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Advanced Practice Nurses' Knowledge and Attitudes on Pain and Pain Management

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**ADVANCED PRACTICE NURSES' KNOWLEDGE AND ATTITUDES
ON PAIN AND PAIN MANAGEMENT**

By

Joann E. Baar

A THESIS

**Submitted to
Grand Valley State University
in partial fulfillment of the requirements for the
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ABSTRACT

ADVANCED PRACTICE NURSES KNOWLEDGE AND ATTITUDES ON PAIN AND PAIN MANAGEMENT

By

Joann E. Baar

The purpose of this study was to examine the knowledge and attitudes of advanced practice nurses regarding pain and pain management, and to determine if a relationship existed between education, experience, clinical specialty, and recent educational sessions on pain management, and scores on the Nurses' Knowledge and Attitudes Survey. The convenience sample consisted of 78 advanced practice nurses or advanced practice nursing students in west Michigan. Data were collected via the use of mailed questionnaires. Dorothea Orem's self-care deficit theory of nursing provided the theoretical framework for this study.

No significant differences in scores were found among those with different educational preparations, clinical specialties, years of experience, or recent attendance at pain management inservices. When comparing scores of this study with those of previous studies, education did make a positive difference. However, scores are not high enough, suggesting that knowledge and attitude deficits continue to exist.

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CHAPTER 1

INTRODUCTION

Pain relief is an important objective for the patient and family who are dealing with it daily, as well as for the health care professionals who strive to alleviate it. Pain is often the reason why individuals initially seek healthcare (Clarke, 1996; Davis, 1996). Despite the availability of numerous pharmacologic and nonpharmacologic methods available for pain management, ineffective pain control is commonly cited (Ferrell & McCaffery, 1997; McCaffery & Ferrell, 1997b; & Paice, Mahon & Faut-Callahan, 1991).

Unrelieved pain causes unnecessary suffering for both the patient and the family. Adverse symptoms of inadequate pain control include anxiety, fear, helplessness, depression, and immobility. Pain can affect the ability of the patient to perform normal activities of daily living, causing the patient to rely on others for care. Restrictions related to pain reduce quality of life in some patients, affecting the family unit and placing unnecessary stress on all those involved.

Besides the obvious physical and emotional problems related to inadequate pain control, there are economic consequences as well. The treatment of pain can be extremely costly, but so can the costs of not effectively treating pain. Patients may miss work or school due to pain. This has a negative financial impact on both the individual and the employer. Everyone ends up paying for those on disability secondary to chronic pain. Secondly, readmission to the hospital often occurs for the patient in pain when the

pain is ineffectively managed in the outpatient setting (Grant, Ferrell, Rivera & Lee, 1995). Unscheduled readmissions or visits to the emergency room create many unnecessary medical costs for both the individual and the institution.

Patients may be partially accountable for adequate pain relief. Often, patients do not accurately express the amount of pain they are having for multiple. Some patients forego pain medicine for fear of addiction, tolerance, or side effects from the medication (AHCPR, 1994). Some may feel that pain, in some situations, is expected and unavoidable. Others do not want to be seen as complainers and choose to pretend all is well rather than express their feelings of discomfort. Also, certain cultures have strong beliefs regarding pain and its management, and may choose not to report unrelieved pain due to these beliefs (AHCPR, 1992).

Another factor that may contribute to ineffective pain control is the expense incurred by patients for pain medication. Those without insurance may feel that they are unable to afford the cost of pain medications. Thus, they forego their own comfort because of this. Others, especially the elderly and chronically ill, are on multiple medications, and even with prescription insurance, the multiple co-pays may exceed their budgets. While the ultimate goal for those in pain is pain cessation, clinicians need to consider a patient's ability to pay for treatment. At no time should the costs of medication and other treatments burden those with limited financial resources (AHCPR, 1994).

Characteristics of health care professionals also present multiple barriers to pain management. First, healthcare providers do not always adequately assess pain (AHCPR, 1994; Clarke, et al., 1996; Pederson & Parran, 1997). Studies have suggested that the

impressions of healthcare providers are often quite different than that of the patient, especially when the patient is experiencing severe pain (Paice et al., 1991; Pederson & Parran, 1997).

Some providers feel that if a patient looks comfortable and is able to perform activities without difficulty, then pain must be under control. This is not necessarily true since discrepancies between behavior and a patient's report of pain may be due to excellent coping skills. Patients may successfully engage in diversionary activities such as relaxation while still experiencing severe pain (AHCPR, 1992).

Clinicians exaggerated fears of causing addiction by administering opioid analgesics is well-documented (AHCPR, 1994; McCaffery & Ferrell, 1997a). Because of this fear, some clinicians choose less effective analgesics instead of the more appropriate opioid analgesics. These fears can lead to unnecessary pain and suffering for their patients. A second barrier to providing effective pain management is the clinician's knowledge of pain and appropriate treatment. McCaffery (1997) states that numerous surveys over the last 20 years provide evidence that many nurses caring for patients in pain lack adequate information about pain management. This can be partially attributed to the education nursing students receive. One study which surveyed faculty from 14 baccalaureate nursing schools in the United States found that faculty knowledge and beliefs about pain as well as the curriculum content on pain were less than optimal (Ferrell, McGuire & Donovan, 1993). If faculty and textbooks do not fully grasp the importance of pain management, then it is difficult to expect that nursing students will have the necessary knowledge to effectively treat the patient in pain.

Clinicians' attitudes regarding pain and its management are another factor contributing to ineffective pain control. The sensation of pain is subjective, and the interpretation of pain by clinicians may be affected by their personal values and biases. Studies have demonstrated that nurses often have inaccurate and even negative attitudes regarding patients in pain (Brunier, Carson & Harrison, 1995; Clarke et al., 1996). Nurses' attitudes may be influenced by multiple factors, including age, education, experience, knowledge, and even their own personal experiences with pain.

Hospital stays are growing increasingly shorter. This change is causing many health care problems, including the treatment of acute and chronic pain, to be handled in the primary care setting. Advanced practiced nurses (APNs) are one group of providers who are being asked to see an increased number of patients in the primary care setting with various pain management needs.

According to Calkin (1984), advanced nursing practice is defined as the deliberative diagnosis and treatment of human responses to actual or potential health problems. When viewing pain as a human response, it is clear that nurses can and should play a vital part in pain management. Besides the numerous pharmacological options for the treatment of pain, nurses have knowledge of nonpharmacological interventions for pain control. Examples of these include massage, music therapy, distraction, guided imagery, therapeutic touch, and exercise. Advanced practice nurses, through their assessment skills should be able to identify the appropriate interventions which will best meet the patient's needs. As patient advocates, nurses have the responsibility to provide the best possible care for every patient, including the provision of adequate pain control.

Problem statement:

Despite recent advances in pain management, uncontrolled pain remains a serious health issue. Because many patients see APNs as their primary health care providers, these patients trust that their provider will be able to offer them comprehensive care, including pain management. Nursing research examining the knowledge and attitudes of APNs regarding pain management is limited. More research is needed to evaluate if APNs are providing optimal pain management for their patients and if they have the necessary knowledge and attitudes to do so.

Purpose:

The purpose of this study is to measure the knowledge and attitudes of APNs regarding pain and pain management. The relationship between these providers' ages, education, and professional experiences to their pain management knowledge will be explored. An assessment of knowledge and attitudes among these providers is an important start in reducing barriers to adequate pain relief. Through understanding of these barriers, steps can be taken to overcome them. This will lead to more effective pain management.

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Theoretical Framework

Dorothea Orem's (1995) self-care deficit theory of nursing provided the theoretical framework for this study. According to Orem (1995), this is a general theory, which serves nurses in the development and validation of nursing knowledge and in teaching and learning nursing. Orem's theory consists of three interrelated theories: the theory of self-care; the theory of self-care deficits; and the theory of nursing system.

Self-care is defined as "The practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being" (Orem, 1995, p. 104). Ultimately, the goal of self-care is for the patient to manage his or her own health care. If this is not possible, the patient can collaborate with nursing to meet his or her needs. Since pain is subjective, it is ideal for the patient to assume responsibility for pain management, which correlates with Orem's self-care theory. If this is not possible, a self-care deficit is created.

Orem's second theory (1995) deals with the concept of self-care deficit. Orem (1995) defines self-care deficit as:

A relation between the human properties therapeutic self-care demand and self-care agency in which constituent developed self-care capabilities within self-care

agency are not operable or not adequate for knowing and meeting some or all components of the existent or projected therapeutic self-care demand. (p. 461).

Orem uses the word “agency” to describe knowledge or ability. The central idea to this theory is that individuals are affected by limitations that inhibit them from meeting their self-care needs at times (Hartweg, 1991). Such can be the case for patients experiencing high levels of acute or chronic pain.

When the patient’s self-care deficits exceed his or her self-care ability, the person becomes a patient and a recipient of nursing care (Orem, 1995). It is at this time that health care professionals must get involved. This is where nurses need to have the appropriate knowledge base and skills to identify, access and intervene to overcome patient care deficits. This is why nurses who deal with patients in pain need to have a working understanding of pain and how to manage it.

The theory of nursing system is Orem’s (1995) third theory in her self-care deficit theory of nursing. This theory establishes the structure as well as the content of nursing practice. In this theory, the relationship between nursing actions and role and patient actions and role are explained (Hartweg, 1991, p. 13). Orem (1995) defines nursing systems as

A series and sequences of deliberate practical actions of nurses performed at times in coordination with actions of their patients to know and meet components of their patients’ therapeutic self-care demands and to protect and regulate the exercise or development of patients’ self-care agency. (p. 459).

The concept of nursing agency is an essential element of the theory of nursing system. Orem (1995) states that nursing agency is the developed capabilities of nurses

that empower them to represent themselves as nurses, and within the frame of a legitimate interpersonal relationship to act, know, and help persons in such relationships to meet their self-care demands and regulate the development or exercise of their self-care agency (p. 458). This theory expresses the broad purpose of nursing according to Orem: to compensate for health-associated limitations of patients. Orem sees nursing agency as a power which is developed via such things as specialized education and clinical experiences in nursing practice. It is in this part of Orem's theory that the problem of inadequate pain control secondary to the nurse's knowledge deficit and attitude falls. Orem stresses that nursing agency is a power that is developed. Learning does not stop upon graduation. In order to remain a competent nurse and to have true "nursing agency", learning must continue throughout one's career. Therefore, if an individual nurse has an identified knowledge deficit such as an inadequate understanding of pain management, that nurse must take action to correct the knowledge deficit. Orem (1995) states that knowledge is essential for the giving of care, responsibility and respect. Therefore, without knowledge, proper nursing care cannot be given.

Orem also elaborated on other nursing personal factors which are defined as those factors that are specific for each individual nurse that are important to the delivery of care (Orem, 1995). Examples include age, gender, race, culture and maturity. Personal factors along with education and experience make up a nurse's knowledge base and attitude. In the situation of caring for a client with pain, these personal factors contribute to an individual nurse's knowledge and attitudes regarding pain management. When nurses better understand pain and how to manage it, they are more likely to treat it

aggressively. This in turn leads to the adequacy of pain control for the patient and hopefully a greater sense of well-being.

Orem defines well-being as “A state characterized by experiences of contentment, pleasure, and kinds of happiness; by spiritual experiences; by movement toward fulfillment of one’s self-ideal; and by continuing personalization” (1995, p. 101). Orem stresses that well-being can be achieved even under adverse conditions such as illness.

Literature Review

Current literature reflects an increase in the number of research studies done on pain and pain management. However, an extensive review of the literature did not reveal any studies which focused on knowledge and attitudes of APNs regarding pain. While numerous people play a part in ineffective pain control, research has been focused on nurses. McCaffery and Ferrell, (1997b) determined that nurses spend more time with patients than any other health team members. Therefore, it is the nurse who performs many pain interventions, and the nurse who evaluates the effectiveness of the pain management plan.

Three themes are repeatedly explored in the literature, to examine why pain is not adequately controlled. First, knowledge of pain and its management is often cited. A second factor cited is the attitudes of the health care providers. Third, is the fear of addiction or other side effects from the pain medications. These fears may be on the part of the health care professional, the patient experiencing the pain, or the family members.

Knowledge

Despite efforts to increase pain management knowledge over the last two decades, lack of knowledge still persists. Countless surveys over the last 20 years confirm that many nurses caring for patients with pain lack the necessary information about pain management (McCaffery & Ferrell, 1997b). In a recent study of 53 nurses, more than half (55%) of the nurses felt that inadequate staff knowledge of pain management was a barrier to pain management (Howell, Butler, Vincent, Watt-Watson, & Stearns, 2000).

Research by Kubecka, Simon and Hardy Boettcher (1996) is an example of how inadequate knowledge can be a barrier to effective pain management. The purpose of this study was to explore the pain management knowledge of hospital-based nurses in a rural Appalachian setting. This descriptive study involved sending a survey to 143 registered nurses at three hospitals in a rural area of the mid-Atlantic region of the United States. The instrument used consisted of three sections. Section A contained 13 demographic questions. Section B had eight questions regarding opioid classification and the incidence of addiction. Section C consisted of 20 true/false statements, and covered pain assessment and management. Sections B and C were developed by McCaffery in 1988 and 1992 respectively, and had been administered to over 3500 nurses. One hundred twenty three of the 143 surveys distributed were returned. Results indicated a lack of knowledge of the behavioral indicators of pain and the properties of opioid analgesics, and adjuvant drugs used in pain management. Specifically, respondents were found to be deficient in the classification of opioids, incidence of opioid addiction, ceiling dose of morphine, and reliance upon nonverbal cues to assess pain. No relationship was found between increased clinical experience and overall pain

management knowledge score. Also, results did not find a relationship between type of nursing education and increased knowledge of pain management. The authors state that in order to increase the ability to generalize these findings, this study should be replicated in other settings with different patient populations. They also state that further studies are needed using other tools which measure the effectiveness of pain-rating scales, patient-satisfaction surveys, and knowledge of various interventions for the management of pain.

Limitations include that these findings cannot be generalized beyond this sample, since only three hospitals in a certain region of the United States were studied. Also, participation was voluntary, and those who chose to participate may have more interest in pain than those who did not. One strength of the study was the high response rate of 86%.

Another descriptive study compared intensive therapy unit and hospice nurses' knowledge on pain management (Fothergill-Bourbonnais & Wilson-Barnett, 1992). A questionnaire created by the researchers was used for the study, which consisted of multiple choice and short answer questions, used to measure current knowledge, and perceived adequacy and acquisition of knowledge. A demographics questionnaire was also included. A convenience sample of 52 intensive therapy nurses from two large teaching hospitals, and 48 hospice nurses from four hospice-type settings in the London area was used. Each of these groups were further divided into beginners (less than one year of experience) and experts (greater than three years of experience). Hospice nurses demonstrated higher knowledge scores than the intensive therapy nurses on multiple choice questions. On short answer questions, there was no difference between groups.

However, both groups demonstrated lack of knowledge. There was not a significant difference between beginner and expert scores.

Also of interest is that the vast majority of nurses in this study (86%) did not believe that their basic nursing education had prepared them adequately to care for patients in pain (Fothergill-Bourbonnais & Wilson-Barnett, 1992). These findings are consistent with the findings of numerous research studies (McCaffery & Ferrell, 1995; O'Brien, Dalton, Konsler & Carlson, 1996; and Wallace, Reed, Pasero & Olsson, 1995). The primary limitation of the study by Fothergill-Bourbonnais and Wilson-Barnett (1992), was that the tools used were developed for the study, and need to be tested further for validity and reliability. Also, the study used a convenience sample, and 96 of the 100 participants were female. Because all participants were from the London area, results cannot be generalized to other populations.

The purpose of the descriptive study by Ferrell and McCaffery (1997) was to identify the knowledge of nurses who regularly care for patients with cancer who receive morphine and transdermal fentanyl, two commonly used opioids prescribed for cancer pain relief. A survey designed to evaluate the nurses' knowledge about these two drugs was given to 82 nurses who volunteered to participate. The majority of nurses practiced in hospital settings (65.9%) and most of the remaining nurses practiced in either hospice settings or in community home care. The average number of years of experience was 15.8 years, and the average age of participants was 40.5 years.

Despite ability to use an equianalgesic chart, about one-third of respondents were unable to calculate equianalgesic doses. This resulted in both under and over dosing,

with the majority of respondents under dosing. When asked questions regarding breakthrough pain, two thirds of the respondents selected doses that would seriously under treat pain. Also, almost half of the respondents were unable to select the appropriate dose increase when a previous opioid dose was ineffective. As the results indicate, these nurses who care for patients with cancer pain daily have major pain management knowledge deficits.

The major limitation was that a convenience sample of nurses was used. All of the nurses completed the survey while attending lectures on pain during 1994. Therefore, subjects had a pre-existing interest in pain, and were probably not representative of the general nursing population.

Attitudes

Along with inadequate knowledge, nurses' attitudes regarding pain and its management is often cited as causative factors contributing to ineffective pain control (Ferrell, McGuire, & Donovan, 1993; O'Brien, Dalton, Konsler, & Carlson, 1996; Pederson & Parran, 1997; Vortherms, Ryan & Ward, 1992). Ferrell, McGuire, and Donovan's study (1993) explored the knowledge and beliefs regarding pain in a sample of nursing faculty. Fourteen baccalaureate nursing schools in the United States were mailed a self-administered knowledge/beliefs questionnaire for faculty and a self-report curriculum questionnaire. Three of the schools were in the north Atlantic region, four in the Midwest, five in the South, and two in the West. This sample consisted of both private and public schools.

The first of three instruments used was the Survey of Knowledge and Beliefs Regarding Pain developed by Donovan and Ferrell. The second instrument was a Pain

Curriculum Survey, which covered anatomy and physiology, etiology, beliefs and misconceptions, assessment, analgesics, nonpharmacological treatment, and current research. The Faculty Characteristics Survey was the third tool used, which was developed to describe characteristics of faculty at each school. A total of 776 surveys were distributed, and 498 were returned.

Results indicated that overall, faculty felt that their school's pain education was only moderately effective in preparing students to deal with patients in pain, and they felt only moderately successful themselves in caring for patients with pain or supervising students in doing so. Also, although the curriculum of most schools included the seven major areas of pain content, the hours spent on it were minimal.

As stated by the authors, because baccalaureate nursing programs are teaching the foundations of nursing to their students, the information being taught should be as accurate and comprehensive as possible. However, results of this study indicate that faculty knowledge and beliefs about pain, as well as pain curriculum content may be less than optimal.

One strength of this study was that multiple areas in the United States were represented. Also, the response rate was 64%, which is good for a mailed questionnaire. However, a major weakness was the way in which schools were selected for inclusion in the study. The investigators selected schools where they knew of a faculty member who was interested in pain, and who was willing to serve as site investigator. Because of this, the sample may over-represent those schools who have a higher interest in pain.

In another study, Pederson and Parran (1997) explored bone marrow transplant nurses' knowledge, beliefs, and attitudes regarding pain management. Investigators

developed a 49-item questionnaire to measure nurses' knowledge, beliefs, and attitudes related to pain in bone marrow transplant recipients. A convenience sample of 39 bone marrow transplant (BMT) nurses from a 32-bed BMT unit within a 567-bed tertiary-care facility in a large mid-western city was used.

Findings indicated that many BMT nurses have a high knowledge level and positive beliefs and attitudes related to pain management. The overall mean percent of correct responses to the knowledge items was 79%. While patient self-report is the most reliable indicator of pain, only 29 (74%) of the nurses saw this as the correct answer. The majority of nurses believed that they have influence in implementing a pain management plan, that opioids should not be limited when patients exhibit drug-seeking behaviors and report a high pain level, and that under-treating pain is not safer than over-treating pain in children.

The authors state that although this study indicates that a knowledge gap exists, BMT nurses' scores were higher than average when compared to scores achieved by nurses in previous pain-knowledge tests. However, less than one-half (46%) of the BMT nurses returned the questionnaire. The authors also state that the reliability and validity of the nurse test and survey used in this study have not been well established. Also, because the study used a convenience sample, and the number of respondents was small, results cannot be generalized to other populations.

Knowledge and Attitudes

The purpose of the study by Brunier, Carson, and Harrison (1995) was to determine nurses' knowledge and attitudes regarding pain in the acute and long-term care settings of a large Canadian teaching hospital. The Nurses' Knowledge and Attitudes

Survey (NKAS) was used to gather data. This is a 46-item tool designed to measure a nurse's knowledge and attitudes regarding pain. All items are equally weighted, with the maximum score being 46. A higher score indicated a higher number of correct answers. The survey was sent to 1,003 nurses in the hospital. Of these, 514 nurses responded. Three hundred forty four of these nurses had a diploma degree, 81 with bachelors in nursing, 10 had a master's degree, 70 held a registered nursing assistant certificate, and 9 did not supply this information. The majority of respondents were female (94%). Forty seven percent had been in nursing over ten years, with 45% of nurses having worked on their current nursing unit for one to three years. Other variables explored in this descriptive study included the participant's age, clinical area, exposure to caring for patients in pain, and attendance at educational sessions on pain management.

The mean raw score on the NKAS was 19.21 (SD = 5.56), based on a possible mean score of 0-46. The mean percent score on the questionnaire was 41. Total scores ranged from 0 to 35. Nurses who had a university education scored significantly higher than nurses who were not university prepared. Also, nurses who had attended pain management educational sessions within the last year also scored significantly higher than those who had not attended. Results indicated that nurses lacked knowledge and understanding of basic pain principles, opioid use, and acute and chronic pain. These results support the need for advanced educational preparation and continuing education sessions for nurses.

Limitations include that all participants worked in the same institution, so results cannot be generalized to other populations. Also, participation was voluntary, and a convenience sample was used. Using a self-report method for obtaining information also

has its limitations, since participants may give answers they think are most acceptable, rather than ones that more accurately display their true beliefs. One strength was the large sample size of 514 participants. However, 1,003 questionnaires were actually sent, giving a response rate of only 51%.

Clarke et al. (1996) used three instruments to examine the attitudes and knowledge of registered nurses regarding pain management. They examined how pain is being assessed, treated and documented by these nurses. They also looked at how selected nurses' characteristics, such as the nurse's age, educational level, experience, intensity of personal pain experience and type of clinical unit was related to the nurse's knowledge and attitudes. The researchers explored how these nurses rated the adequacy of their pain management education as well.

The sample for this study came from a large university-affiliated, teaching hospital in an urban area of the Northeast. Data were collected over a four-month period from November 1992 to March 1993. There were nine nursing units in the target population: two surgical intensive care units, two orthopedic, three surgical and two medical units (including one medical oncology unit). Of the 228 RNs targeted, 120 nurses returned the Pain Management: Nurses' Knowledge and Attitudes Survey (NKAS). A twelve-item demographic questionnaire was then collected on all participants who completed this survey.

The third instrument used was the Pain Audit Tool (PAT). This tool was used to gather data regarding the documentation of pain management practices. It is a brief, validated instrument developed after extensive literature review and expert evaluation. The target population of charts to be audited came from ten patient charts from each of

the nine units. Charts were selected if the patient had a current opioid order and had received an opioid for pain in the previous 24 hours. The sample was then formed from these 82 charts which met the criteria, and these charts were audited.

Mean scores from the Nursing Knowledge and Attitudes Survey revealed knowledge deficits as well as inconsistent responses in many areas related to pain management (mean score 62%, range, 41% - 90%). The demographic questionnaire revealed that pain management education was most inadequate regarding nonpharmacological interventions to relieve pain, the anatomy and physiology of pain, and the difference between acute and chronic pain. Participants felt that the education they had received on pain management was lacking. They felt that contact with colleagues and experience was where they currently learned most about pain management. Participants saw hospital orientation and continuing education programs as very poor sources of pain management information. Seventy six percent of the nurses stated that they use a patient self-rating tool to assess pain. However, chart audits using the PAT revealed that 76% of the charts lacked documentation of such. The PAT also revealed that evaluation of pain and response to treatment measures was sporadic and judged mainly by caregivers' subjective and idiosyncratic descriptions. Adjunct medications were ordered with some consistency, but according to this audit, appeared to be underutilized, especially the use of nonsteroidal anti-inflammatory agents (mean use, 1%). Also, 90% of the charts had no documentation of the use of nonpharmacological interventions to relieve pain. The authors listed no limitations. However, participation was voluntary, and only one hospital in the Northeast served as the data collection site.

Also, of the 228 nurses targeted, 120 nurses actually took part in the study. Therefore, these results cannot be generalized to other populations.

Based on this study, the authors have several recommendations. One was to incorporate a patient self-rating tool for pain assessment onto a flow sheet or vital sign sheet for every patient's chart. It was also suggested to include adequate and current pain management information in all hospital orientation programs. Establishing a pain information bulletin on each unit to post current information was another idea. Many other recommendations were included, and the authors suggest that there are several more. The authors conclude by saying that patient satisfaction will increase if patients and family feel that effective pain relief has been achieved. This is a goal for which the nursing profession must strive.

The purpose of the study by Cason, Jones, Brock, Maese, and Milligan (1999) was to describe nurses' knowledge of and attitudes and beliefs about pain and its management. Differences in knowledge based on certain demographic variables were also examined. The Nurses' Knowledge and Attitude Survey (NKAS) and a demographic data sheet were used for data collection. All nurses (n = 671) providing care to adults in a 902-bed teaching hospital in Texas were asked to participate. Of these, 217 returned completed surveys.

Scores on the NKAS ranged from 10% to 97% correct (M = 68%; SD = 15). Only 19% had NKAS scores of 80% or greater. Nurses with ADN, BSN, and MSN degrees scored significantly higher than nurses holding diplomas as the highest degree. Nurses who worked on burn and oncology units had higher NKAS scores than those from other units, including OB/GYN, medicine, and surgery units. There was no statistical

difference in NKAS scores between those who attended unit inservice classes and those who did not. There was also no difference in scores between those who attended continuing education seminars and workshops presented at the hospital and those who did not. Results indicated that staff was least knowledgeable about pharmacology-specific content.

One limitation to this study is that only one third of the staff responded. Also, nurses were told that if they completed and returned the survey, they would be qualified to receive one of four prizes. Therefore, some participants may have not put much effort in answering the questionnaire to the best of their ability if their primary motivation was to qualify to win a prize.

The Nurses' Knowledge and Attitudes Survey Regarding Pain (NKAS), was also the tool used in a study by Brown, Bowman, and Eason (1999), along with a demographics questionnaire created by the investigators. The purpose of this study was to assess nurses' attitudes and knowledge regarding pain management. A random sample of 1,000 RNs in North Carolina stratified by practice setting and clinical practice were asked to participate. Of these, 260 nurses returned surveys, giving a response rate of 26%.

The mean score on the NKAS was 64.58 (SD = 13.07, range = 31.43 to 97.14, median = 63). No statistical differences in scores were found based on clinical specialty, practice setting, age, years of experience, or educational preparation. Also, no significant correlation was found between scores and amount of time spent caring for those in pain, in degree of success felt about caring for patients in pain, or those having personal

experiences with pain. Half or more of the sample answered ten of the 35 questions on the NKAS incorrectly.

The authors analyzed individual items most often answered incorrectly, finding that pharmacologic interventions were a big area of concern. Less than 20% of the sample knew that Phenergan is not a potentiator of opioid analgesics. More than half (54.3%) of the sample did not know the duration of action of Meperidine, and only 21.4% knew its equianalgesic dosages. Less than one-third of the nurses surveyed knew that the oral route is preferred for administration of opioid analgesics to patients with prolonged cancer-related pain. One fourth of the sample knew that respiratory depression occurs in less than 1% of those receiving opioids. Seventy percent did not know that the likelihood of opioid addiction is less than 1% when treating pain. More than half (56.9%) indicated that they believe more than 10% of patients over-report their pain.

Study results are limited by the poor response rate of 26%. Results also cannot be generalized outside the state of North Carolina. One strength of this study is that a random sample was used, and potential participants were further stratified by practice setting and clinical practice. According to Polit and Hungler (1995), the goal of stratified sampling is to obtain a greater degree of representativeness. However, with such a poor response rate, the sample may not actually represent the designated strata.

Addiction

An exaggerated fear of causing addiction by administering narcotics is well documented (McCaffery & Ferrell, 1997b). In a study by Vortherms, Ryan and Ward (1992), only 16.1% of the nurses surveyed knew that the incidence of psychological dependence is less than one patient per 1,000. In another study, McCaffery and Ferrell

survey of nurses in five countries regarding their knowledge of cancer pain management (1995). This study found that 19.2% of Canadian nurses, 28.9% of United States nurses, and 31.9% of Australian nurses had an exaggerated fear of addiction. This is defined by the authors as 25% or more of patients becoming addicted. Japanese and Spanish nurses had an even greater exaggerated fear of addiction, 50.9% and 54.7%, respectively.

McCaffery and Ferrell have done extensive research on pain and its management. They feel that nurses' exaggerated concern about tolerance may be due to the misconception that there is a ceiling on the analgesia of opioids (1997a). They have also found that some nurses choose not to increase opioid doses for fear that they would have nothing to give the patient if the higher dose did not work. The nurses seemed to regard the maximum prescribed dose as the ceiling on analgesia, feeling that a dose higher than this would not be safe, or perhaps not effective (1997a). A study by Furstenberg et al. (1998) supported this concept as well, with 16% of nurses surveyed believing that there was a ceiling dose for morphine.

Fear of tolerance and addiction were found to be major barriers to cancer pain relief in a study by Paice, Toy, and Shott (1998). The purposes of this study were to test the feasibility of the Cancer Total Quality Pain Management (TQPM) Patient Assessment Tool and to identify factors associated with poor pain relief. The goal of this tool was to measure pain management outcomes, expectations, barriers, and satisfaction of cancer patients. A convenience sample of 200 cancer patients was surveyed at a large, mid-western university-based medical center. Both inpatient and outpatient oncology patients were surveyed. Patients were identified from admission rosters. The refusal rate was less

than 1%. A trained data collector interviewed each patient, using the TQPM Tool as a guide.

Factors associated with higher pain intensity included the presence of metastatic disease, being in the inpatient setting, hesitancy in bothering the nurse, and concerns regarding tolerance and addiction. More than half of the patients (55.6%) was concerned about becoming addicted to pain medicine, and 39.4% were concerned about tolerance. In this study, the patients who were concerned about addiction had higher pain intensity scores than those without these concerns. Patients who were concerned about addiction also reported less pain relief, and a reduced satisfaction with pain treatment.

The authors stated that patient education was clearly insufficient, and feel that standardized teaching methods and tools that address both tolerance and addiction must be developed. The major limitation of this study is that the tool used was developed for this study. Further studies using this tool must be done to support its reliability and validity. Also, data were obtained by a trained data collector, but the article does not say if this data collector was one person, or many different people. If there were many different people collecting data, their different styles in interviewing patients may have altered results. A convenience sample was also used, and only one medical center served as the data collection center. Therefore, results cannot be generalized outside of this population.

Summary

Throughout this literature review, all investigators concluded that pain management continues to be a problem. While many factors are seen as contributing to this problem, three factors are repeatedly seen throughout this literature review:

knowledge of pain and pain management, attitudes of nurses regarding pain, and fear of addiction or other side effects from the pain medications. While these deficits are repeatedly seen when studying nurses in general, none of the studies explored whether APNs shared these common misconceptions and deficits. Therefore, this study will contribute to the body of knowledge by exploring whether advanced practice nurses have deficits regarding pain knowledge and attitudes.

Research Questions

1. What is the level of APN's knowledge and attitudes regarding pain?
2. Are there differences among APNs with different educational preparation and their knowledge and attitudes about pain?
3. Are there differences among APNs with different numbers of years of experience as an APN and their knowledge and attitudes about pain?
4. Are there differences among APNs with different clinical specialties regarding their knowledge and attitudes about pain?
5. Does recent attendance at educational sessions on pain management affect APNs level of knowledge and attitudes about pain?

Definitions

Pain: "pain is whatever the experiencing person says it is, existing whenever he says it does." (McCaffery, 1979, p. 11)

Knowledge and attitudes about pain: the level of knowing and understanding the physiological basis of pain and the individual beliefs held regarding its management. This is measured by the APNs' scores on the Nurses Knowledge and Attitudes Survey (Ferrell & McCaffery, written communication, 1998).

Experience: the skills gained by practice, measured by the number of years of working as an APN.

CHAPTER 3

METHODS

Research Design

A descriptive study design was used to examine APN's knowledge and attitudes regarding pain. Information from participants was obtained via the use of a two- part questionnaire.

“The purpose of descriptive studies is to observe, describe, and document aspects of a situation as it naturally occurs” (Polit & Hungler, 1995, p. 178). A non-experimental design is most appropriate in this research because knowledge and attitudes regarding pain are not subject to experimental manipulation. There are several advantages and disadvantages of using a non-experimental design such as this. One advantage of using questionnaires in a descriptive study is that it is an efficient and cost-effective way of collecting a large amount of data in a short time. Non-experimental designs are also strong in realism.

There are also many disadvantages to using a survey design since numerous personal or situational variables other than those being studied may influence one's responses. What time of day as well as where the participant completes the questionnaire may alter responses. If the individual is tired, hungry, rushed, or distracted, questionnaire results may suffer. Since participation is voluntary, results may be biased.

Those who feel strongly regarding pain management may be more likely to participate than their colleagues who may not view it as an important issue.

Sample and Setting

The target population for this study was a convenience sample of APNs in West Michigan. APNs were asked to participate in the study through an introductory letter mailed to them along with the questionnaires. Via their completion of the questionnaires, willingness to participate in the study was assumed.

Potential participants for the study came from a list compiled and utilized by the coordinator of continuing nursing education at a west Michigan university. This list of 240 people is composed of advanced practice nurses or advanced practice nursing students from the west Michigan area. All individuals on this list were mailed survey questionnaires and asked to participate. In order to be included in the study, an individual must currently be practicing as a nurse.

Instruments

A questionnaire developed by B.R. Ferrell and M. McCaffery (1987) entitled Nurses' Knowledge and Attitudes Survey Regarding Pain was used for this study. Written permission for use of the questionnaire was granted by both authors (see Appendix A). The tool was recently revised and tested in a pain education course with greater than 800 subjects. This survey is a 39-item tool designed to measure a nurse's pain knowledge and attitude (Appendix B). All items are equally weighted with the maximum possible score being 39. Correct responses are given a value of one and an incorrect or blank response was given a value of zero. Therefore, a higher score indicates a higher number of correct responses on the survey.

The first 22 questions on the Nurses' Knowledge and Attitudes Survey Regarding Pain are "True" or "False" and respondents are asked to circle the best answer. This is followed by 13 multiple-choice questions. In the last part of the survey, two case studies are presented, with each case study followed by two multiple choice questions.

According to the authors of this survey, they found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes, since many items really measure both. Therefore, data are analyzed in terms of the percentage of complete scores as well as in analyzing individual items (Ferrell & McCaffery, written communication, 1998).

The following data was based on the evaluation of the original version of the tool. Content validity has been established by review of pain experts (Ferrell & McCaffery, written communication, 1998). Its content was derived from current standards of pain management such as the World Health Organization, the American Pain Society, and the Agency for Health Care Policy and Research. Construct validity was established by comparing scores of nurses at numerous expertise levels, such as students, new graduates, oncology nurses, graduate students, and senior pain experts. Test-retest reliability was established ($r > .80$) by repeat testing in a continuing education class involving 60 staff nurses. Internal consistency reliability was established as measured by Cronbach's alpha was $r > .70$, with items reflecting both knowledge and attitude domains (Ferrell & McCaffery, written communication, 1998).

Demographic variables included in this study were: age, gender, clinical role, primary clinical focus, basic nursing education, education preparation for APN status, number of years as a APN, number of years as a nurse, estimated percent of patients seen

primarily for pain management, attendance at an educational session on pain within the last year, and practice setting. Clinical roles included on the demographic questionnaire (Appendix C) included: NP, CNS, nurse educator, nurse researcher, CRNA, CNM, and other. Primary clinical focuses recognized included family, pediatrics, neonatal, adult, geriatric, women, mental health and other. The three basic nursing degrees were ADN, diploma, and BSN. Educational preparation for advanced practice status included a certificate program, masters in nursing, current APN student, and other. Clinical settings included acute, primary care, long term care, and other.

Procedure

Letters were mailed to all people on the advanced practice nursing list in winter of 2000. This list was obtained from the coordinator of continuing education at a west Michigan university. Included was the Nurses' Knowledge and Attitudes Survey Regarding Pain, the demographic questionnaire, and a cover letter. The cover letter contained a short introduction about the researcher and a phone number to call for any questions or concerns (Appendix D). Also included was a self addressed stamped envelope to return completed questionnaires to the researcher within three weeks.

Human Subjects Consideration

Before data collection began, approval was obtained from the Grand Valley State University Human Research Review Committee (Appendix E). There were no potential risks for the participants in the study. All participants remained anonymous. Participation in the study was assumed by the completion and return of the questionnaire.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

The primary purpose of this study was to explore advanced practice nurses' knowledge and attitudes regarding pain and pain management. Data were collected using a two-part questionnaire. The statistical Package for the Social Sciences (SPSS) was used to analyze the data in this study. The level of significance in this study was a p value of .05.

Two hundred forty surveys were mailed to the target population. Of those, 114 were returned, giving an initial response rate of 47.5%. Thirty-two surveys were returned unopened from the post-office stating they were not able to deliver them as addressed. Four surveys were returned blank with notes attached stating that they had retired, and therefore could not participate in the study. This left 78 usable surveys, giving a total response rate of 32.5%. Since 32 surveys were returned unopened, 208 nurses had the opportunity to participate, giving an actual response rate of 37.5%.

Characteristics of Subjects

Seventy-eight nurses participated in the study. Seventy-seven of these participants were female. The age of participants ranged from 25 to 68 with a mean age of 45.69 (SD = 8.75). More than half of those surveyed had greater than 23 years of experience as a Registered Nurse, with a mean of 23.53, and a range of 3 to 47 years (SD = 9.27).

Thirty-two percent of respondents stated that they never see patients primarily for pain management. Thirty-seven percent said that one to five percent of their patients are seen for pain management. Thirty-one percent of the respondents stated that greater than six percent of their patients are seen mainly for pain.

The majority of respondents practiced in primary care. Those who worked in acute care and those who did not fit into a defined category followed. The smallest group was those who practiced in a long term setting (See Table 1).

Table 1

Description of Sample by Practice Setting (N = 78)

	frequency	percent
acute	14	17.9
long term	3	3.8
primary care	47	60.3
other	14	17.9

Participants were asked to indicate their primary clinical focus. The largest number of respondents stated that their focus was family practice, followed by adult and women's health. Only two people stated that they had a mental health focus (See Table 2).

Table 2

Description of Sample by Primary Clinical Focus (N = 78)

	frequency	percent
family	25	32.1
neonatal	3	3.8
geriatric	5	6.4
mental health	2	2.6
pediatrics	11	14.1
adult	14	17.9
women	13	16.7
other	5	6.4

Research Question Number One

“What is the level of APN’s knowledge and attitudes regarding pain?” The mean score on the NKAS, based on a possible score of 0-39 was 29.24 (SD = 4.03). Total scores ranged from 22 to 38. The mean percent score was 74.00 (SD = 10.33). Percent scores ranged from 56.41 to 97.44. Of those who answered all the survey questions, 35.8% scored less than 70%. Approximately eleven percent of respondents scored higher than 90%.

Research Question Number Two

“Are there differences among APNs with different educational preparation and their knowledge and attitudes about pain?” The data was analyzed using t-Tests for

independent samples to determine if there were differences among APNs with different educational preparations and their scores on the NKAS. For this test, basic education was collapsed into two groups. Group one consisted of those who originally received their ADN or diploma. Group two had their BSN degree. There was no significant differences found in NKAS scores between the two groups. Group one ($n = 24$) had a mean score of 30.08 ($SD = 4.48$), while group two ($n = 28$) had a mean score of 28.64 ($SD = 3.57$).

There was also no statistical significant difference ($t = 1.29$, $p = .20$) in scores between those who had their masters or those who received a Certificate degree for advanced practice nursing. Those who completed a certificate program ($n = 10$) had a mean score of 29.9 ($SD = 5.78$), while those who had a MSN degree ($n = 40$) had a mean score of 28.93 ($SD = 3.61$).

Research Question Number Three

“Are there differences among APNS with different numbers of years of experience as an APN and their knowledge and attitudes about pain?” The mean number of years respondents had as APNs ($n = 78$) was 9.17 ($SD = 7.25$) with a range from 0 to 25 years. Thirty four (43.6%) had five or less years of experience, 26.9% had six to fourteen years, and 29.5% had greater than fourteen years experience as an APN. An ANOVA was run to see if there were any differences in NKAS scores between these three groups. Statistically, no significant differences were found ($f(2,50) = 1.83$, $p = .17$).

Research Question Number Four

“Are there differences among APNs with different clinical specialties regarding their knowledge and attitudes about pain?” Subjects were asked what their primary clinical role was, and were given the choices of NP, CNS, Nurse Educator, Nurse Researcher, CNM, CRNA, and Other. Of the 78 respondents, 89.7% were NPs, 5.1% were CNSs, 1.3% were nurse educators, and 3.8% said other. None of the respondents said they were nurse researchers or Certified Nurse Midwives. Because of the overwhelming percent of respondents who were nurse practitioners, it was not feasible to examine differences between groups.

Research Question Number Five

“Does recent attendance at educational sessions on pain management affect APNs level of knowledge and attitudes about pain?” The mean number of educational sessions attended by all within the last year was .69 (SD = .93, N = 78). The individual range was zero to five classes. Results were collapsed into three groups: those who had not attended any educational sessions (n = 26), those who attended one class (n = 18), and those who had attended two or more (n = 9). There was no significant difference found in NKAS scores ($F(2,50) = .95, p = .39$) when an ANOVA was run between the three groups.

Other Findings of Interest

Ferrell and McCaffery recommended that data should be examined to see those items with the highest and lowest number of correct responses (written communication, 1998). The researcher of this study chose to examine those items answered correctly by 90% or more, or 50% or less, or the sample (See Table 3).

Table 3

Item-by-Item Analysis (N = 78)

Items of best results		Items of worst results	
Item	Correct	Item	Correct
32	100%	36B	48.7%
20	98.7%	35	47.4%
5	97.4%	26	44.9%
16	97.4%	25	42.3%
17	97.4%	23	34.6%
18	97.4%	9	30.8%
33	97.4%	12	26.9%
1	96.2%	28	25.6%
3	96.2%		
19	94.9%		
15	93.6%		
2	91.0%		

All respondents correctly answered question 32 by stating that the patient is the most accurate judge of the intensity of the patient's pain. Despite this, only 66.2% also answered question 36 correct. This question presented a case study in which a twenty-five year old male rated his pain an eight out of ten, one day after abdominal surgery. His vital signs were stable, and he was talking and joking with his visitor.

Respondents were asked to circle the number that represented their assessment of the patient's pain, and could choose zero (no pain) through ten (worst pain), with the correct answer being eight. Although respondents had stated in question 32 that patients were the best judges of their pain, many did not answer question thirty-six as if this is what they believed.

In question 32- B, respondents were asked how much medication they would give in the above case, with analgesia orders stating the patient could have morphine intravenously 1-3 mg every one-hour as needed. The patient had received 2 mg of morphine two hours ago, and continued to rate his pain from a six to an eight. He did not exhibit respiratory depression, sedation, or other untoward side effects. Only 48.7% of respondents correctly stated that they would give the patient a 3- mg dose of morphine now.

Question 28 had the lowest number of correct responses (25.6%). This question asked what the incidence of respiratory depression would be in a patient with chronic cancer pain who was receiving morphine 250 mg per hour intravenously for three hours. Most did not know that the incidence of respiratory depression in this situation would be less than 1%.

Almost 73% falsely believed that Phenergan was a reliable potentiator of opioid analgesics in question twelve. That the oral route of administration of opioid analgesics is recommended for patients with prolonged cancer pain was known by 34.6% of respondents. Just over 42% of respondents knew that morphine is the drug of choice for the treatment of prolonged moderate to severe cancer pain.

Drug equivalencies also posed a problem for most of the respondents, with only 30.8% knowing that Aspirin 650 mg orally is approximately equal in analgesic effect to Demerol 50 mg orally in question nine. In question twenty-six, 55.1% of respondents did not know that 30 mg of oral morphine is equivalent to 10 mg of morphine intravenously.

CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

Discussion of Findings

The findings in this study, which measured advanced practice nurses' knowledge and attitudes regarding pain and pain management, suggest that a knowledge deficit does exist. This is consistent with previous research findings (Brown et al. 1999; Brunier et al. 1995; Cason et al. 1999; and Clarke, et. al. 1996). Participants in this study had significantly higher NKAS scores than previous studies. The mean percent score of this study was 74.00, compared to 64.58 (Brown et al.), 41 (Brunier et al.), 68 (Cason et al.), and 62 (Clarke, et. al.). According to Brown et al., no predetermined acceptable score was noted by the original developers of the NKAS tool. However, 80% or higher is what is identified as being acceptable by most practice standards (Brown et al.).

The discrepancy in NKAS scores can most likely be attributed to the educational level of the subjects studied. Subjects for this study were all APNs or APN students, while the other studies surveyed nurses of all levels of education. In the study by Clarke et al. (1996), those with a masters degree (n = 10) had a mean score of 74%, which compares to this study. Those with a MSN (n = 7) had a mean score of 78% in the study by Cason et al. (1999). When comparing survey results, it appears that education does make a difference. However, scores are not at the level they should be, indicating a knowledge deficit continues to exist.

There were no significant differences found in education and NKAS scores in this study. This is inconsistent with previous research, which supported the idea that those with higher education had higher NKAS scores (Brunier et al. 1995; Cason et al. 1999; & Clarke, et al. 1996). Again, this could be explained by the differences in current education of the subjects surveyed. This study, like the study by Cason, et al. (1999) found no differences in NKAS scores in those who did and did not attend recent pain inservices. However, the study by Brunier et al. (1995) found that those who recently attended pain inservices had significantly higher scores.

The findings of this study are consistent with previous research (Brown, et al. 1999; & Cason et al. 1999), in that it found that pharmacologic interventions are a major area of concern. For example, in this study, almost 73% falsely believed that Phenergan was a reliable potentiator of opioid analgesics. In the study by Brown et al., more than 80% got this question wrong. Only one fifth of the sample in the study by Brown et al. knew equianalgesic doses of meperidine, and more than half did not know its duration of action. In this study, 68% of respondents did not know equianalgesic doses of meperidine, while almost 40% did not know its duration of action.

Dorothea Orem's (1995) Self-Care Deficit Theory of Nursing provided the theoretical framework for this study. This framework adequately addresses the concepts of ineffective pain management. The individual with pain is introduced into the health care system when he or she has a self-care deficit secondary to the inability to manage his or her own care. These concepts directly relate to Orem's first two theories. The nurse then needs an adequate knowledge of pain management to provide effective pain control for the patient. This knowledge base partially comes from the nurse's previous

experiences and education. The nurse's attitude regarding pain also plays a role in shaping his or her ability to provide adequate pain relief. All of these factors are explained in Orem's Theory under the concepts of nursing agency and nurse personal factors. Because the above listed concepts of Orem's Theory so closely relate to the phenomenon of inadequate pain control, the author feels that Orem's Theory accurately describes, explains and predicts what is occurring in the phenomenon of pain and its management.

Using Orem's Theory (1995) as a framework, the nurse needs a good knowledge of pain to meet the needs of his or her patients. Therefore, with increased knowledge gained by continuing education, the nurse's ability to offer pain management should be increased. In this study, advanced education did not correlate with increased NKAS scores. However, this is contrary to previous research findings (Brunier et al. 1995; Cason et al. 1999; & Clarke et al. 1996) which found that those with more advanced education did significantly better on the survey.

Limitations

According to Polit and Hungler (1995), coefficient scores of .70 are sufficient for making group comparisons. In this study, an alpha score of .68 was obtained, which is slightly lower than recommended. This is most likely due to the smaller sample size. According to Ferrell and McCaffery (written communication, 1998), reliability of the NKAS has been established as measured by an alpha score of greater than .70. In a study by Cason et al. (1999), reliability on the NKAS was .75.

Using a self-report survey to collect data has several limitations. Those who have a stronger interest, and perhaps a greater knowledge in pain, may have been more likely

to participate in the study. Also, participants may have given answers they felt were more socially acceptable than ones that they really believed. With the self-report method, participants had the opportunity to look answers up or ask other people if they desired.

One threat to internal validity was that participation was voluntary. A convenience sample was also used. The target population came from a list of advanced practice nurses or APN students from the coordinator of continuing nursing education at a West Michigan university. Therefore, a majority of those on this list were graduates or affiliated with this one university. Because of this, subjects are not representative of APNs in general.

Another limitation to this study is the relatively low final response rate of 32.5%. However, 32 of the 240 surveys were unable to be delivered. The response rate of those who received the surveys was 37.5%. Also, the sample size of 78 was moderate, but a larger sample size would have been better.

Application to Practice

This study is consistent with previous research findings, which indicate that inadequate knowledge and attitudes regarding pain and pain management continue to exist. Although this study did not find a significant difference in NKAS scores among those with different educational backgrounds, there was a significant difference in scores when compared to previous studies (Brunier et al. 1995; Cason et al. 1999; & Clarke et al. 1996). The NKAS scores of this study were much higher than scores found in previous studies. One likely reason for this is that participants in this study were primarily APNs, while all nurses were included in the other studies.

In view of this, it is reasonable to say that advanced education does make a difference in the knowledge and attitudes of nurses regarding pain and its management. Therefore, it is recommended that continuing education on pain, especially the pharmacological aspects, be done on a regular basis. Another suggestion is to employ more APNs, both in the inpatient and outpatient settings. They can share their knowledge regarding pain to their colleagues, and can serve as a reference as needed for other staff members.

Virtually every area of nursing care deals with pain management at some point, yet lack of pain management knowledge continues to exist. This study suggests that formal education on pain and pain management needs to be increased. More emphasis needs to be placed on pain management in all types of nursing programs. Employers of health care professionals should also focus more on pain management education. This should be included at orientation, and reviewed annually or sooner if needed. New research on pain should be available to staff. This could be done via a newsletter, or a committed bulletin board at the facility. AHCPR guidelines for the management of acute pain and cancer pain should be distributed to all health care professionals where applicable. Not only should they be distributed, but time should be set aside to discuss the guidelines. Ways to incorporate guidelines into practice must then be developed.

Just as a certain type of bacterial infection needs to be treated with a certain antibiotic, specific types of pain need to be treated in a certain way for optimal success. The same amount of time and thought APNS put into learning and treating infections should be put into learning and treating pain. If an individual APN realizes that his or her

knowledge of pain is lacking, he or she must take it upon him or herself to correct this deficit. In refusing to do so, optimal care cannot be offered to patients.

Journal clubs can be a very effective means of learning. This enables APNS to share concerns and success stories with each other. It can also increase awareness that pain management continues to be a challenge, a challenge that needs to be taken seriously.

Reading articles and attending conferences are other good ways to enhance knowledge. However, having the knowledge on how to manage pain effectively is not enough. APNS need to bridge the gap between pain management research and practice. This means sharing the knowledge obtained from reading and attending conferences with colleagues. Knowledge needs to be put into action.

Most importantly, all health care professionals need to realize that patients are the best judges of their pain, and treatment should be based on this rather than on the amount of pain the health care provider feels the patient is having. One way to be more objective about pain is with the use of pain scales. Pain scales can be used in the hospitals as well as in primary care offices. This could be especially beneficial when following a patient for chronic pain. If a patient states his pain is a two on a zero to ten scale, with zero being no pain and ten being the worst pain, and last month his pain was a six, there is objective data that indicates his pain is improving. On the other hand, if the patient is rating his pain higher than last month, therapy may need to be altered.

Further Research

While the knowledge and attitudes of nurses regarding pain and pain management has been studied extensively, little research has been done on the knowledge and attitudes

of APNs. Therefore, more research studies need to be done to explore whether APNs share the same deficits regarding pain as nurses in general have demonstrated.

Replicating this study with APNs from other areas outside West Michigan is also suggested.

It also may be beneficial to modify the Nurses' Knowledge and Attitudes Survey (NKAS) Regarding Pain when APNs are the subjects under consideration. Some questions on the NKAS assume that the nurse is following tasks ordered by a physician, which is usually not the case for APNs. For example, questions 36-B and 37-B involve case studies in which the nurse is asked how much morphine he or she would give based on orders received from the physician, stating the patient could have morphine 1-3 mg every one hour as needed.

While the NKAS tests for general knowledge regarding pain and pain management, many questions are specific to cancer pain. As suggested by Clarke et al. (1996), it may be beneficial in the future to modify the survey by deleting those questions which are specific to cancer pain. When the concept under investigation is general pain management, survey questions should be more reflective of this.

Summary

This study explored the knowledge and attitudes of advanced practice nurses regarding pain and pain management. Scores on the Nurses' Knowledge and Attitudes Survey suggest that deficits continue to exist. No differences in scores were found among those with different educational preparations, clinical specialties, years of experience, or recent attendance at pain management inservices. However, when comparing scores of this survey which studied APNs, and scores of previous studies

which looked at nurses with varying degrees, education does seem to have a positive correlation with NKAS scores. Based on this, recommendations for continuing education were suggested. Patients deserve to live, and even to die in comfort. Advanced practice nurses must be able to help their patients achieve this goal. Equipped with the proper knowledge and attitudes, APNs have the necessary tools to do just this.

APPENDICES

APPENDIX A



NATIONAL MEDICAL CENTER AND
BECKMAN RESEARCH INSTITUTE

Dear Colleague:

We have had many inquiries regarding the need for an instrument to measure nurses' knowledge and attitudes regarding pain. Therefore, we have prepared our instrument for distribution to others. The tool can be used to assess nurses in your setting and as an evaluation measure following educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool was recently revised and tested in a pain education course with greater than 800 subjects. Psychometric analysis will be conducted on this data using the updated version.

The following data was based on evaluation of the previous version.

- Regarding issues of reliability and validity: This tool has been developed over several years. Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the Agency for Health Care Policy and Research. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established ($r > .80$) by repeat testing in a continuing education class of staff nurses ($N = 60$). Internal consistency reliability was established ($\alpha > .70$) with items reflecting both knowledge and attitude domains.
- Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measures both knowledge and attitude issues. Therefore, we have found the most benefit to be gained from analyzing the data in terms of the percentage of complete scores as well as in analyzing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below.

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

Sincerely,



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



Margo McCaffery, RN, MS, FAAN
Lecturer and Consultant

2/98

APPENDIX B

Nurses' Knowledge and Attitudes Survey Regarding Pain

True/False - Circle the correct answer.

- T** **F** 1. **Observable changes in vital signs must be relied upon to verify a patient's statement that he has severe pain.**
- T** **F** 2. **Because of an underdeveloped neurological system, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences.**
- T** **F** 3. **If the patient can be distracted from his pain this usually means that he does NOT have high pain intensity.**
- T** **F** 4. **Patients may sleep in spite of severe pain.**
- T** **F** 5. **Comparable stimuli in different people produce the same intensity of pain.**
- T** **F** 6. **Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for bone pain caused by metastases.**
- T** **F** 7. **Non-drug interventions (e.g. heat, music, imagery, etc.) are very effective for mild-moderate pain control but are rarely helpful for more severe pain.**
- T** **F** 8. **Respiratory depression rarely occurs in patients who have been receiving opioids over a period of months.**
- T** **F** 9. **Aspirin 650 mg PO is approximately equal in analgesic effect to meperidine (Demerol) 50 mg PO.**
- T** **F** 10. **The World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs (e.g. combining an opioid with a non-steroidal agent).**
- T** **F** 11. **The usual duration of action of meperidine (Demerol) IM is 4-5 hours.**

- T F 12. Research shows that promethazine (Phenergan) is a reliable potentiator of opioid analgesics.**
- T F 13. Patients with a history of substance abuse should not be given opioids for pain because they are at high risk for repeated addiction.**
- T F 14. Beyond a certain dosage of morphine increases in dosage will NOT increase pain relief.**
- T F 15. Elderly patients cannot tolerate opioids for pain relief.**
- T F 16. The patient with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.**
- T F 17. Children less than 11 years cannot report pain with reliability and therefore, the nurse should rely on the parents' assessment of the child's pain intensity.**
- T F 18. Based on one's religious beliefs a patient may think that pain and suffering is necessary.**
- T F 19. After the initial recommended dose of opioid analgesic, subsequent doses are adjusted in accordance with the individual patient's response.**
- T F 20. The patient should be advised to use non-drug techniques alone rather than concurrently with pain medications.**
- T F 21. Giving patients sterile water by injection (placebo) is often a useful test to determine if the pain is real.**
- T F 22. In order to be effective, heat and cold should only be applied to the painful area.**

Multiple Choice - Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics to patients with prolonged cancer-related pain is
- a. intravenous
 - b. intramuscular
 - c. subcutaneous
 - d. oral
 - e. rectal
 - f. I don't know
24. The recommended route of administration of opioid analgesics to patients with brief, severe pain of sudden onset, e.g. trauma or postoperative pain, is
- a. intravenous
 - b. intramuscular
 - c. subcutaneous
 - d. oral
 - e. rectal
 - f. I don't know
25. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
- a. Brompton's cocktail
 - b. codeine
 - c. morphine
 - d. meperidine (Demerol)
 - e. methadone
 - f. I don't know
26. Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg of oral morphine given q4 hours
- a. Morphine 5 mg IV
 - b. Morphine 10 mg IV
 - c. Morphine 30 mg IV
 - d. Morphine 60 mg IV

27. Analgesics for post-operative pain should initially be given
- a. around the clock on a fixed schedule
 - b. only when the patient asks for the medication
 - c. only when the nurse determines that the patient has moderate or greater discomfort
28. A patient with chronic cancer pain has been receiving daily opioid analgesics for 2 months. The doses increased during this time period. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously for 3 hours. The likelihood of the patient developing clinically significant respiratory depression is
- a. less than 1%
 - b. 1-10%
 - c. 11-20%
 - d. 21-40%
 - e. > 41%
29. Analgesia for chronic cancer pain should be given
- a. around the clock on a fixed schedule
 - b. only when the patient asks for the medication
 - c. only when the nurse determines that the patient has moderate or greater discomfort
30. The most likely explanation for why a patient with pain would request increased doses of pain medication is
- a. The patient is experiencing increased pain.
 - b. The patient is experiencing increased anxiety or depression.
 - c. The patient is requesting more staff attention.
 - d. The patient's requests are related to addiction.
31. Which of the following drugs are useful for treatment of cancer pain?
- a. Ibuprophen (Motrin)
 - b. Hydormorphone (Dilaudid)
 - c. Amitriptyline (Elavil)
 - d. All of the above

32. The most accurate judge of the intensity of the patient's pain is
- a. the treating physician
 - b. the patient's primary nurse
 - c. the patient
 - d. the pharmacist
 - e. the patient's spouse or family
33. Which of the following describes the best approach for cultural considerations in caring for patients in pain:
- a. Because of the diverse and mixed cultures in the United States, there are no longer cultural influences on the pain experience.
 - b. Nurses should use knowledge that has defined clearly the influence of pain on culture (e.g. Asian patients are generally stoic, Italians are expressive and exaggerate their pain, etc.
 - c. Patients should be individually assessed to determine cultural influences on pain.
34. What do you think is the percentage of patients who over report the amount of pain they have? **Circle the correct answer.**
- 0 10 20 30 40 50 60 70 80 90 100%
35. Narcotic/opioid addiction is defined as psychological dependence accompanied by overwhelming concern with obtaining and using narcotics for psychic effect, not for medical reasons. It may occur with or without the physiological changes of tolerance to analgesia and physical dependence (withdrawal).
- Using this definition, how likely is it that opioid addiction will occur as a result if treating pain with opioid analgesics? **Circle the number closest to what you consider the correct answer.**
- < 1% 5% 25% 50% 75% 100%

Case Studies

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

Directions: Please select one answer for each question.

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

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

0 1 2 3 4 5 6 7 8 9 10

No pain/discomfort

Worst
pain/discomfort

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

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

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

0 1 2 3 4 5 6 7 8 9 10

No pain/discomfort

Worst
pain/discomfort

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

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

APPENDIX C

Demographic Questionnaire

Please check the one answer that best describes you.

1. What is your age in years? _____

2. Are you 1. male _____ 2. female _____

3. What is your clinical role?

- | | |
|------------------------------------|----------------|
| _____ 1. Nurse Practitioner | _____ 5. CNM |
| _____ 2. Clinical Nurse Specialist | _____ 6. CRNA |
| _____ 3. Nurse Educator | _____ 7. Other |
| _____ 4. Nurse Researcher | |

2. What is your primary clinical focus?

- | | |
|------------------------|---------------------|
| _____ 1. family | _____ 5. pediatrics |
| _____ 2. neonatal | _____ 6. adult |
| _____ 3. geriatric | _____ 7. women |
| _____ 4. mental health | _____ 8. other |

3. What is your basic nursing education?

- | | |
|------------------|--------------|
| _____ 1. ADN | _____ 3. BSN |
| _____ 2. Diploma | |

Code # _____

4. What type of education prepared you/is preparing you to receive your advanced practice status?

- _____ 1. Certificate program _____ 3. Current APN Student
_____ 2. Masters in Nursing

5. How many years have you been an Advanced Practice Nurse? _____

6. How many years have you been a nurse? _____

7. What is the estimated percent of patients you see primarily for pain management? _____

8. How many educational sessions on pain have you attended within the last year?

9. In what setting do you practice?

- _____ 1. acute 3. _____ primary care
_____ 2. long term 4. _____ other

APPENDIX D

Joann E. Baar RN, BSN
2937 Meyer Ave.
Wyoming, MI 49509

Dear Colleague:

The issue of pain management is vital to us as nurses. While there are numerous studies examining nurses and pain management, there is little research that focuses on advanced practice nurses. I am currently conducting a study to identify APN's knowledge and attitudes regarding pain and pain management. This study is being conducted as part of my graduate work at Grand Valley State University, Kirkhof School of Nursing.

Enclosed you will find a short questionnaire which will take approximately 20 minutes to complete. Please do not place your name on the questionnaire so your responses will be anonymous. All data will be reported in a statistical format only so that no individual will be recognizable by the answers given. By completing this questionnaire and returning it to me, you are signifying your consent to participate in this study. Please return your completed questionnaire in the attached self-addressed, stamped envelope within 3 weeks if possible.

Participation is optional. There are no personal benefits or risks to participating in this study, but there could be future benefits to patients since this study will provide information that could lead to better pain management. If you are interested in research results or if you have any questions, feel free to contact me at (616) 531-2144, or Grand Valley State University's Human Subjects Committee Chairperson, Paul Huizenga at (616) 895-2472. Thank you for your support. Your assistance in this project is greatly appreciated.

Sincerely,


Joann E. Baar, RN, BSN

APPENDIX E



**GRAND VALLEY
STATE UNIVERSITY**

I CAMPUS DRIVE • ALLENDALE, MICHIGAN 49401-9403 • 616/895-6611

January 12, 2000

Joann Baar
2937 Meyer Ave.
Wyoming, MI 49509

Dear Joann:

Your proposed project entitled **Advanced Practice Nurses Knowledge and Attitudes on Pain and Pain Management** has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,

A black rectangular box redacting the signature of Paul A. Huizenga.

Paul A. Huizenga, Chair
Human Research Review Committee

LIST OF REFERENCES

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