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A comparative study of knowledge of pain management in certified and non-certified oncology nurses

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A Comparative Study of Knowledge of Pain Management in Certified and Non-Certified
Oncology Nurses

by

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

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Sherrie LaLande

ABSTRACT

Over 1.4 million people are diagnosed with cancer annually. Of those people, 70-90% experience some form of pain. Numerous efforts have been made to educate nurses in the management of pain, yet 30-50% of cancer patients report that their pain is poorly managed. It is not clear whether nurses who obtain certification in Oncology are better equipped to manage this patient population regarding their pain issues. This study compared the knowledge of Oncology Certified Nurses (OCN) and Non-Certified Oncology Nurses (NCON) regarding pain management.

The sample of 41 oncology nurses included 19 who were certified in oncology and 22 who were not certified in oncology from two Oncology Nursing Society Chapters in West Central Florida. The nurses sampled were predominately Caucasian (n=35), females (n=38), with a mean age of 48.9 years, all caring for patients in an oncology setting. The participants completed a brief demographic form and the Pain Management Principles Assessment Test (PMPAT).

Results of the study showed that the Oncology Certified Nurses scored significantly higher (mean = 71%; SD = 2.9) on the PMPAT than did the Non-Certified Oncology Nurses (mean = 62%; SD = 3.6). Although the sample size was small and limited in geographic location, the results are adequate in providing meaningful results

($p = .007$). Findings suggest that there is benefit to oncology certification, allowing nurses to provide more comprehensive care for cancer patients in pain.

Chapter I

Introduction

The American Cancer Society (2009) estimates that approximately 1.4 million people are diagnosed with cancer annually. Throughout the course of their illness, it is estimated that 70% of those patients will experience severe pain. According to the National Pain Foundation, the numbers escalate for people with advanced cancer to between 75% and 90% (National Pain Foundation, 2010). Pain in cancer patients can be caused by effects of the tumor, via invasion of the bone, invasion of soft tissue, or nerve compression. Complications of treatment such as radiation, chemotherapy, or surgery can be contributing factors as well. Unfortunately, 30%-50% of patients receiving treatment for the disease report unrelieved pain (Ashley, 2008). Unrelieved pain has the potential to affect many aspects of an individual's life. Pain is directly related to fatigue, anxiety, emotional distress, mood disorders, depression, less social interaction, an alteration in family activities, and overall reduction in a person's quality of life. As a result of these staggering statistics, pain has become one of the most feared aspects of cancer.

In August of 2000, the American Cancer Society (ACS) developed a pain control plan after meeting with experts from various organizations devoted to pain control and palliative care (ACS, 2001). In 2001, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) added pain assessment and

management standards, naming pain the fifth vital sign in an effort to improve the standards of care. The American Nurses Credentialing Center joined the American Society for Pain Management to offer the first nurse-focused pain management certification in October 2005. This signified the need for a formal body of nurses with advanced knowledge and experience in pain management (American Nurses Association, 2005). In the summer of 2006, nursing pain management experts and nurse leaders gathered at the American Nurses Associations' national House of Delegates meeting and passed the "Improving Pain Management" resolution written by Dorothy Stratman-Lucey MSN, RN, BC, PNP (2006). More recently, the Oncology Nursing Society (ONS) Position on "Cancer Pain Management" was approved by the ONS Board of Directors in 1998 and last revised in 2006 (ONS, 2006). The point of this time line is to demonstrate that management of pain has been in the forefront for some time with many national organizations. However, pain continues to be untreated, undertreated, or improperly managed, despite these efforts.

One barrier in the management of cancer pain is the lack of knowledge on the part of healthcare providers, including staff nurses. There are many contributors to the care of oncology patients. Nurses however, maintain a vital role when it comes to the management of pain in this population. The nurse is often the first to respond to a patient's report of pain. They are also the healthcare providers readily available at the bedside to educate patients on how to actively participate in the management of their symptoms, including pain. Finally, when physicians prescribe less appropriate types, or doses of analgesics, nurses often play the role of advocate on behalf of the patient, providing assessment data to support appropriate management (McMillan, Tittle, Hagan,

Laughlin, and Tabler, 2000). The Agency for Health Care Policy and Research (AHCPR) guidelines suggest that 90% of cancer pain may be controlled through proper education of health care professionals (1994).

Nursing certification is a process in which a non-governmental agency validates the registered nurses' qualifications and expert knowledge of practice in a specialized area of nursing. Oncology Certified Nurses have met or exceeded requirements for practice in cancer care and have demonstrated their knowledge by passing a standardized exam in oncology nursing, developed by the Oncology Nursing Certification Corporation (ONCC). Nurses certified by ONCC are also expected to have completed education in oncology nursing and have demonstrated specific knowledge of symptom management including pain. Oncology certified nurses have a tested knowledge of the specialty which is based on current professional practice.

Problem Statement

Previous research has focused mainly on the nurses' knowledge and attitudes about pain management. Unfortunately, there is very little research focusing on whether oncology certification is beneficial in the management of pain in the oncology population. The purpose of this study is to determine whether Oncology Certified Nurses (OCN's) demonstrate a higher level of knowledge regarding pain management than the Non-Certified Oncology Nurses (NCON's) when caring for the oncology population.

Research Questions

The following questions are addressed in this study:

1. What level of knowledge do OCN's have regarding pain management in the cancer population?

2. What level of knowledge do NCON's have regarding pain management in the cancer population?
3. Do OCN's have a significantly higher level of knowledge regarding pain management of the oncology population, when compared to NCON's?

Definition of Terms

The following terms are defined for the purpose of this study:

Pain- "is an unpleasant sensory and emotional experience arising from actual or potential tissue damage" (National Pain Foundation, 2010).

Knowledge- "is the fact of knowing something with familiarity, obtained by investigation, acquired study, or experience "(Merriam –Webster Online Dictionary, 2009).

Significance of the Study

For many years, management of pain has been a priority for many national organizations which represent healthcare providers. Millions of dollars and countless hours have gone into creating models and making plans to eliminate this epidemic. Unfortunately, despite all of these efforts, many cancer patients still suffer with pain.

Nurses are the primary care providers for the oncology population. They are pivotal in most decisions related to patient care. If lack of knowledge has been identified as the primary barrier to proper management of pain, examining the level of knowledge nurses possess is an important step toward better pain management for the oncology population. The intent of this study is to provide insight into whether OCN's demonstrate a higher level of knowledge regarding pain management than NCON's.

Results of this study may assist schools of nursing and in-service education departments, insuring the importance of effective pain management when planning nursing curriculum.

Chapter II

Review of the Literature

The purpose of this chapter is to present a comprehensive review of relevant literature. Most of the research available to date regarding nurses' knowledge of pain management almost always includes the correlation of nurses' attitudes, as they are so closely intertwined. However, only the findings pertaining to nurses' knowledge are reviewed here. Knowledge is gained through education. Therefore, it is important to include research on the methods to educate nurses in the management of pain. Only one study was found to address the effect of certification in oncology nursing on pain management. This overall lack of data supports the need for further research into this matter.

Knowledge

McMillan and colleagues (2000) sought to assess nurses' knowledge and attitudes about pain management and patients in pain. Eighty-five nurses, both RNs and LPNs, from seven medical-surgical units within two Veterans Administration (VA) hospitals participated in the study. To assess the nurses' knowledge, the Pain Management Knowledge Test (PMKT) was used. The PMKT is a 31-item multiple choice test that covers physiology and characteristics of pain, addiction, dependence, tolerance, and goals of pain management. The study found that nurses' were most knowledgeable about the importance of asking patients about their pain and around the clock scheduling of opioid

analgesics, use of distraction and tolerance. However, there was a knowledge deficit when it came to the nurses understanding of the physiology of pain and the pharmacology of the analgesics.

Rushton, Eggett, and Sutherland (2003) studied knowledge and attitudes about cancer pain management among oncology and non-oncology nurses. The purpose was to obtain baseline data about the knowledge and attitudes of a group of Utah RNs regarding control of cancer pain. Potential study participants were mailed a letter, explaining the study, a demographic survey and the Nurses Knowledge and Attitudes Survey Regarding Pain, developed by Ferrell. The tool contains 37 items based on standards of pain management from American Pain Society, World Health Organization, and AHCPR (Rushton et al., 2003). Forty-four oncology nurses and 303 non-oncology nurses returned the surveys that were used in the data analysis. Findings suggested that the oncology nurses knowledge correlated more closely with the recommended principles of pain management in the cancer patient than did those of the non-oncology nurses. As with the previous study by McMillan and colleagues (2000), the findings suggest oncology nurses have a lack of knowledge in regard to the pharmacology of medications used in managing cancer pain.

In yet another study pertaining to the assessment of nursing knowledge, Wilson (2007) sought to determine whether there is a difference in the knowledge base between two groups of nurses with different backgrounds, and whether this was related to clinical experience or post-basic education. One hundred questionnaires were given to two groups of nurses' (hospice/oncology and district). Both groups were considered to be expert nurses' because of their post-basic education and clinical experience. However,

the district nurses' were considered expert generalists because of their focus on a wide range of nursing skills and clinical interventions. Seventy-two nurses participated by completing the revised Pain Survey devised by McCaffery. The survey measures nurses' knowledge of pain assessment and management. Findings suggest that the hospice/oncology nurses' had a more comprehensive knowledge of pharmacology, theories of pain, and management. Interestingly, the knowledge of those nurses did not appear to be related to their years of experience.

Clarke et al. (1996) wanted to assess the knowledge that RNs possess in regard to pain management and whether their educational preparation had any influence on that knowledge. The researchers administered the Pain Management: Nurses Knowledge and Attitude Survey to 120 RNs from two surgical ICUs, two orthopedic units, and two medical units including one medical oncology unit. Demographic information was also collected which included area of clinical practice, years of experience, general nursing degree, and other degrees or certification. Findings suggested that the level of nursing education positively correlated with mean scores on the Nurses Pain Knowledge and Attitude Survey. Also, nurses who worked on the medical oncology unit scored higher than nurses from the eight other non-oncology units surveyed. Results showed that there are inconsistencies in the answers provided and an overall lack of knowledge regarding accepted strategies for pain management. Overall, the findings were similar to previously cited studies.

Education

Research suggests that other parts of the world are encountering the same issues regarding lack of nurses' knowledge and attitudes in pain management. A longitudinal

study, conducted in Europe by Wells, Dryden, Guild, Levack, Farrer and Mowat (2001) hypothesized that the hospital Palliative Care Team's advice and informal teaching encounters would improve the knowledge and attitudes of the nurses and physician in regard to pain management. One hundred thirty-five doctors (n=32) and nurses (n=103) from an oncology surgical unit participated. Study participants were asked to complete the Knowledge and Attitude scale devised by Elliott and colleagues (1995). The scale consisted of 27 items pertaining to an individual's current knowledge and attitudes about pain and pain management. Participants also completed a demographic questionnaire about previous training, personal and professional details, and current priorities for training in palliative care. Baseline data was similar to the findings in the previously cited studies, lack of knowledge and attitudes in management of pain. The initial data in this study was used primarily to target areas in need of education by the institution's Palliative Care Team. The team was able to provide teaching sessions on a surgical unit where large numbers of cancer patients are cared for and informal education opportunities that arose when patients on the unit were referred to the Palliative Care Team. At one year, 101 study participants completed the second set of questionnaires. Initial results indicated that having the personal interactions and education forums of the Palliative Care Team did improve the knowledge and attitudes over the course of the year. However, only 19 staff members were able to attend the formal teaching sessions. Further analysis suggested that the staff members that attended the formal teaching sessions were no more likely to have improved knowledge when compared to those who did not attend. Therefore, the findings were thought to be a result of the good working relationships that developed rather than through formal education.

Wilkes, Lasch, Lee, Greenhill and Chiri (2003) hypothesized that educational intervention such as Cancer Education Module for the Management of Pain (CEMMP) would be effective in changing graduate nursing students' level of knowledge of cancer pain management. The researchers also believed that the benefits of early and reinforced exposure of such pain education would be maintained over time. CEMMP curriculum includes the pathophysiology of cancer pain, pharmacologic and non-pharmacologic management, collaborative care, cultural diversity in pain expression and receptivity to treatment, and pain management under managed care. An oncology nurse specialist delivered seven, two-to-four hour seminars which covered the CEMMP curriculum at three participating graduate schools. Ninety-two graduate nursing students participated in the study. Students were asked to take a pretest before the seminar and a post-test immediately after the class as well as a follow up test 6 and 24 month later. Although 53% did not return the 6 month test and 77% did not return the 24 month test, the investigators were still able to demonstrate that the participants improved their knowledge of cancer pain management and also retained this knowledge at the follow-up tests.

De Rond, de Wit, van Dam, van Campen, den Hartog, and Klievink (2000) of the Netherlands implemented a Pain Monitoring Program (PMP) for the purpose of improving nurses knowledge about pain and pain treatment. They also intended to enhance the nurses' understanding of the patients' pain experience, and to change the nurses' behavior toward pain management. The PMP was a 3 hour long educational program consisting of formal lecture and open discussion. The focus was on the current trends in pain assessment and treatment. The program also included discussion about

analgesics and use of non-pharmacological pain treatment. The nurses' were also instructed on the importance of daily pain assessment using a Pain Intensity Scale (from 0-10). The study was conducted throughout three hospitals in the Netherlands. In total, 240 nurses worked in the nine wards from which participants would be gathered. The effects of the PMP were measured using a pre-test and post-test design before the start of the education program and again at 6 months, after implementation of the PMP. Participants were asked to complete two questionnaires and a few socio-demographic questions at both assessment points. The first questionnaire the participants completed was a Dutch version of Ferrell's Patient Pain Questionnaire, in which responses were measured on a 5-point Likert type scale (strongly agree, agree, not agree, disagree, strongly disagree) to measure nurses knowledge of pain. The second study measure was a newly created Pain Attitude Inventory (PAI). The PAI is a nine item questionnaire which measures nurses' opinions about several aspects of pain and pain management (DeRond, et al. 2000). For analysis, data from 175 nurses at pre-test and 144 nurses at post-test were included. To estimate the amount of knowledge gained during the PMP, the results of the pre-test and the post-test were compared by means of a Student's *t*-test. The results showed that nurses improved their knowledge of pain management after the PMP was implemented.

Effect of Certification

Coleman and colleagues (2009) conducted a study in which they compared Oncology Certified Nurses to non-Oncology Certified Nurses for knowledge related to symptom management of pain. They also measured patient satisfaction and nurse satisfaction. Patients were asked to complete the Patient Pain Questionnaire (PPQ) and

the Press Ganey Inpatient Survey (INVR). Nurses completed the Nurses Knowledge and Attitude Survey Regarding Pain (NKASRP), Nurses Knowledge and Attitude Survey, a questionnaire on work satisfaction, and lastly, a general demographic form. The Patient surveys were linked to the nurse who was providing care at that time. The results of the cancer patients surveys (n=270) showed overall high satisfaction with their care, and they believed that their pain was managed well. There was statistically no difference between the management of the patient's pain by certified nurses and noncertified nurses in this area. However, results showed that Oncology Certified Nurses scored higher on the NKASRP than noncertified nurses. Attending more hours of continuing education and being members of the Oncology Nursing Society (ONS) were found to be contributing factors. Although, not relevant to this review of literature, job satisfaction was high for all nurses who participated in the study (n=93), with noncertified nurses scoring slightly higher.

Conclusion

Methods to treat pain have been in existence for quite some time, and it is estimated that 90% of cancer pain is treatable, yet effective pain management continues to elude many patients. Nurses can assume a very important role in the assessment and management of their patient's pain. However, research findings suggest that nurses are not prepared to handle this critical role due in part by their lack of knowledge and individual attitudes regarding pain, and pain management. There seems to be a reoccurring theme that implies a nurses preparation and education about pain management is a contributing factor. Results support the idea that pain education has been beneficial to nurses which in turn will overall benefit the patient. Certification is

one way in which oncology nurses can demonstrate their advanced knowledge, and continue to provide superior pain management to the oncology population.

Chapter III

Methods

In this chapter, the methodology of the study is presented. This includes the characteristics of the sample, and a description of the instruments of measurement used to collect data. In addition, the procedures for data collection, and the methods of data analysis are discussed.

Sample

The target population included nurses from two Oncology Nursing Society (ONS) chapters in west-central Florida. Forty-one nurses were recruited to participate in the study. All of the nurses were currently practicing, and were caring for cancer patients in their primary nursing role. Nineteen of the nurses were OCN's, and twenty-two were NCON's. Nurses who held certification in pain management were excluded.

Instrumentation

Pain Management Principles Assessment Test

The Pain Management Principles Assessment Test (PMPAT) was administered. This instrument was chosen for use in this study, because it is a reliable and valid tool for measuring knowledge of pain management principles. The questionnaire contains 31, multiple choice items that cover pain, addiction, dependence, tolerance, goals of pain management, and principles of pain assessment and management (McMillan et al., 2000). A higher score indicates a higher level of knowledge about the management of pain. The

fact that the test was built from a blueprint, basing items on a review of literature and that it was studied in a pre to post test fashion ($t= 6.76$, $p < 0.00$), supports the validity of this instrument for use in this study. Test-retest reliability with a one-week delay supports the reliability of the instrument as well ($r= 0.84$, $p < 0.00$) (McMillan. et al., 2000).

Demographic Data

A demographic data form was created for use in this study. The form contains items such as age, gender, ethnicity/race, level of education, years of experience, and area of specialty.

Procedures

Approval was sought from the west central ONS chapters to approach their members for the purpose of participation in the study. Upon acceptance, approval was sought from the University of South Florida Institutional Review Board. Nurses were asked to participate at one of the monthly meetings between March and April of 2010. A cover letter, explaining the study in its entirety was given to the members. The investigator was present to answer any concerns or questions related to the study. Nurses agreeing to participate were given the demographic sheet and the PMPAT. Completion of the forms implied consent. The instruments were gathered upon closure of the meeting by the investigator and kept in confidence. No personal identifiers appeared on the questionnaire.

Data Analysis

Demographic data was analyzed using frequencies, percentages, means, and standard deviations. Means and standard deviations were used to answer research question 1; what level of knowledge do OCN's have regarding pain management in the

cancer population? Means and standard deviations were also used to answer research question 2; what level of knowledge do NCON's have regarding pain management in the cancer population? Independent t-test was used to answer research question 3; do OCNs have a higher level of knowledge regarding pain management of the oncology population, when compared to NCON's?

Chapter IV

Results, Discussion and Conclusions

This chapter presents the results of the Pain Management Principles Assessment Test, which was administered to both OCN's and NCON's. This section discusses the strengths and weaknesses that surround the results. It also discusses, what implications the findings have for nursing and, future research.

Results

Demographic Information

The sample consisted of 41 nurses, 19 of whom were Oncology Certified Nurses. The mean age was 48.9 years, with a range of 28-65 years. Of the 41 nurses, 92.7% (n=38) were females, while 4.9% (n=2) were males. One participant did not report age or gender. The majority of nurses were Caucasian (85.4%, n=35), while 7.3% (n=3) were African American, 4.9% (n=2) were Asian, and 2.4% (n=1) were American Indian/Alaskan Native. Most of the nurses were of Non-Hispanic ethnicity (90.2%, n=37). Eighteen of the nurses reported having an Associate in Science of Nursing degree or Diploma and 18 reported having either a Bachelors in Science of Nursing or a Masters in Science of Nursing. Five participants listed their education level as "other" which consisted of Licensed Practical Nurses (n=3) and nurses with Masters in Health

Administration (n=2). Fifty-six percent (n=23) of the nurses had 20 or more years of experience (Table 1).

Table 1. Frequency and Percentage of Demographic Characteristics

Demographic Content	Frequency	Percent
Gender		
Number of Females	38	92.7
Number of Males	2	4.9
Ethnicity		
Hispanic or Latino	1	2.4
Not Hispanic or Latino	37	90.2
Unknown	3	7.3
Race		
American Indian/Alaskan Native	1	2.4
Asian	2	4.9
Black or African American	3	7.3
White or Caucasian	35	85.4
Experience		
≤ 3 years of experience	1	2.4
4-7 years of experience	6	14.6
8-11 years of experience	1	2.4
12-15 years of experience	7	17.1
16-19 years of experience	3	7.3
≥ 20 years of experience	23	56.1
Education		
Associate Degree	16	39.0
Diploma	2	4.9
BSN	13	31.7
MSN	5	12.2
Other Degree	5	12.2
Practice Setting		
Inpatient	17	41.5
Outpatient	18	43.9
Home care	3	7.3
Other	3	7.3

Level of Knowledge

The raw scores of the PMPAT in the OCN group were calculated and analyzed to address the first research question, the level of knowledge that the OCN possess regarding pain management in the cancer population. Raw knowledge scores ranged from 16 (52%) to 27 (87%), with a mean of 21.9 (71%) and a standard deviation of 2.9 (Table 2). The same process was repeated for the NCON group to answer the second research question, the level of knowledge that the NCON possesses regarding pain management in the cancer population. In this group, the raw knowledge scores ranged from 13 (41%) to 25 (81%), with a mean of 19.09 (62%) and a standard deviation of 3.6. In order to answer the final research question and explore differences in knowledge regarding pain management of the oncology population between the OCN and the NCON, an independent t-test was conducted. The OCN's scored significantly higher on the PMPAT than did the NCON's ($p=.007$).

Table 2. Independent t-test Comparison of OCN's and NCON's in their Levels of Pain Management Knowledge

Group	<i>n</i>	<i>M%</i>	<i>M raw</i>	<i>SD</i>	<i>t</i>	<i>p</i>
OCN	19	71	21.9	2.9	-2.8	.007
NCON	22	62	19.1	3.6		

When grouping the nurses with an Associate of Science in Nursing (ASN) and Diploma together, their mean score on the PMPAT was 19.7 with a standard deviation of 3.7. The nurses with a higher level of education, Bachelors of Science in Nursing (BSN) and Masters of Science in Nursing (MSN), had a mean score of 21.6 with a standard deviation of 3.2 (Table 3). The level of knowledge for the BSN/MSN group is not

statistically different from the ASN/Diploma group ($p = .120$). Therefore, the level of education did not seem to influence the results of the study.

Table 3. Independent t-test Comparison of ASN/Diploma and BSN/MSN in their Levels of Pain Management Knowledge

Group	<i>n</i>	<i>M%</i>	<i>M raw</i>	<i>SD</i>	<i>t</i>	<i>p</i>
ASN/Diploma	18	64	19.7	3.7	-1.6	.120
BSN/MSN	18	70	21.6	3.2		

Areas in which the nurses knew the least on the PMPAT included physiology of pain which included questions related to nerve fibers, gate control theory, and the effects of pain on the body (Table 4). The nurses also knew the least about pharmacology, including when to administer an analgesic that is ordered “as needed”, to maintain a steady state of analgesia. Patient pain intensity judgment and goals of pain management were also areas of difficulty. Areas in which 85% or more of the nurses answered correctly include use of distraction, NSAID’s in conjunction with narcotic to relieve pain, issues surrounding tolerance, benefits of maintaining a steady state of analgesia, patient control with pain management and that the patient is the most accurate and reliable judge of the intensity of their pain.

Table 4. Frequencies and Percentages of Correct Answers on the PMPAT

Content	Answered Correctly	
	Frequency	Percentage
Areas of Least Knowledge		
Physiology		
Nerve fibers	3	7
Gate control theory	10	24
Pain's effects on the body	18	44
Pharmacology		
Administration of analgesics to achieve steady state	6	15
Best method of administration to achieve steady state	14	34
Goals of pain management	9	22
Nurses' inability to judge patients' pain intensity	9	22
Prevalence of chronic cancer pain	17	42
Areas of Greatest Knowledge		
Steady state analgesia	35	85
Need for increased dose as a result of tolerance	35	85
Use of NSAIDS as an adjunct	36	88
Mechanism of action of analgesics	36	88
Patient's control pain management regimen	37	90
Physician contact when pain persists despite max dose	39	95
Patient is most accurate judge of pain	40	98
Use of distraction	41	100
Tolerance definition	41	100

Discussion

Demographic Information

When discussing demographic information obtained from a single sample, one would expect to find some differences from the larger population. In this study, Caucasian females comprised the majority of the 41 participants (n=38). According to the 2004 National Sample Survey of Registered Nurses (NSSRN), there are 2,909,357

licensed Registered Nurses in the United States. Approximately 5.8% are males, 4.2% are African American, 1.7% are Hispanic Latino, 3.1% are Asian, and 0.3% are American Indian/Alaskan Native. Therefore, this sample is reflective of the population of RN's in the United States. The average age of a nurse in the United States in 2008 was 47.0 years according to initial findings of the NSSRN. Participants in this study were representative of the 2004 NSSRN for gender, ethnicity, race, and age. However, because the data was collected in one geographic location and there was limited input from males, the various races, and ethnic backgrounds, results may not be generalized to include the entire population of nurses caring for oncology patients.

For the purpose of this study, oncology nurses were recruited from two local Oncology Nursing Society chapters in west central Florida. These nurses were chosen because of their known involvement with the care of patients with cancer. A strength of this study, is that the sample of nurses represent different aspects of nursing care. The Greater Tampa Chapter is composed of mostly oncology nurses caring for patients in a comprehensive cancer care setting at Moffitt Cancer Center. The Nature Coast Chapter is composed mostly of nurses caring for patients in the rural, private, and outpatient setting. A limitation of this study was the small sample size, taken from one geographic region. As with any study, a larger sample size might have been more representative.

Level of Knowledge

Oncology Certified Nurses scored significantly higher on the PMPAT than did the Non Certified Oncology Nurses. This finding is consistent with research conducted by Coleman and colleagues, which found OCN's scored significantly higher on the pain management portion of the NKASRP than the NCON's (2009). Studies by Rushton and

colleagues (2003), and Wilson (2005) have shown that nurses caring for the oncology population score higher on various pain knowledge assessment tests as well. It is thought that the oncology nurses caring for cancer patients with pain are more knowledgeable through their work experiences, and various educational offerings. With the exception of the study by Coleman and colleagues, the other findings did not address certification as a potential influence upon the greater knowledge of pain management.

There was a notable difference in the scores from the PMPAT when comparing educational background. The BSN/MSN group scored higher than the ASN/Diploma group. However, the difference was not statistically significant. This is unlike the findings of Clarke et al. (1996) that found a positive correlation between the level of nursing education with the mean scores on the Nurses Pain Knowledge and Attitude Survey. There are several factors that may have influenced the outcome of the current study. The first is the small sample size. Another consideration is the number of years a nurse has been in practice. In this study, there were a large number of nurses (n=23) with 20 or more years of experience. These nurses may hold an ASN or Diploma. However, because of their experience may have scored higher on the PMPAT. Lastly, the nurses' place of employment and amount of time providing direct patient care to the oncology population could have affect the outcome.

Although the Oncology Certified Nurses and the BSN/MSN prepared nurse scored higher than their counterparts on the PMPAT, the mean for all groups was never higher than 71%. That is still considered a failing score by most standards. This only signifies the need for more education on pain management in current curriculums. Pathophysiology courses could include matters such as nerve fibers, gate control theory

and pain modulators. Issues surrounding administration of opioids to achieve a steady state and best methods of administration would be best explained in a pharmacology course. Medical-surgical courses could incorporate education on the prevalence of chronic pain and goals of pain management. Lastly, assessment courses could discuss the effects that pain can have on the body.

Implications for Nursing

Obtaining specialty certification is beneficial to oncology nursing. In order to be eligible for certification, the Registered Nurse must have been licensed for at least one year, completed a minimum of 1,000 hours of adult oncology nursing, and complete a minimum of 10 contact hours of continuing nursing education in oncology nursing. The exam consists of 165 multiple choice items with 22% of the questions pertaining to symptom management, including alterations in comfort, rating scales, pharmacologic interventions and non-pharmacologic interventions. Certification in oncology signifies that a nurse has experience and specialty knowledge beyond that of the general nurse.

As a result of an aging population and the increasing need for cancer care, the demand for knowledgeable nurses is on the rise. As our healthcare delivery system receives continued public scrutiny, employers look to distinguish themselves in the marketplace. Certification of nursing staff can factor into accreditation by various agencies. According to the Oncology Nursing Certification Corporation, 8 out of 10 people in the general population are aware that nurses can carry certification in a specialty area. Having certified nurses, allows patients to feel confident about the care they are receiving. Nurses also gain a sense of confidence and personal accomplishment from knowing that their knowledge in oncology nursing has been demonstrated.

Many OCN's go on to join national societies and local chapters catering to the oncology nurse, such as the Oncology Nursing Society (ONS) and the Hospice and Palliative Nurses Association (HPNA). Through these organizations, nurses have access to a vast amount of education in the form of books, continuing education programs, journal articles, peer groups and annual conferences. All of these are designed to keep nurses updated on current trends in oncology nursing, including pain management. This enables the OCN's to provide more comprehensive care to their cancer patient.

Conclusion

Management of pain, particularly in the oncology population has been a primary concern of patients, care givers and healthcare providers for countless years. However, 30-50% of patients continue to report unrelieved pain (Ashley, 2008). It is possible that, the nurses' lack of knowledge regarding pain management may contribute to poor pain relief in the oncology population. The results of this study identified that nurses whom obtain Certification in Oncology scored higher on their knowledge of pain management than their colleagues whom were not certified.

Although the OCN's scored higher on the PMPAT than the Non-OCN's, the scores for both groups were relatively low, indicating an overall deficit in knowledge regarding cancer pain management. It is evident that there is a need for more education. This study may offer guidance in creating learning opportunities for both OCN's and NCON's in the area of pain management.

Future research should include a larger sample of OCN's and NCON's from different ethnic backgrounds and geographic locations. The sample should also include a proportionate number of males and females. Including a more accurate account of the

participant's years of experience may be of benefit, as there may be a correlation between experience and levels of knowledge regarding pain management, although that relationship was not demonstrated in this study. Also, future studies should monitor nurses' pain management practices to evaluate whether knowledge of pain management principles has a positive effect on pain severity or distress

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Appendices

Appendix A: 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 with 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 administration route of opioid analgesics for cancer patients is which of the following?
 - a. Intravenous
 - b. Intramuscular
 - c. Subcutaneous
 - d. Oral**
 - e. Rectal

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

Appendix A: Pain Management Principles Assessment Test (Continued)

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**
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 results 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.

Appendix A: Pain Management Principles Assessment Test (Continued)

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 opioids 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
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:

Appendix A: Pain Management Principles Assessment Test (Continued)

- 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
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:
- a. Environment and social consequences of expressions of pain
 - b. Cultural diversity in the ways patients express their discomfort
 - c. The observable measurable actions of the patient
 - d. a and b
 - e. **a, b, c**
21. The action of naloxone is:
- a. To enhance the effect of opioid analgesics
 - b. **To act as a opioid antagonist**
 - c. To act as a opioid agonist
 - d. To act as a respiratory stimulant
22. Research suggests that:
- a. **Physicians underprescribe and nurses undermedicate for pain**
 - b. Physicians prescribe appropriately and nurses undermedicate
 - c. Physicians underprescribe and nurses give optimal doses based on those orders
 - d. Physicians prescribe appropriately and nurses medicate appropriately in the majority of cases
23. One significant disadvantage of meperidine is:

Appendix A: Pain Management Principles Assessment Test (Continued)

- a. It is more expensive than morphine
 - b. It has more CNS toxicity than morphine**
 - c. It is more addicting than morphine
 - d. It is more difficult to administer than morphine
24. Which of the following methods of opioid administration provides steady state analgesia?
- a. Patient controlled analgesia using a pump
 - b. Intravenous drip of opioids**
 - c. Intravenous bolus administration of opioids
 - d. Intramuscular injections every two hours
25. The primary benefit of providing steady state analgesia is which of the following?
- a. It is cost effective because it uses less nursing time
 - b. The patient receives less opioid overall
 - c. Respiratory depression is less likely to occur
 - d. The patient is more comfortable**
26. A nursing decision to administer pain medication should be based on all of the following EXCEPT:
- a. The patient's description of the quality of his/her pain
 - b. The family's request to keep the patient comfortable
 - c. The nurse's objective assessment of the intensity of the pain**
 - d. The patient's subjective report of the intensity of her/his pain
 - e. The nurse's knowledge of the action of opioid analgesics
27. Who should have the most control over the patient's pain management regimen?
- a. The patient**
 - b. The family
 - c. The nurse
 - d. The physician
 - e. 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?
- a. Addiction
 - b. Physical dependence
 - c. Tolerance**
 - d. Addictive personality

Appendix A: Pain Management Principles Assessment Test (Continued)

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:
- a. **Cutaneous stimulation**
 - b. Distraction
 - c. Diversion
 - d. TLC (tender loving care)
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.

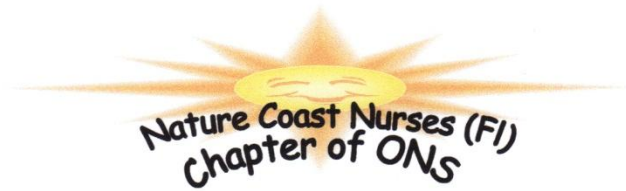
Appendix B: Demographic Data Form

Demographic Data Form

1. Age: _____
2. Gender: _____
3. Ethnicity:
 - ☐ Hispanic or Latino
 - ☐ Not Hispanic or Latino
4. Race
 - ☐ American Indian/Alaskan Native
 - ☐ Asian
 - ☐ Native Hawaiian/Pacific Islander
 - ☐ Black or African American
 - ☐ White or Caucasian
5. Please select number of years practicing as a registered nurse.
 - ☐ 3 years or less
 - ☐ 4-7 years
 - ☐ 8-11 years
 - ☐ 12-15 years
 - ☐ 16-19 years
 - ☐ 20 years or >
6. Indicate highest level of nursing education that applies.
 - ☐ Associate Degree
 - ☐ BSN
 - ☐ MSN
 - ☐ PhD
 - ☐ Other _____
7. Indicate certifications that apply.
 - ☐ Oncology Certified Nurse
 - ☐ Advanced Oncology Certified Nurse Practitioner
 - ☐ Other (no abbreviations please) _____
8. Please indicate work/practice setting.
 - ☐ Inpatient
 - ☐ Outpatient
 - ☐ Home Care
 - ☐ Research
 - ☐ Consultation
 - ☐ Education
 - ☐ Nursing Home
 - ☐ Retired
 - ☐ Other: (Specify) _____
9. Do you provide care to oncology patients?
 - ☐ Yes
 - ☐ No

If Yes, what percentage of your time is spent providing direct patient care? _____

Appendix C: Letter of Approval: Nature Coast Chapter ONS



Nature Coast Nurses (FI) Chapter of ONS
C/O PO BOX 353
Trilby, FL 33593-0353
voice mail: 352-583-3612, fax: 352-397-2010
Members e-mail list: Cyndi@RealNurseEd.com

March 2, 2010

The Nature Coast Nurses Chapter of ONS give permission to Sherrie LaLande to request our members to participate in her pain research during any upcoming chapter meeting in 2010.

Sincerely,
Cyndi
Cyndi Cramer, BA, RN, OCN®, PCRN
Nature Coast Nurses Chapter of ONS
Communication Chairperson

Appendix D: Letter of Approval: Greater Tampa Chapter ONS



Greater Tampa Chapter Oncology Nursing Society

PO BOX 82985 * Tampa, Florida 33682-2985



Greater Tampa Oncology Nurses Society
P.O. Box 82985
Tampa, Florida 33682-2985

March 3, 2010

Dear Sherrie,

The Greater Tampa Oncology Nurses Society is pleased to invite you to gather the data necessary to conduct your research, leading to your Thesis titled, "Assessing the Oncology Certified Nurses Knowledge of Pain Management" at our upcoming meeting. The chapter encourages educational opportunities, and is hopeful you will present your studies' findings in the near future.

Best Wishes,

Terry Sylvanus

Terry Sylvanus, RN, MSN, ACNS-BC, AOCN®
President-Elect
Greater Tampa Chapter
Oncology Nursing Society

Appendix E: Letter of Approval USF Institutional Review Board



DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 0000166
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-475
(813) 974-5638 • FAX (813) 974-561

March 23, 2010

Sherrie LaLande
College of Nursing

RE: **Exempt Certification** for IRB#: Pro00000605
Title: Assessing the Oncology Certified Nurses Knowledge of Pain Management

Dear Sherrie LaLande:

On 3/22/2010, the Institutional Review Board (IRB) determined that your research meets USF requirements and Federal Exemption criteria as outlined in the federal regulations at 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement) survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

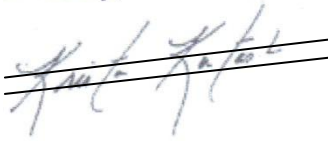
As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures. Please note that changes to this protocol may disqualify it from exempt status. Please note that you are responsible for notifying the IRB prior to implementing any changes to the currently approved protocol.

The Institutional Review Board will maintain 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, whichever is longer. If you wish to continue this protocol beyond five years, you will need to submit a continuing review application at least 60 days prior to the exemption expiration date. Should you complete this study prior to the end of the five-year period, you must submit a request to close the study.

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 813-974-9343.

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

Sincerely,

A handwritten signature in dark ink, appearing to read "Krista Kutash", is written over two horizontal lines.

Krista Kutash, PhD, Chairperson
USF Institutional Review Board

Cc: Various Menzel. CCRP. USF IRB Professional Staff