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Evaluating Knowledge and Attitudes of Undergraduate Nursing Students Regarding Pain Management

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Evaluating Knowledge and Attitudes of Undergraduate Nursing Students
Regarding Pain Management

by

Jessica Latchman

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master in Science
College of Nursing
University of South Florida

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Dedication

This is dedicated to all the people in my life who were monumental in making this dream come through for me. To my family, who have always encouraged me to be the best that I can be. To my sister Dru, who had more faith in me than I had in myself when I went into nursing. To my fiancé Prem, who has always been my rock whenever I needed him. My love and deepest appreciation to all of you.

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ABSTRACT

Unmanaged pain is a widespread problem that many cancer patients face on a daily basis. Cancer pain, which can either be caused by complications due to the disease process itself or from treatment measures used, has devastating effects on the quality of life for these patients and their caregivers. This study examined the knowledge and attitudes of undergraduate students regarding pain management.

The sample in this study consisted of 41 undergraduate students at the University of South Florida College of Nursing. The students sampled were predominantly white, (n=30), female (n=37), seniors (n=41) taking Leadership and Management in Nursing. After volunteering to participate, students completed the demographic data form, the nurses' attitude survey and the Pain Management Principles Assessment Tool.

The mean age of students was 22.46 years, with a range from 18 to 42 years. One student indicated that he or she had a bachelor's degree in another field with the majority of students being first time college students (n=31).

The results of the study showed that a mean score of 19.4 (SD= 3.0) out of a possible 31(63%) was achieved on the knowledge of the students regarding pain management while, a mean score of 17.0 (SD=2.6) out of 25 (68%) was achieved on the Nurses' Attitude Survey. The data showed that nursing students demonstrated inadequate knowledge regarding pain management, and had mixed attitudes towards pain management. However, a weak to moderate relationship between knowledge and attitudes was found ($r=0.33$, $p=0.038$) due to the fact that students lacked the fundamental knowledge, and understanding as to why they were practicing certain pain management skills.

Although the sample size was relatively small and not ethnically or demographically diverse, the response from the sample was sufficient in providing statistically meaningful data for this study. The results were seen to be consistent with previous studies that show poor management of pain. The findings of this study suggest the need for the development of specific strategies to effectively teach students about pain management, as well as integrate pain management as a major component of the undergraduate-nursing curriculum to improve patient outcomes.

Chapter I

Introduction

Unmanaged pain has become a focal area of concern for many healthcare professionals in the oncology setting, as millions of cancer patients suffer from pain caused by disease, surgery, or trauma on an everyday basis (Deandrea, Montanari, Moja & Apolone, 2008). This focus has led to tremendous advancements in evidence-based guidelines, and research regarding the treatment and management of pain, within acutely and chronically ill cancer patients (National Comprehensive Cancer Network, 2010). Despite these recent improvements, the number of cancer patients suffering from unrelieved pain has been growing at an exponential rate (American Cancer Society, 2009). In fact, the issue has become so problematic that pain has now earned the title of the fifth vital sign (American Academy of Pain Management, n.d.).

In the oncology population, unmanaged pain has been identified as a major barrier in the overall care of the oncology patient. It is estimated that more than 75% of patients with cancer will at some point during the course of their disease experience breakthrough pain (American Pain Foundation, 2010). Cancer pain, which can be caused by numerous complications, has devastating effects on the quality of life for these patients, and their caregivers as well

(American Cancer Society, 2009). Therefore, in 1992, the Ad Hoc Committee on cancer pain of the American Society of Clinical Oncology (ASCO) stated that 70% of patients diagnosed with cancer would, at some point in the course of their disease, experience considerable pain, with more than 80% receiving ineffective treatment. Therefore, the committee developed necessary and much needed guidelines for better pain management in the oncology population by fostering better pain assessment and treatment skills as well as formal instruction and education of healthcare professionals regarding pain management (ASCO, 1992). In 2001, the Agency for Healthcare Research and Quality also updated their 1994 recommendations on the management of cancer pain. This was also aimed at developing better cancer pain management skills, owing to the extensive view that many cancer patients were still given ineffective pain relief measures. However, although all these guidelines exist for effectively managing the pain of cancer patients, unmanaged pain is still a widespread problem.

Problem Statement

Pain literally affects all levels of psychophysiological capabilities and influences almost every aspect of a patients' life, including relationships with others, activities of daily living, as well as their job performance abilities. Pain accounts for an estimated cost of 90 billion dollars in economic resources as a result of disability, lost time from work, and reduced productivity (Turks, 2006). According to the American Nurses Association (ANA), nurses are required to maintain current knowledge in pain assessment and management (ANA, 2001).

Therefore, if pain is the most common reason for seeking medical intervention, why then is it the most inadequately managed? According to many experts in the field, one reason that patients continue to needlessly suffer from improper pain management is the lack of expertise of nurses and physicians (Lasch, Greenhill, Wilkes, Carr, Lee, & Blanchard, 2002). Many health care professionals lack the proper knowledge and attitude for effectively managing pain, leaving many patients to endure a reduced quality of life (American Cancer Society, 2009). This lack of knowledge begins in basic educational programs.

Synthesis of the literature over the past several years has shown that the medical, as well as the nursing curriculum itself, lacks the educational content to prepare students to effectively address the pain needs of their patients. This issue may be due to the fact that nursing faculty themselves are inadequately prepared to educate students on pain management, either owing to the fact that they were not knowledgeable about pain management, or failed to keep abreast with current evidence-based practices (Ferrell, McGuire, & Donovan, 1993). In addition to this, since many of these inadequately prepared nursing students later became nurses, this educational flaw may have influenced nurses' negative attitude towards patients seeking pain treatment. For instance, many nurses had insufficient knowledge about basic mechanisms of action of medications, dosages and uses of certain pharmaceuticals, in addition to other pain management interventions (Lasch, et al., 2002).

With regard to the undergraduate-nursing curriculum, few studies have focused on baccalaureate-nursing students' abilities and attitudes in effectively managing the pain of their patients (Diekmann & Wasseem, 1991). There has also been a vast lack of knowledge among these students, due to a deficiency in information provided to them in their curriculum. This curriculum deficiency may be a result of insufficient instruction by faculty due to their own lack of knowledge on this subject matter, as well as outdated educational material in textbooks (Ferrell et al., 1993). The combined effects of these play a huge role in hindering successful pain management among baccalaureate nursing students. Therefore, the purpose of this study was to examine the knowledge and attitudes of undergraduate students regarding pain management, since there are few studies that focus on this issue, and many students still lack the ability to effectively manage the pain of their patients.

Assumptions

Two assumptions made in this study are:

1. Pain is not well managed in the oncology patient population.
2. There will be an improvement in pain management by educating nursing students.

Research Questions

The research questions that are addressed in this study are:

1. What is the level of knowledge of pain management possessed by nursing students at the baccalaureate level?

2. What are nursing students' attitudes toward pain management in the oncology patient?
3. Is there a significant relationship between knowledge and attitudes among baccalaureate students related to pain management in cancer patients?

Definition of Terms

For the purpose of this study the following terms are defined:

1. Pain Management: According to the American Pain Society Quality of Care Task Force, (2005), pain management encompasses all interventions used to understand and ease pain, and alleviate the origin of the pain.
2. Pain: According to the American Academy of Pain Management (n.d), pain is defined as a neural transmission and sensory transduction, which is a complex mix of emotions, culture, experience, spirit and sensation. In other words, pain is a complex psychological and physical occurrence that is unique to each patient experiencing it.
3. Knowledge: Comprehension of facts, ideas, and information, gained through experience, instruction, and learning for a distinct use (Merriam-Webster Online Dictionary, 2009).
4. Pain attitudes: A persisting set of beliefs and values that affect how one responds or reacts when pain is involved (McMillan, Tittle, Hagan, Laughlin, & Tabler, 2000).

Significance of Study

The intent of this study was to provide insight into the knowledge and attitudes toward pain management among baccalaureate nursing students. Because, nurses spend most of their time at the patient's bedside as compared to other healthcare professionals, they perform an instrumental role in the assessment and evaluation of pain. Therefore, nurses must become the primary agents of change for better pain management outcomes within patient populations. Consequently, if nurses are insufficiently educated and ill prepared to effectively relieve pain, the patient ultimately suffers. For this reason, student nurses must be well educated and knowledgeable about pain and pain management to improve patient outcomes and collaborate efficiently with other healthcare professionals to successfully manage pain.

Chapter II

Review of Literature

The purpose of this chapter is to present the review of the relevant literature. The literature identifies numerous impediments to effective pain management and, therefore, demonstrates their impact on patient outcomes. Barriers analyzed include, the lack of knowledge, as well as, the negative attitudes of nurses, nursing faculty and baccalaureate nursing students.

Knowledge About Pain Management

Insufficient knowledge by nurses, nursing students, and nursing educators has emerged as the most significant barrier to effective pain management (Chiu, Trinca, Lim, & Tuazon, 2003). In fact, the lack of knowledge reported in studies from the early 1990's is still clearly evident in more recent literature as well. For instance, based on the criterion for minimally acceptable scores in many pain management questionnaires, there were deficiencies noted in students' responses in categories such as physiology of pain, assessment parameters, differentiating addiction from tolerance and physical dependence (Goodrich, 2006). Rather than simply asking patients for pain intensity ratings, nurses should obtain a more thorough assessment of pain. In addition to this, discrepancies were noted in the depth of pain information in lectures. Most

studies analyzed indicated that more than 50% of nurses did not believe that patient's were the best judge of their own pain (Bernardi, Catania, Lambert, Tridello & Luzzani, 2007; Rieman, 2006). In fact, most educators and students also stated that they were unsure whether to believe that patients were accurately giving them pain scores. In such cases, nurses and students documented lower pain scores than reported and administered lower dosages of medications (Goodrich, 2006; Lasch et al., 2002; McMillan et al, 2000).

Diekman and Wassem (1991) also illustrated that many nursing programs had little or no content on cancer pain management and students were ill prepared to use appropriate measures to alleviate pain. Goodrich (2006) determined that there are numerous gaps in nursing education regarding pain management and students (both medical and nursing), which communicated the need for better integration of pain management content into their program curriculum. Students also remarked that they received little or no education concerning pain management and thus, felt unprepared to implement pain management tasks (Ferrell et al., 1993; Lasch et al., 2002). Consequently, in the study by Chiu and colleagues (2003), results indicated that Australian students and Philippine students also received minimal pain education, and thus, were unable to adequately address pain in patients.

In earlier studies, only a few faculty members were also noted to be knowledgeable in pain management. In fact, both faculty and students felt that they were inadequately educated to implement pain management procedures,

and adjunct therapies to effectively treat patients' pain. Faculty members also agreed that introduction of pain, and cancer pain management would better prepare their students for general practice (Ferrell et al., 1993; Lasch et al., 2002). Conjointly, Ferrell and colleagues, (1993) also indicated that only a few educators identified changes in pain management practices for the past 20 years and were unaware of the fact that there were new guidelines put in place to address the pain needs of patients. In addition to this, less than one-third of schools taught their students' current research practices on pain management, with educators only moderately meeting the pain educational needs of their students (Lasch et al., 2002). Overall, most studies indicated that nursing faculty must acknowledge that their curricula lacks the necessary course content to effectively instruct their students on pain management (Goodrich, 2006; Ferrell et al., 1993; Lasch et al., 2002). Therefore, reevaluation of current nursing programs is essential to facilitate better pain management skills in students and curricula revisions are essential to necessitate this.

Analysis of the literature also showed that students scored lowest on medication related questions such as mechanism of action, dosage, side effects and administration (Plaisance & Logan, 2006). Therefore, despite advancements in pain management protocols, students displayed insufficient knowledge in pharmacology to effectively manage pain. In most instances, opioids were generally under-used by physicians, nurses, and students, to better relieve pain (Lasch et al., 2002; McMillan et al., 2005). Data also indicated that most nurses

had insufficient knowledge about the World Health Organization pain ladder, and were not aware that a combination of drugs could be used synergistically to alleviate pain in a safe manner, without patients developing respiratory depression (Bernardi et al., 2007). Overall, deficiencies were noted in nurses, and students' responses in classes regarding; understanding ceiling dose of certain analgesics, calculation of analgesic dosages, as well as, the mechanism of action, and dosages of analgesics in pain management (Goodrich, 2006; McMillan et al., 2005; McMillan et al., 2000). In addition, nurses were unaware of the fact that pain was better controlled by around the clock pain medications, rather than waiting for patients to verbalize pain (Bernardi et al., 2007). Further, faculty members lacked knowledge on the ceiling effect of opioids, as well as, differentiating addiction from physical dependence, and tolerance (Lasch et al., 2002). Statistically, no changes in scores were seen on the use of opiates for pain management since respiratory depression was also thought to be a major side effect of opioid medications if given over a 24-hour period (Bernardi et al., 2007; McMillan et al., 2005).

Overall, continuing education was found to be a solution to inadequate knowledge, and poor attitudes. McMillan and colleagues, (2005) found that continuing education in intensive pain management was an effective means in improving the knowledge and attitudes of nurses. However, nurses must continuously stay abreast with current treatment guidelines if they are to provide competent care and improve patient outcomes (Diekmann et al., 1991). Although

further studies are required to address integrating new educational modules in instructing nurses on pain and pain management, considering that knowledge regarding pain management is a key aspect of effective nursing practice, most studies illustrated that there was little significance between educational levels and being better at effectively managing pain (McMillan et al., 2005; Plaisance & Logan, 2006). Thus, faculty should implement new educational strategies to adequately prepare nursing students at all levels, and themselves on managing pain in patients. In fact, when pain educational programs were given, nurses, students, and educators felt more confident in assessing pain as well as using the correct measurements and procedures in effectively relieving pain (Lasch et al., 2002; McMillan et al., 2005; Wilkes, Lasch, Lee, Greenhill & Chiri, 2003).

In two studies, it was noted that oncology nurses were more formally educated on pain management guidelines when compared to non-oncology nurses (McMillan et al., 2005; Rushton, Eggett & Sutherland, 2003). In both studies, data showed that oncology prepared nurses had better patient outcomes regarding pain management and were more knowledgeable about recommended practice guidelines than non-oncology nurses. However, the pharmacology of medications used to manage cancer pain was poorly understood by both groups of nurses (Bernardi et al., 2007; McMillan et al., 2000).

Attitudes Toward Pain Management

Negative attitudes by students and healthcare professionals are yet another barrier to effective pain management. Although many students and

nurses correctly identified that most cancer patients experience pain at some point during the course of their illness, very few believed that pain could effectively be relieved by medication or that it was appropriate for cancer patients to receive maximum tolerated treatment to become pain free (Diekmann et al., 1991). Further, if a patient was cheerful during visiting times with the nurses, a lower pain rating was documented and reduced pain medication dosages were given because, nurses believed that patients over-estimated their pain levels (McMillan et al., 2000).

Second barrier, in younger and older patients, pain rating and medication dosages were also decreased, as most nurses would allow concerns of addiction to affect their administration (McMillan et al., 2005; Rushton et al., 2003). A similar trend was noticed when around the clock analgesics were prescribed for patients. Nurse would allow their belief that patients should experience pain before administering medication to influence how they dispensed pain medication (Ferrell et al., 2003; McMillan et al., 2000). Correspondingly, students and faculty also expressed the fear that administering too much opioid medication could facilitate addiction, which was a major deterrent for them in administering analgesics to patients (Lasch et al., 2002).

Another factor hindering positive attitudes for effective pain management was inadequate nursing education. Since nursing faculty themselves were insufficiently knowledgeable on the principles of pain management, they were mostly likely to perpetuate their own negative beliefs onto students (who later

became nurses) regarding the pharmacology of medications and physiology of pain (Ferrell et al., 1993; Lasch et al., 2002). It was also interesting to note that if faculty and students were not better educated on pain management they were most likely to implement their own biases onto patients as well (Lasch et al., 2002). However, it was unclear from the literature whether oncology nurses had more positive attitudes towards patients with pain than non-oncology nurses.

Finally, administration of educational modules showed a vast improvement on attitude questions by nurses. It was also noted that changes in attitudes on charting patients' pain was significantly enhanced, indicating that education is an important aspect of pain management (McMillan et al., 2005).

Summary of Literature

In summary, review of the empirical literature has shown that the nursing curriculum lacks the educational content to prepare its students to effectively address the pain needs of their patients. This issue may be due to the fact that nursing faculty themselves are inadequately prepared to educate students on pain management. Studies analyzed indicated that nursing faculty was either lacking knowledge about pain management or failed to keep abreast with current evidence-based practices. In addition to this, since many of these inadequately prepared nursing students later became nurses, this educational flaw may have transferred into their practice, reflecting highly negative attitudes and poor pain management skills. Therefore, more emphasis must be placed on educating

students on basic mechanisms of action of medications, dosages, and uses of certain pharmaceuticals, in addition to other pain management interventions.

Chapter III

Methods

In this chapter the methods of the study are presented. This includes the characteristics of the sample such as the inclusion criteria for participation, variables under investigation, and a description of the instruments of measurement used to collect data. In addition, the procedures for data collection and the method of analysis also are discussed.

Sample

For the purpose of this study, the targeted population was undergraduate nursing students, while the sample consisted of consenting undergraduate students, currently pursuing a Bachelor of Science degree in Nursing (BSN), at the University of South Florida (USF). The inclusion criteria for participation was based on; being an undergraduate student in the BSN Program in their senior year at USF, enrolled in the Leadership and Management in Nursing course, over the age of 18 years, able to read and write English, and having completed undergraduate pharmacology and pathophysiology courses.

The sample size was estimated using power analytic techniques. With power of 0.80 and an alpha set 0.05 for a Pearson correlation, a sample size of 30 should yield significant results.

Instruments

The instruments that were utilized in this study were the Nurses' Attitude Survey (NAS) and the Pain Management Principles Assessment Tool (PMPAT), in addition to a demographic data questionnaire. Both tools were chosen for the study as they clearly distinguish between knowledge deficits and attitudinal barriers in pain management, which made them appropriate for the study.

Nurses' Attitude Survey

The NAS, created by McMillan and Tittle (2000), is a 25-item instrument, which uses a four-point Likert type format to assess attitudes toward pain management. Responses for the instrument ranged from strongly disagree to strongly agree, with item raw scores varying from 1 to 4 for each item. The higher the score, the more positive attitudes nurses had. The survey included items on scheduling analgesics, use of opiates, pain assessment, goals of pain assessment, misconceptions about pain management and non-pharmacologic management of pain (Appendix A).

Validity and Reliability. Internal consistency reliability was found using Cronbach's alpha ($r=0.70$), which was adequate. Validity was also demonstrated by a significant difference ($p<.01$), after it was pre-tested and post- tested among nursing students (McMillan et al., 2000).

Pain Management Principles Assessment Tool

The PMPAT is a 31-item multiple-choice test with four response choices per question. The questionnaire was designed to test pain management

knowledge regarding physiology, pharmacology, characteristics of pain such as addiction, physical dependence, tolerance, and principles of assessment and management. Scores for the survey ranged from 0 to 31, or 0 to 100%, with higher scores meaning more questions were answered correctly.

Validity and Reliability. The tool was designed based on a blueprint from previous research studies attesting to its content validity. Validity of the instrument was also tested using a pre and post-test method among 28 nursing students before and after administering a three-hour pain management course. Validity was found to be significantly high from pre to post test ($t=6.76$, $p<0.01$). Reliability was also discovered to be significantly high ($r=0.84$, $p=0.00$) (McMillan et al., 2000) (Appendix B).

Demographic Data Form

Each participant was also asked to complete a demographic data form. The form incorporated questions on age, gender, ethnicity, current semester in the BSN program at USF, highest level of education achieved, work experience, and current work status, and if they have ever received any type of training in pain management (Appendix C).

Approval

Approval to conduct the study was obtained from both the USF College of Nursing (Appendix D) to approach students to participate in the study, and the USF Institutional Review Board (Appendix E). Permission was requested from the instructor of the Leadership and Management in Nursing course to administer

the surveys to students during class. In addition to this, a letter explaining the purpose of the study, as well as the inclusion criteria for participation, was given to each participant. The letter also stated that filling out the questionnaires implied consent, and that participation was confidential and voluntary.

Procedures

The questionnaires were given to each student during class period. Prior to the administration of the questionnaires, the instructor of the Leadership and Management in Nursing course was asked to leave the classroom, while the investigator remained in the room to supervise the study, distribute the surveys as well as collect them. A brief explanation was given regarding the study, noting that there were no risks or benefits to participants from taking part in the study, apart from enriching nursing research on the topic of pain management. Students were also given the opportunity to ask any pertinent questions they had regarding the study. In addition, students were asked to carefully read the instructions given and work individually on their questionnaires without the aid of textbooks or colleagues.

Data Analysis

Demographic data was analyzed using descriptive statistics, such as frequencies, percentages, means and standard deviations. Microsoft Excel, as well as, the Statistical Package for Social Sciences (SPSS) was utilized to analyze the level of knowledge students had, their attitudes towards pain management, and the correlation between knowledge and attitudes.

To answer Research Question 1; What is the level of knowledge of pain management principles possessed by nursing students at the baccalaureate level, means and standard deviations were calculated?

To answer Research Question 2; What are nursing students' attitudes toward pain management in the oncology patient, means and standard deviations were calculated?

To answer Research Question 3; Is there a significant relationship between knowledge and attitudes among baccalaureate students in pain management in cancer patients, Pearson Correlations was calculated?

Chapter IV

Results, Discussion and Conclusions

This chapter presents the results of the knowledge and attitudes surveys given to undergraduate nursing students at the University of South Florida to determine their level of knowledge, and current attitudes towards pain management. In addition to the results of the variables, discussion of the relationship between the knowledge and attitude scores is also presented. Further, the limitations of this study, conclusions and suggestions for future research are also discussed in this chapter.

Results

Sample

The sample for this study consisted of 41 undergraduate students currently in their senior year, pursuing a Bachelor of Science degree in Nursing at the University of South Florida. Of the 41 participants, 90% (n=37) was female, while 10% (n=4) were males (Table 1). The mean age of students was 22.5 years with a range from 18 to 42 years. The majority of participants, (73%, n=30) were of Non- Hispanic White ethnicity, while 7% (n=3) were African American, 15% (n=6) were of Hispanic origin, and 5% (n=2) Asian origin (Table 1). On analysis, years of formal education ranged from 15% of students having

associates degrees before attending USF, while 2% (n=1) had Bachelors' degree in other fields than nursing (Table 1). The majority stated that they were full time nursing students with no jobs (75%, n=31), while 15% (n=6) were working as nurse technicians, and 10% (n=4) were certified nursing assistants (Table 1). In the area of pain management, 20% (n=7) of students had pain management training, while 80% (n=34) had no training at all other than that give in their nursing program (Table 1).

Table 1. Frequency and Percent of Gender, Ethnicity, Educational Level, Work Experience, and Pain Management Training of Students

Demographic Content	Frequency	Percent
Males	4	10
Females	37	90
Asian	2	5
African American	3	7
Hispanic	6	15
Non Hispanic White	30	73
Associates Degree	6	15
Bachelor's Degree	1	2
Nursing Student	31	75
Nurse Technician	6	15
Certified Nursing Assistant	4	10
Pain Management Training	4	10

Knowledge of Pain Management Principles

In order to answer the first research question, to assess the knowledge of undergraduate nursing students regarding pain management, the raw scores of the PMPAT were tabulated and analyzed (McMillan et al., 2000). The mean score on knowledge was 19.4 (SD= 3.0) out of 31 items, or 63%. The raw scores indicated that the number of correct responses for the 41 students ranged from 39% to 81%. If a passing score of 70% was used, only 7 students or 17% of students passed the pain management knowledge test, with 30 or 73% of students scoring between 50% to 75%, and 4 or 10% of students scoring less than 50% (Table 2).

On analyzing the responses to individual knowledge questions it was noted that students had low scores, 39% or less in areas of pain physiology, pharmacology of pain medications, appropriate time to medicate for pain, use of cutaneous stimulations as a measure of pain relief and total pain relief as the main goal of pain management practices. Conversely, subject areas in which items received a score of 100% were first, patients as the most accurate, and reliable judge of their own pain, and, second, the definition of tolerance. Other areas in which scores were 90% or higher were, patients should be in charge of their own pain management regimen, nurses should call the physician when a patients' pain increases on the maximum dose of analgesic prescribed, and distraction as an approach to pain management (Table 3).

Table 2. Frequency and Percent of Scores on the Knowledge Test

Score Range	Frequency	Percent
Greater than 70%	7	17
50%-70%	30	73
Less than 50%	4	10

Attitudes Toward Pain Management

Attitudes were measured using the Nurses' Attitude Survey (NAS). Responses for the instrument ranged from strongly disagree to strongly agree, with item raw scores varying from 1 to 4 for each item. The higher the score, the more positive attitude nurses had. On analysis of the raw scores from the attitude survey given to the sample, a mean score of 17.1 (SD=2.6) was calculated with a range of 48% to 88% of students having positive attitudes towards pain management.

Results of an item analysis of the NAS, showed that 100% (n=41) of students agreed that; distraction and diversion could decrease patients' pain level, lack of pain expression does not mean lack of pain, and continuous assessment of pain and medication effectiveness is necessary for good pain management. In addition to this, 95% of students agreed that patients may be hesitant to use pain medication due to fears about opioid use, and if a patient continues to have pain the nurse should contact the physician. This was followed by 85% agreed that a constant level of analgesic should be maintained in the blood to control pain effectively, 78% agreed that patients should be maintained

in a pain-free state, and 71% agreed that cancer pain could be relieved with appropriate anti-cancer drugs, radiation therapy and/or pain relieving drugs. Also, 39% agreed that the cancer patient and family should have more control over the schedule for analgesics than the health care professional and 15% agreed that patients in pain can tolerate high doses of opioids without sedation or respiratory depression (Table 4).

Conversely, in terms of the questions that were graded as disagreed, 98% of students disagreed that an estimation of pain by the physician or nurse is a more valid measure of pain than patient the self-report, 78% of students disagreed that patients should experience pain before getting their next dose of pain medication, while, 73% of students disagreed that patients receiving opioids around the clock for cancer pain are likely to become addicted. Subsequently, 29% of students stated that cancer patients receiving as needed pain medication should receive pain medication before the pain returns along with, 5% disagreeing that patients receiving around the clock opioids are at risk for sedation and respiratory depression (Table 4).

Relationship Between Knowledge and Attitudes

To determine if there is a significant relationship between knowledge and attitudes among baccalaureate students related to pain management in cancer patients, a Pearson correlation was calculated between the total scores for knowledge and the total scores for attitudes. Results of the Pearson correlation

$r=0.33$ ($p=0.038$), showed a weak to moderate but significant degree of correlation between these two variables.

Table 3. Frequency and Percent of Students: Correct Responses by Knowledge Questions

Knowledge Content	Frequency	Percent
Patient most reliable judge of pain	41	100
Definition of tolerance	41	100
An example of distraction	39	95
Patient in control over Pain Management	38	93
Nurse should call physician when pain increases on maximum dose	37	90
Use of combination analgesics	34	83
Cancer patients who suffer from pain	30	73
Cancer patients with pain	25	61
Physicians and nurses under medicate	19	46
Nurse should not base pain administration on objective assessment	13	32
Goal of pain management	10	24
Occurrence of addiction Less than 1%	10	24
Physiology of Pain		
• Mechanism action of opioid	36	88
• Opiate receptors	31	76
• Level of analgesics	28	68
• Symptoms of chronic pain	27	66
• Symptoms of Acute Pain	22	54
• Gate Control Theory	15	37
• C fibers of nerves	8	20
Pharmacology of Pain		
• Pain due to decrease in analgesic	28	68
• Disadvantage of Merperidine	25	61
• Best method to achieve steady state of analgesic	24	59
• Drug with longest duration of action	9	22
• Preferred route of administration	6	15
Cutaneous Stimulation		
• Example of cutaneous stimulation	33	80
• Cutaneous stimulation as a method of pain relief of any intensity	16	39
• Cutaneous stimulation for any type of pain	16	39

Table 4. Frequency and Percent of Students: Positive Attitude Response by Questions

Attitude Content	Frequency	Percentage	Positive Attitude
Continuous assessment necessary for good pain management	41	100	Agreed
Lack of pain expression does not necessarily mean lack of pain	41	100	Agreed
Distraction/ diversion of attention can decrease perception of pain	41	100	Agreed
Estimation of pain by MD/RN is a more valid than patient self-report	40	98	Disagreed
Patients/family members hesitant to use pain medications due to fears	39	95	Agreed
Nurse should contact MD if patient has continuous pain	39	95	Agreed
Nurse can make a more accurate assessment of patient's pain than patient/family	39	95	Disagreed
A constant level of analgesic should be maintained in the blood to control pain effectively.	35	85	Agreed
Patient should experience discomfort prior to getting the next dose of pain medication.	32	78	Disagreed
Patients should be maintained in a pain-free state.	32	78	Agreed
Patients receiving narcotics around the clock for pain are likely to become addicted	30	73	Disagreed
Cancer pain can be relieved with appropriate treatment	29	71	Agreed
Cancer patient/family should have more control over the schedule of analgesics than MD/RN	16	39	Agreed
Patient in pain is receiving PRN medication, at what level of discomfort would it first be appropriate for the patient to request additional pain medication?	12	29	Agreed
Patients in pain can tolerate high doses of narcotics without sedation or respiratory depression	6	15	Agreed
Patients receiving around the clock narcotics are at risk for sedation and respiratory depression	2	5	Disagreed

Discussion

Sample

The response from the convenience sample of students (n=41) from the undergraduate Bachelor of Science in Nursing program at USF who participated in this study was sufficient in providing statistically meaningful and sufficient data for this study. The sample demonstrated a strong cross-sectional view of the students who are currently pursuing a Bachelor of Science degree in Nursing at USF. However, since the data was only collected in one geographical area and had limited representation from other ethnic groups, results gathered from this study may not be generalized to include the entire population of undergraduate nursing students in Florida or the U.S. Also, since the sample mainly consisted of Non Hispanic Whites, there was very little minority participation in this study. Therefore, the lack of representation from other ethnicities and cultures may have incurred a bias with an unknown effect to data gathered, since ethnicity and culture influence knowledge and attitudes regarding pain management. Another limitation of this study was that all students were asked to participate instead of being randomly selected, and it is therefore unclear as to the effect this may have on the data gathered as well. The item regarding pain management training in the demographic data form was flawed as students may have interpreted this to mean content taught in class as opposed to actual formal training on pain management by a professional.

Knowledge of Pain Management Principles

The mean score on knowledge test was 19.4 (SD=3.0) or 63%. The data showed that nursing students demonstrated inadequate knowledge regarding pain management. These scores were similar to those obtained by McMillan and colleagues for nurses (2000), and Plaisance and Logan (2006). The mean score obtained by McMillan and colleagues, (2000) was 18.8 (SD=2.9) or 61%, while Plaisance and Logan (2006) had an overall score of 64%. Thus, although the focus on pain continues as a national priority, nurses may not be learning critical information in their basic nursing programs.

Although the overall knowledge scores were relatively low, students showed strength in certain areas of the pain management knowledge test. For instance, 100% of the students accurately responded that patients are the most accurate and reliable judge of their own pain, while 93% replied that patients should be in charge of their own pain management regimen. This was consistent with the data derived by McMillan and colleagues, (2000), who obtained scores of 96% and 81%, and inconsistent with data derived by Bernardi and colleagues, (2007), where only 56% of nurses believed that patients were the most accurate judge of their own pain. This signified that the current undergraduate curriculum at USF does place some emphasis on pain management. This correlated well with the NAS where 98% of the students disagreed that an estimation of pain by the physician or nurse is a more valid measure of pain than a patients' self-report of pain.

In terms of pharmacologic management, most students were able to; accurately define tolerance, state the action of naloxone, and the use of combined analgesics to achieve pain control. The fact that 100% of students were able to define tolerance was consistent with the findings of McMillan and colleagues (2000), who reported a score of 89%. However, in the study conducted by Goodrich (2005), a threshold of less than 80% was achieved in differentiating addiction from tolerance and dependence. Another strength of this study was the fact that 93% of students stated that patients should be in control of their pain management regimen, which was much higher than the score obtained ten years earlier by McMillan and colleagues, (2000) of 81%.

Although the data analyzed showed few areas of competency, there were numerous areas in which significant knowledge gaps existed among students. These areas mostly included questions pertaining to the physiology and pharmacology of pain. This is consistent with previous research studies (Bernardi et al., 2007; Diekmann & Wassem, 1991; Ferrell et al., 1993; Goodrich 2005; McMillan et al., 2000; Plaisance and Logan, 2006). For instance, only 20% of students had the knowledge that C- fibers were responsible for dull, and aching pain sensations, 29% of student correctly identified that the most appropriate time to administer pain medication was before pain began, whereas only 37% knew about the Gate Control Theory. In terms of pharmacology; only 14% of students knew that the preferred route of medication administration was orally, 22% of students knew that methadone was the opioid with the longest duration of

action, and less than 60% knew that meperidine had central nervous system toxicities.

However, it was also noted that less than 24% of students stated that the overall goal of pain management was the total relief of pain, and less than 1% of cancer patients become addicted to pain medication. There was also a lack of understanding that the use of non-pharmacologic techniques such as cutaneous stimulation can be used for any level of pain. Therefore, owing to the lack of understanding of basic physiology and pharmacology of pain by students, it is now clearer why nurses perform poorly in managing the pain of patients. This data also suggest that pain management will continue to be a problem when this new generation of nurses begins working.

Attitudes Toward Pain Management Principles

On analysis of the raw scores derived from the test given to the sample, a mean score of 17.1 (SD=2.6) out of 25 was calculated. The fact that many students had a poor understanding of the physiology of pain and pharmacology of opioids, may have had an effect on the attitudes they have toward pain management. For instance, only 5% of students disagreed with the statement that patients receiving around the clock opioids are at greater risk for sedation and respiratory depression, which corresponded with the low responses on patients in pain being able to tolerate high doses of opioids without sedation or respiratory depression. Therefore, if students had a better understanding of the physiology of pain and the pharmacology of opioids, they might know that

increasing opioid doses are due to the tolerance of opioids and do not necessarily lead to sedation and respiratory depression. These results were similar to previous studies and clearly show that there has been little improvement in this area by students and nurses over the past decade.

It was also interesting to note that the sample of students studied were committed to being strong patient advocates and felt strongly that a patient's self-report of pain was more valid than that estimated by the physician or nurse. This strongly correlated to the knowledge question where 100% of students agreed that patients were the best judges of their own pain. However, only 39% of students agreed that the cancer patients and their family members should have more control over the schedule of analgesics than the healthcare professional. Hence, this belief that the physician or nurse should have control over the schedule of analgesics is misguided since cancer patients and their family members spend the majority of time managing chronic pain outside the realm of the physicians' or nurses' control.

Therefore, we see that if nurses developed a better understanding of the physiology of pain and the pharmacology of analgesics, a more positive attitude regarding pain management might emerge. In addition to this, students can facilitate better relationships with their patients and ultimately better patient outcomes if students understand the need to better educate patients on managing their own pain and allowing family members and patients to be in more control over their pain treatment plans.

Relationship between Knowledge and Attitudes

Although the Pearson correlation value illustrated a weak to moderate relationship between knowledge and attitudes ($r=0.33$, $p=0.038$), the result was significant and data gathered showed that students who generally had high scores on the knowledge test, had corresponding high scores on the attitude test as well. However, there appear to be some discrepancies between similar questions on the knowledge survey and attitude questionnaire. For example, a lack of understanding of therapeutic levels seems to be area in which students have poor knowledge on but yet showed good attitudes. For instance, although only 29% of students accurately stated on the knowledge questionnaire that additional pain medication on an as needed schedule should be administered before pain returns, but this was inconsistent with the 78% of students who disagreed that patients should experience discomfort prior to getting the next dose of pain medication. This may indicate that students are somewhat unfamiliar in understanding the difference between as needed analgesic medications and scheduled analgesic treatment plans.

Another area in which there seems to be confusion is in whether total pain relief is a goal. On the knowledge survey, only 24% of students believed that all patients should have complete pain relief, while 78% of students on the attitude survey agreed that patients should be maintained in a pain free state. This may indicate that although students had the positive attitudes required for good pain

management practices, they lack the knowledge and rationales in understanding the need for total pain relief for patients.

Addiction is yet another subject in which students had difficulty. Even though 100% could accurately define tolerance, only a small percentage (24%) knew that less than 1% of cancer patients became addicted to pain medication. On the attitude test, 73% of students disagreed that patients receiving opioids around the clock for cancer pain are likely to become addicted. Therefore, we see that on the subject of addiction, both knowledge and attitudes scores seem to be unrelated. It is unclear how these conflicting knowledge and attitude scores may ultimately impact patient care by these nurses.

Conclusions

Although pain management has been an area of study for many decades, lack of knowledge by students seems to be a major hindrance in good pain management practices. Because inadequate knowledge and some negative attitudes were found in this study, it can be deduced that better educating students on the physiology of pain and pharmacology of analgesics is a much needed enterprise. Although in many instances, students had the positive attitude required for good pain management techniques, they lacked the fundamental knowledge, and understanding as to why they were practicing certain skills. Therefore, it can be surmised that educating nurses and students is a step in the right direction to better pain management practices. Hence, a change in the current undergraduate curriculum is required if we are to improve

the pain management education that students receive. For this reason, topics addressing pharmacology, pain physiology, in addition to better understanding of concepts such as tolerance, dependence and addiction would be beneficial to improving the knowledge of students and their care of patients who suffer from chronic pain. It is therefore, imperative that strategies be identified to better educate students if we are to set the stage for enhanced pain management practices for patients.

Implications for Nursing

The findings of this study have several implications for nursing. Future studies should include multiple educational institutions from different geographical areas and a diverse ethnic population to yield more accurate results on evaluating the knowledge and attitudes of undergraduate students regarding pain management.

In addition to this, nursing research should also focus on the development of specific strategies to effectively teach students about pain management and integrate pain management as a major component throughout the undergraduate-nursing curriculum. This will undoubtedly afford students the opportunity to provide effective care for cancer patients with chronic pain, as well as, stimulate better patient outcomes regarding pain management.

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Appendices

Appendix A: Nurses Pain Management Attitude Survey

**NURSES PAIN MANAGEMENT ATTITUDE SURVEY
KEY**

Directions: Circle the response that best describes your attitude toward the following statements. We are interested in your current beliefs.

**CODES: SD = Strongly Disagree D = Disagree
 A = Agree SA = Strongly Agree**

- | | | | | | |
|-----|--|----|---|---|----|
| 1. | Giving opioids on a regular schedule is preferred over a prn schedule for continuous pain. | SD | D | A | SA |
| 2. | A patient should experience discomfort prior to getting the next dose of pain medication. | SD | D | A | SA |
| 3. | Continuous assessment of pain and medication effectiveness is necessary for good pain management. | SD | D | A | SA |
| 4. | Patients (and/or family members) have a right to expect total pain relief as a goal of treatment. | SD | D | A | SA |
| 5. | Patients (and/or family members) may be hesitant to ask for pain medications due to their fears about the use of opioids. | SD | D | A | SA |
| 6. | Patients receiving opioids on a prn basis are more likely to develop clock-watching behaviors. | SD | D | A | SA |
| 7. | Estimation of pain by a MD or RN is a more valid measure of pain than patient self report. | SD | D | A | SA |
| 8. | Patients in pain can tolerate high doses of opioids without sedation or respiratory depression. | SD | D | A | SA |
| 9. | Patients can be maintained in a pain free state. | SD | D | A | SA |
| 10. | If a patient (and/or family member) reports pain relief and euphoria, the patient should be given a lower dose of the analgesic. | SD | D | A | SA |

Appendix A: Nurses Pain Management Attitude Survey (Continued)

11. Patients with chronic pain should receive pain meds at regular intervals with or without the presence of discomfort.	SD	D	A	SA
12. Patients receiving around the clock opioids are at risk for sedation and respiratory depression.	SD	D	A	SA
13. Patients having severe chronic pain need higher dosages of pain meds compared to acute pain.	SD	D	A	SA
14. Patients should be maintained in a pain-free state.	SD	D	A	SA
15. Lack of pain expression does not necessarily mean lack of pain.	SD	D	A	SA
16. Cancer pain can be relieved with appropriate treatment with anti-cancer drugs, radiation therapy and/or pain relieving drugs.	SD	D	A	SA
17. If a patient continues to have pain after receiving pain relieving medication(s), the nurse should contact the physician.	SD	D	A	SA
18. Patients receiving opioids around the clock for cancer pain are likely to become addicted.	SD	D	A	SA
19. Distraction and diversion of patient's attention (use of music, relaxation) can decrease the perception of pain.	SD	D	A	SA
20. A constant level of analgesic should be maintained in the blood to control pain effectively.	SD	D	A	SA
21. Increasing analgesic requirements and physical symptoms are signs that the patient is becoming addicted to the opioid.	SD	D	A	SA
22. The cancer patient and family should have more control over the schedule for analgesics than the health professional.	SD	D	A	SA

Appendix A: Nurses Pain Management Attitude Survey (Continued)

- | | | | | |
|--|----|---|---|----|
| 23. The nurse can make a more accurate assessment of the patient's pain than the patient/family can. | SD | D | A | SA |
| 24. Cutaneous stimulation (e.g. heat, massage, ice) are only effective for mild pain. | SD | D | A | SA |

Circle the response that you most agree with.

25. When a patient in pain due to cancer is receiving analgesic medication on a **PRN** basis, at what level of discomfort would it first be appropriate for the patient to request additional pain medication?
1. Before pain returns
 2. When pain is mild
 3. When pain is moderate
 4. When pain is severe

Betty Ferrell, PhD, FAAN
Connie Leek, RN, MS, OCN
1990

Revised 8/92
Susan C. McMillan, PhD, RN
Mary Tittle, PhD, RN

Appendix B: Pain Management Principles Assessment Test

PAIN MANAGEMENT PRINCIPLES ASSESSMENT TEST

Parallel Form

DIRECTIONS: Circle the letter in front of the one best answer.

You may write **ON THE TEST.**

1. What percentage of cancer patients suffer pain at some point during their illness?
 - a. 10%
 - b. 30%
 - c. 60%
 - d. 90%

2. What percentage of cancer patients suffer pain for longer than one month?
 - a. 20-30%
 - b. 40-50%
 - c. 70-80%
 - d. 100%

3. If the patient continues to have pain after receiving the maximum ordered dose of analgesics, what should the nurse ALWAYS do?
 - a. Increase the dose, slightly.
 - b. Explain the risks of high doses of opioids to the patient/family.
 - c. Reassure the patient that the medication will work.
 - d. Call the physician.

4. The preferred route of administration of opioid analgesics for cancer patients is which of the following?
 - a. Intravenous
 - b. Intramuscular
 - c. Subcutaneous
 - d. Oral
 - e. Rectal

Appendix B: Pain Management Principles Assessment Test (Continued)

5. When a patient having pain due to cancer is receiving analgesic medication on a PRN basis, at what level of discomfort would it first be appropriate for the patient to request additional pain medication?
 - a. Before the pain returns
 - b. When pain is mild
 - c. When pain is moderate
 - d. When pain is severe
 - e. When the pain is intolerable

6. The most accurate and reliable judge of the intensity of the cancer patient's pain is which of the following?
 - a. The treating physician
 - b. The patient's primary nurse
 - c. The patient
 - d. The pharmacist
 - e. The patient's spouse or family

7. What percentage of patients receiving opioid analgesics around the clock become addicted?
 - a. Less than 1%
 - b. 5-10%
 - c. 25%
 - d. More than 25%

8. Which of the following statements accurately describe the mechanism of action of analgesics?
 - a. Opioids act in the CNS to decrease the transmission/perception of pain.
 - b. Opioids act at the periphery to decrease the transmission of pain.
 - c. Non-opioids act in the CNS to decrease the transmission/perception of pain.
 - d. Opioids work by the Gate Control mechanism.

9. Which kind of pain can be treated with cutaneous stimulation?
 - a. Mild pain only
 - b. Moderate pain only
 - c. Severe pain only
 - d. Any intensity of pain

Appendix B: Pain Management Principles Assessment Test (Continued)

10. Which of the following statements accurately reflects principles underlying analgesic administration for persons with pain due to advanced cancer?
 - a. Prolonged administration leads to tolerance which requires escalating amounts of analgesic to control pain.
 - b. Prolonged administration often result in addiction, so drug amounts must be carefully limited in the early stages of the disease.
 - c. Opioids should be offered on an “as needed” basis to prevent drug dependence.
 - d. Around the clock administration of opioids (rather than PRN) results in clock-watching in patients and families.

11. Which group of symptoms are more related to chronic pain?
 - a. Decreased appetite, decreased energy, sleep disturbances, apathy, decreased blood pressure.
 - b. Grimacing, fast heart rate, fast respiratory rate, elevated blood pressure, sweating.
 - c. Thrashing, grimacing, elevated heart rate, cold and clammy extremities.
 - d. Groaning, elevated blood pressure, irritability, sweating

12. Which of the following drugs have the longest duration of action?
 - a. Codeine
 - b. Methadone
 - c. Meperidine
 - d. Morphine

13. Acute pain is frequently accompanied by which of the following?
 - a. Increased caloric requirements, increased temperature
 - b. Increased oxygen requirements, decreased temperature
 - c. Decreased caloric requirements, decreased temperature
 - d. Increased caloric requirements, decreased temperature

14. Dull and aching pain sensations are the responsibility of which of the following?
 - a. A-delta fibers
 - b. C fibers
 - c. Opiate receptors
 - d. Small myelinated fibers

Appendix B: Pain Management Principles Assessment Test (Continued)

15. According to the Gate Control Theory, the location in the nervous system that is responsible for “gating” is located in:
 - a. The substantia gelatinosa in the spinal cord
 - b. The nociceptors in the skin
 - c. Deep nociceptors in the muscles
 - d. White matter in the brain

16. Pain is modulated by which of the following:
 - a. Opiate receptors mu, gamma, and kappa
 - b. A-delta fibers
 - c. C-fibers

17. Mrs. Colton, a 160 pound female is 24 hours post-op following abdominal hysterectomy. She received a dose of morphine sulfate 8 mg IM at 4:00 pm. It is now 6:30 pm and she is complaining of pain and requesting another injection. Her pain is most likely related to which of the following:
 - a. Physical dependence on the analgesic
 - b. Tolerance to the prescribed dose of analgesic
 - c. A decrease in the blood level of the analgesic
 - d. Early onset of addiction to the analgesic

18. Following an abdominal hysterectomy, your pain management goal for Mrs. Colton should be which of the following:
 - a. Enough pain relief to allow her to cooperate in post-op care
 - b. To provide enough pain relief to keep Mrs. Colton from crying out
 - c. To relieve her pain to a level that she can tolerate
 - d. To provide her complete pain relief

19. Mr. West has prostatic cancer that has spread to the bones. In planning for his care, the primary factor to consider is:
 - a. The likelihood that he will need higher doses later on
 - b. The probability that he will become addicted to opioids
 - c. His overall quality of life
 - d. The wishes of his family regarding pain relief

Appendix B: Pain Management Principles Assessment Test (Continued)

20. In assessing the patient's pain, the nurse should take into account which of the following variables which may affect the expression of pain:
- Environment and social consequences of expressions of pain
 - Cultural diversity in the ways patients express their discomfort
 - The observable measurable actions of the patient
 - a and b
 - a, b, c
21. The action of naloxone is:
- To enhance the effect of opioid analgesics
 - To act as an opioid antagonist
 - To act as an opioid agonist
 - To act as a respiratory stimulant
22. Research suggests that:
- Physicians underprescribe and nurses undermedicate for pain
 - Physicians prescribe appropriately and nurses undermedicate
 - Physicians underprescribe and nurses give optimal doses based on those orders
 - Physicians prescribe appropriately and nurses medicate appropriately in the majority of cases
23. One significant disadvantage of meperidine is:
- It is more expensive than morphine
 - It has more CNS toxicity than morphine
 - It is more addicting than morphine
 - It is more difficult to administer than morphine
24. Which of the following methods of opioid administration provides steady state analgesia?
- Patient controlled analgesia using a pump
 - Intravenous drip of opioids
 - Intravenous bolus administration of opioids
 - Intramuscular injections every two hours

Appendix B: Pain Management Principles Assessment Test (Continued)

25. The primary benefit of providing steady state analgesia is which of the following?
- It is cost effective because it uses less nursing time
 - The patient receives less opioids overall
 - Respiratory depression is less likely to occur
 - The patient is more comfortable
26. A nursing decision to administer pain medication should be based on all of the following EXCEPT:
- The patient's description of the quality of his/her pain
 - The family's request to keep the patient comfortable
 - The nurse's objective assessment of the intensity of the pain
 - The patient's subjective report of the intensity of her/his pain
 - The nurse's knowledge of the action of opioid analgesics
27. Who should have the most control over the patient's pain management regimen?
- The patient
 - The family
 - The nurse
 - The physician
 - The pharmacist
28. DEFINITION: After repeated administration of an opioid, a given dose will begin to lose its effectiveness, resulting in the need for larger and larger doses. This begins with decreased duration of analgesia and then progresses to decreased analgesia.
The above is a definition of which of the following?
- Addiction
 - Physical dependence
 - Tolerance
 - Addictive personality
29. Mrs. Easton has metastatic breast cancer with painful lesions in her spine. She is reluctant to take her morphine as often as needed because she is afraid of drugs. You offer her a backrub and leave her with a heating pad on her back. This is an example of:
- Cutaneous stimulation
 - Distraction
 - Diversion
 - TLC (tender loving care)

Appendix B: Pain Management Principles Assessment Test (Continued)

30. Another approach you might have tried with Mrs. Easton involves concentrating on a task such as needlepoint or a crossword puzzle or reading a favorite book. This is an example of:
- a. Cutaneous stimulation
 - b. Avoidance
 - c. Distraction
 - d. TLC (tender loving care)
31. Mrs. Sikes is a 72 year old woman with breast cancer which has metastasized to her pelvis. She also has moderately severe arthritis. Which of the following statements about managing her pain are most likely true?
- a. Morphine is the drug of choice because it will treat pain from any source.
 - b. Morphine and a non-steroidal anti-inflammatory drug together would get the best results with the least side effects.
 - c. A non-steroidal anti-inflammatory drug alone would probably be best because her primary problem is bone pain.
 - d. Mrs. Sikes should not expect pain relief because of the severity of her disease.

Appendix C: Demographic Data Sheet

Demographic Sheet

1. Age
What is your age? _____

2. Sex
What is your sex?
 - A. Male
 - B. Female

3. Race/ethnicity
How do you describe yourself? (please check the one option that best describes you)
 - A. American Indian or Alaska Native
 - B. Hawaiian or Other Pacific Islander
 - C. Asian or Asian American
 - D. Black or African American
 - E. Hispanic or Latino
 - F. Non-Hispanic White

4. Employment status
Are you currently (Select all that apply):
 - A. A Licensed Registered Nurse (RN)
 - B. Nurse Technician
 - C. Certified Nursing Assistant
 - D. Licensed Practicing Nurse
 - E. A nursing student
Years of Nursing Experience as an RN: _____

5. Education completed
Highest level of nursing education?
 - A. Diploma
 - B. Bachelor of Science in Nursing
 - C. Associate Degree in Nursing
 - D. Other. If so please state _____
Do you currently work in a pain management clinic?
 - A. Yes
 - B. No

Appendix C: Demographic Data Sheet (Continued)

Have you had formal training in pain management?

A. Yes

B. No

Appendix D: Letter of Approval USF College of Nursing



June 22, 2009

Jessica Latchman
Graduate Student
Oncology Master's Program
University of South Florida,
College of Nursing
27124 Big Sur Drive
Wesley Chapel, FL

RE: Permission to Conduct Pain Management Study

Dear Ms. Latchman

This letter grants you permission to conduct the study "To Evaluate the Knowledge and Attitudes of Undergraduate Students Regarding Pain Management" at the University of South Florida, College of Nursing. As discussed, Ms. Lisa Huhn, the instructor for the Leadership and Management Course at the college, has granted you permission to hand out your survey during one of her classes for a period of approximately 30 minutes. I understand that the Pain Management Study is a cross-sectional study that will occur on a day decided by you and Ms. Huhn between August 24th 2009 – December 11th 2009.

Your survey, which consists of a demographic sheet, and a knowledge and attitude questionnaire on pain management, will be given to each student with a brief explanation of the importance of the study. In addition to this, any questions students may have regarding the study will also be addressed. We also understand that all data gathered from the students will be kept anonymous and all surveys will be handed back to you at the end of the session.

The faculty and staff at the College will assist you to the best of our abilities and look forward to being part of this important nursing study.

Sincerely,

A handwritten signature in black ink that reads "Cheryl Zambroski".

Cheryl Zambroski, PhD, RN
Interim Assistant Dean for Academics
Undergraduate Program

A handwritten signature in black ink that reads "Patricia G. Burns".

Patricia Burns, Ph.D RN FAAN
Dean and Professor

STUDENT SERVICES • COLLEGE OF NURSING
University of South Florida • 12901 Bruce B. Downs Blvd., MDC22 • Tampa, FL 33612-4766
(813) 974-2191 • Fax (813) 974-5418 • health.usf.edu/nursing

Appendix E: Letter of Approval USF Institutional Review Board



DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE

Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

August 12, 2009

Jessica Latchman
College of Nursing
27124 Big Sur Dr.
Wesley Chapel, FL 33544

RE: **Exempt Certification** for IRB#: 108261 G
Title: *Evaluating the Knowledge and Attitudes of Undergraduate Nursing Students Regarding Pain Management*

Dear Ms. Latchman:

On August 11, 2009, the Institutional Review Board (IRB) determined that your research **meets USF requirements and Federal Exemption criteria two (2)**. It is your responsibility to ensure that this research is conducted in a manner reported in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures.

Please note that changes to this protocol may disqualify it from exempt status. It is your responsibility to notify the IRB prior to implementing any changes.

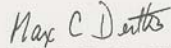
The Division of Research Integrity and Compliance will hold your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received. If you wish to continue this protocol beyond those periods, you will need to submit an Exemption Certification Request form at least 30 days before this exempt certification ends. If a Final Progress Report has not been received, the IRB will send you a reminder notice prior to end of the five year period; therefore, it is important that you keep your contact information current with the IRB Office. Should you complete this study prior to the end of the five-year period, you must submit a Final IRB Progress Report for review.

Please reference the above IRB protocol number in all correspondence regarding this protocol with the IRB or the Division of Research Integrity and Compliance. In addition, you can find the Institutional Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities in the conduction of human participant research on our website. Please read this guide carefully. It is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB.

Appendix E: Letter of Approval USF Institutional Review Board (Continued)

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-2036.

Sincerely,



Max C. Dertke, Ph.D., Chair Designee
USF Institutional Review Board

Cc: Anna Davis/cd, USF IRB Professional Staff
Susan McMillan PhD,RN,FAAN