49.
- D'arcy, Y. (1999). Managing postoperative CABG pain. *Nursing, 9*, 17.
- Dihle, A., Bjolseth, G., & Helseth, S. (2004). The gap between saying and doing in postoperative pain management. *Journal of Clinical Nursing, 15*, 469-479.
- Doering, L. V., McGuire, A. W., & Rourke, D. (2002). Recovering from Cardiac Surgery: what patients want you to know. *American Journal of Critical Care, 11*(4), 333.
- Drayer, R. A., Henderson, J., & Reidenberg, M. (1999). Barriers to better pain control in hospitalized patients. *Journal of Pain Symptom Management, 17*, 434-440.
- Dudgeon, D., Raubertus, R., & Rosenthal, S. (1993). Short-form of the McGill pain questionnaire in chronic cancer pain. *Journal of Pain and Symptom Management, 8*, 191-195.
- Frasco, P. E., Sprung, J., & Trentman, T. L. (2005). *The impact of Joint Commission for Accreditation of Healthcare Organizations pain initiative on perioperative opiate consumption and recovery room length of stay*. Retrieved September 8, 2009, from <http://anesthesia-analgesia.org/cgi>
- Gift, A. G. (1989). Visual analogue scales: measurement of subjective phenomena. *Nursing Research, 38*, 286-288.
- Godfrey, B., Parten, C., & Buckner, E. (2006). Identification of special care needs: the comparison of the cardiothoracic intensive care unit patient and nurse. *Dimensions in Critical Care Nursing, 25*(6), 275-282.
- Improving the Quality of Care Through Pain Assessment and Management*. (2005). Retrieved September 7, 2009, from Agency for Healthcare Research and Quality Web Site: <http://ahrq.gov/qual>

- Kim, S. K., Schwartz-Barcott, D., Tracy, S. M., Fortin, S. M., & Sjostrom, B. (2005). Strategies of Pain Assessment Used by Nurses on Surgical Units. *Pain Management Nursing*, 6(1), 3-9.
- Kvale, S. (1996). *InterViews. An Introduction to Qualitative Research Interviewing*. London: Sage Publications Inc.
- Mac Lellan, K. (2004). Postoperative pain: strategy for improving patient experiences. *Journal of Advanced Nursing*, 46(2), 179-185.
- Manias, E., Bucknall, T., & Botti, M. (2004). Assessment of Patient Pain in the Postoperative Context. *Western Journal of Nursing Research*, 26(7), 751-769.
- Manias, E., Bucknall, T., & Botti, M. (2005). Nurses' Strategies for Managing Pain in the Postoperative Setting. *Pain Management Nursing*, 6(1), 18-29.
- Melzack, R., & Wall, P. D. (1996). *The challenge of pain*. New York: Penguin.
- Melzack, R. (1983). The McGill pain questionnaire. In (Ed.), *Pain measurement and assessment* (Rev. ed., p.). New York: Raven Press.
- Melzack, R. (1993). Pain: past, present, and future. *Canadian Journal of Experimental Psychology*, 47(4), 615-629.
- Montes-Sandoval, L. (1999). An analysis of the concept of pain. *Journal of Advanced Nursing*, 29(4), 935-941.
- Reimer-Kent, J. (2003). From theory to practice: preventing pain after cardiac surgery. *American Journal of Critical Care*, 12, 136-143.
- Scott, J., & Huskisson, E. (1979). Vertical or horizontal visual analogue scales. *Annals Rheumatic Disorders*, 38, 560.
- Sherwood, G., McNeill, J., Starck, P., & Disnard, G. (2003). Changing acute pain management outcomes in surgical patients. *AORN Journal*, 77(2), 374-395.

- Sloman, Rod, Rosen, Gila, Rom, Miriam, & Shir, Yoram (2005). Nurses' assessment of pain in surgical patients. *Journal of Advanced Nursing*, 52(2), 125-132.
- Soderham, O., & Idavall, E. (2003). Nurses' influence on quality of care in postoperative pain management: A phenomenological study. *International Journal of Nursing Practice*, 9, 26-32.
- Tapp, J., & Kropp, D. (2005). Evaluating Pain Management Delivered by Direct Care Nurses. *Journal Nursing Care Quarterly*, 20(2), 167-173.
- The Joint Commission. (2009). Retrieved September 4, 2009, from <http://jointcommission.org>
- Watt-Watson, J., & Stevens, B. (1998). Managing pain after coronary artery bypass surgery. *Journal of Cardiovascular Nursing*, 123(3), 39.
- Watt-Watson, J., Garfinkel, P., Gallop, R., Stevens, B., & Streiner, S. (2000). The impact of nurses' empathetic responses on patients' pain management in acute care. *Nursing Research*, 49(4), 191-200.
- Watt-Watson, J., Stevens, B., Garfinkel, P., Streiner, D., & Gallop, R. (2001). Relationship between nurses' pain knowledge and pain management outcomes for their postoperative cardiac patients. *Journal of Advanced Nursing*, 39(4), 535-545.
- White, C. L. (1999). Changing pain management practice and impacting on patient outcomes. *Clinical Nurse Specialist*, 13(4), 166-172.
- Wilson, B., & Mc Sherry, W. (2006). A study of nurses' inferences of patients' physical pain. *Journal of Clinical Nursing*, 15, 459-468.
- Yates, P., Dewar, A., Edwards, H., Fentiman, B., Najman, J., & Nash, R. (1998). The prevalence and perception of pain amongst hospital in-patients. *Journal of Clinical Nursing*, 7, 521-530.

Yellen, E. (2003). The influence of nurse-sensitive variables on patient satisfaction.

*AORN Journal*, 78(5), 783-793.