THE RELATIONSHIP BETWEEN CLINICAL NURSING EXPERIENCE AND PAIN MANAGEMENT IN PREVERBAL CHILDREN

A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF SCIENCE

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

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DECEMBER, 2003

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November 5, 2003
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To the Dean of the Graduate School:

I am submitting herewith a thesis written by Rick Calhoun, BSN entitled "The Relationship Between Clinical Nursing Experience and Pain Management in Preverbal Children." I have examined this Thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science with a major in Nursing.

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DEDICATION

This thesis is dedicated to my wonderful wife, Carla, who gave completely and unselfishly to my success. You have been at my side and quite often carried me with your prayers and Godliness. You believed in me when I was ready to give up. I am grateful beyond words. You can now have your husband back.

I also dedicate this thesis to my loving children, Rider and Condey, who sacrificed so much for me during this time. Both of you tried to understand why your Dad was gone so much and loved me still. I love you both. I will never spend so much time away from you again.

ACKNOWLEDGMENTS

Thank you to everyone who has helped to make this thesis a success, especially:

To my God and Savior Jesus Christ, to whom I owe my entire existence. He has been my rock and security.

To Dr. Anne Stiles, for her encouragement, guidance and leadership in the completion of this thesis. Her endless attention to detail and desire to see me succeed helped turn a project for graduation into an experience that I have enjoyed and will soon not forget.

To Dr. Gail Davis, for her support and vast knowledge. Her knowledge of pain control and vast resources provided me with that little piece of the puzzle needed to make this thesis complete.

To Patricia Jones MSN, FNP, BC, who first put the crazy idea in my head that I could actually complete a thesis.

To the many volunteers and nurses who gave of their time and energy to assist me in this endeavor.

ABSTRACT

THE RELATIONSHIP BETWEEN CLINICAL NURSING EXPERIENCE AND PAIN MANAGEMENT IN PREVERBAL CHILDREN

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DECEMBER, 2003

The purpose of this retrospective study was to explore whether the level of a pediatric nurse's clinical experience is related to effective pain management in hospitalized preverbal children age three years or less. The investigator reviewed 50 closed charts obtained from one hospital medical records department.

The selection criteria of charts included: pediatric patient charts who are age three years or less, discharged between the dates of January 1, 2000 and December 31, 2002, and with an International Classification of Diseases (ICD-9) diagnoses for acute otitis media, otitis media, acute pharyngitis, acute tonsillitis, peri-tonsillar abscess, Kawasaki's, mononucleosis, pneumonia, and cellulitis.

Findings were unexpected since the inclusion criteria were selected based on diagnoses known to be painful. There were 54 charted entries with 30 entries containing a quantitative or qualitative pain assessment. Only six of the pain assessments included a quantitative pre and pos-pain intervention evaluation. Of the 54 entries there were 22 documented entries of pain relieving interventions (pharmacological or non-pharmacological). In this study the nurses with less pediatric clinical experience documented more about the patients' pain and intervened more often.

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CHAPTER 1

INTRODUCTION

Ronald Parisi is the father of a five-year-old boy who died of acute myeloid leukemia six years ago. Mr. Parisi recounts the last days of his son's life in *U.S. News and World Report* (Brink, 2000). In the report Mr. Parisi described how his son was sloughing the mucosal lining of his intestines and vomiting bloody flesh due to the harsh chemotherapy agents being used. He continues to describe how the last twelve hours of his son's life were spent in pain because inadequate analgesics were administered. His son died clenching his fists, grimacing, stiffening his body, and screaming in pain (Brink, 2000).

Problem of Study

A phenomenon that most people experience as a minor inconvenience in daily life is a major issue for children (Lynch, 2001). Generally, it is agreed upon that for most of modern medicine, pain in children has not been a topic of importance and that children do not get the relief from pain they require (Lynn, 1999). Zisk (2003) notes that the youngest patients were often denied pain relief in the past 100 years even after advances in analgesics were made available. Schechter, Allen and Hanson (1986) found a lack of research into pain control in children and cited difficulties with assessing this experience as a major factor.

This problem may be perpetuated by the inexperience of nurses who must interpret the intensity and quality of pain that a child who is unable to communicate is experiencing. Hamers, Abu-Saad, van den Hout, and Halfens (1998) suggest children who are unable to vocalize pain are at risk for under-medication of pain. Is there a relationship between nursing experience and the ability of nurses to effectively manage pain in preverbal children? If a relationship does exist, then perhaps through appropriate staffing assignments, children could suffer less through more effective pain management.

Justification of Problem

Ineffective pain management in children by healthcare workers is a problem that results in unnecessary suffering by the child, unwanted distress to the parents, decreased healing, and prolonged hospital stays (Lynn, 1999). In fact, The American Academy of Pediatrics (AAP) (2001) has gone as far as to say that insufficient knowledge and inadequate application of knowledge by healthcare workers has contributed to poor pain management in children. The AAP has published a position statement that places healthcare workers as one of the main reasons for inadequate pain management (2001). According to the AAP, healthcare workers and medical providers possess insufficient knowledge and inadequately apply knowledge that contributes to ineffective pain management. Consistent with Patricia Benner's Theory of Novice to Expert (1984) is the notion that ineffective pain management also results from the inexperience of nurses.

This study is significant because pain control in pediatric patients has largely not been a priority for most of the twentieth century (Lynn, 1999). In fact the prevalent view has been that infants feel no pain and young children feel less pain than adults (Anand & Hickey, 1987; Lynn, 1999). This idea stemmed from the research of McGraw in 1941 (Zisk, 2003) in which infants a few minutes old to children four years of age were observed after they were exposed to a pinprick. McGraw reported infants showed no response or at best a diffuse response to pain while the older children were able to localize pain. This led McGraw to theorize that pain sensation required memory and thus a mature nervous system which infants and young children do not possess (McGraw, 1941 as cited in Zisk, 2003). Studies such as this have perpetuated myths leading to poor pain management in children.

This study is also of significance to patients like Ronald Parisi's son who might have experienced better pain management with the assignment of more experienced nurses to his care. The results of this study can be used to formulate protocols for the assignment of staff with a varying skill mix to appropriate pediatric patients.

Theoretical Framework

The theoretical framework that has been selected for this study is based on the work of Patricia Benner. Benner (1984) theorized that nurses gain increasing skill through experience. Nurses start out as novices relying on very concrete rules of practice. The novice nurse then progresses to the level of advanced beginner, competent, proficient, and expert nurse through increasing years of nursing and increasing exposure to various situations (Benner, 2000).

Each increase in expertise is accompanied by increasing levels of referential knowledge and application of this knowledge to practice. Benner notes that clinical expertise is accompanied by a nurse's ability to manage a patient with less reliance on strict rules of practice and more on situational references and on an ever-increasing ability to view the patient from a holistic perspective (Benner, 2000).

In applying this framework to the problem of pediatric pain control, the more experienced the nurse is, the more effective pain management the child will receive. Using Benner's theory, a novice nurse would rely simply on verbal cues of pain, or on documented changes in pulse rate, blood pressure and respiratory rate to determine if a child is in pain while an expert nurse would also incorporate referential knowledge into the assessment of the child to determine if the child is experiencing pain and to determine the intensity of that pain.

However, when a child is unable to verbalize his/her pain, or if a child's symptom of pain also resembles the cries of a hungry infant, the novice may be unable to make a reliable judgment as to intensity of pain. This can lead to inappropriate and ineffective pain management. As the nurse increases in skill and experience, he/she will be exposed to situations that can be used as referential knowledge to better assess and manage pain in preverbal children. This study will test Benner's Theory of Novice to Expert by proposing that the experienced nurse will make better decisions about pain control in preverbal children based not only on concrete biophysical data, but also on learned knowledge and experience.

Assumptions

Assumptions made in this study focus on expected nurse characteristics and expected nursing actions. Nurses were expected to have graduated from an accredited nursing program and possess a current nursing license to practice in the State of Texas. Nurses were expected to understand the protocols for pain assessment, analgesic administration, and documentation at the hospital in which they practice. Nurses were also expected to have clinical experience, specifically pediatric clinical experience.

Nurses were expected to follow agency protocols for documentation of pain assessment and analgesic administration. This includes a routine pain assessment and documentation of pre-intervention pain assessment and post-intervention pain assessment. It was expected that nurses would be using agency-approved pain assessment tools and documenting their findings in the appropriate forms in the chart and that the nurses were being truthful in their documentation.

Nurses were expected to understand the indications, dosage, side effects and signs of adverse reactions of analgesics and effects on pediatric patients. It was assumed that nurses had appropriate analgesic orders documented in the patients' charts and if not, would obtain appropriate orders. The agency was expected to provide the analgesics and supplies needed for treatments that nurses were to use.

In this study, nurses were also expected to have knowledge about effective pain management. The nurses were expected to understand the effects of uncontrolled pain on the healing process and the benefits to the children and parents when pain is controlled. It was also assumed that those nurses who had more clinical experience

would have more knowledge related to pain management than nurses with less clinical experience.

Hypothesis

The purpose of this study was to explore whether the number of years of a pediatric nurse's clinical experience is related to effective pain management in hospitalized preverbal children age three years or less. The research hypothesis that was tested in this study was: There will be a positive relationship between recorded pain ratings showing a reduction in pain and the nurses' years of clinical experience.

The null hypothesis that was tested was that there will be no statistically significant correlation between nurses' years of clinical experience and change in pain level on a 0 - 10 scale from pre to post-treatment as recorded in charts of hospitalized children age three years and younger.

Definition of Terms

Terms to be defined include nursing experience, pediatric nurse, pain management, and preverbal children. The theoretical and operational definition of each term will be discussed.

Nursing Experience

Theoretical. Benner (2000) discusses how nurses begin as novices and progress to the level of expert nurse through increasing years of clinical experience and exposure to various situations. The progression from novice to expert can take as little as three years or take many years (Benner, 1984). As the nurse progresses through each level of

nursing expertise, the nurse acquires skills and knowledge that will be used in mastering the current level and progression to the next.

Operational. Nursing experience will be measured as the self-reported total number of years of clinical nursing experience. The clinical experience can be in any area of clinical nursing and is not limited to work with preverbal children.

Pediatric Nurse

Theoretical. Benner (2000) points out that nurses' experience is not only quantitative but also qualitative. The type of experience is just as important as the years of experience. Each nursing specialty exposes a nurse to unique experiences within that specialty. This unique experience provides a referential knowledge that only nurses in that discipline would have (Prowse & Lyne, 2000).

Operational. A pediatric nurse is that nurse (Registered Nurse or Licensed Vocational Nurse) who declares herself or himself as a pediatric nurse on a demographic questionnaire (see Appendix A). Pediatric nurses in this study must report that they spend at least 80% of their time caring for pediatric patients.

Effective Pain Management

Theoretical. The concept of effective pain management is the joining of two different concepts. The first is the concept of pain, which is defined by Lynn (1999) as any biophysical or emotional response to noxious stimuli and by McCaffery (1968) as whatever the patient says it is and when they say it exists. Effective management is defined as the act or art of controlling to accomplish a specific end (Webster, 1996).

Pain management then is the act of controlling the biophysical or emotional response to noxious stimuli to the end of decreasing one's perceived pain intensity.

Operational. Effective pain management will be measured by the nurse's rating of the patient's pain intensity on an 11-point (0-10) scale where 0 is "no pain" and 10 is "maximal pain". The charting forms ask nurses to rate pre and post-intervention pain. A plus or minus will represent the increase or decrease of pain from pre to post-treatment as recorded in patients' charts. The treatment modality or intervention will constitute the method the nurse used to manage the pain (pharmacological or non pharmacological).

Preverbal Children

Theoretical. The concept of preverbal children is based on the idea that this group of children is unable to adequately verbalize needs. Preverbal children may possess a vocabulary but are unable to specifically express ideas (Soetenga, Frank, Pellino, and Hayes, 1999).

Operational. In this study, the concept of preverbal children is defined as children three years of age or less. The age of the child will be determined by the birth date recorded on the chart subtracted from the date of the pain measurement in the chart.

Limitations

This study was conducted in a single hospital with only a ten-bed pediatric unit. The hospital services a predominantly adult population. Another limitation is that the sample size was small (50 pediatric charts and nine nurses) and included only nine

medical diagnoses and no surgical diagnosis. Because of this study's small size, the findings cannot be generalized to other populations, other diagnoses, or other nurses.

Nurses may not be diligent in their documentation of pain assessments or interventions, thereby decreasing the validity of the data in the charts; a limitation ever which the investigator had no control. Another limitation of the study dealing with documentation is that the nurses may have inadvertently or knowingly recorded information incorrectly. There is no way for the investigator to know how long the child was in pain prior to the nurse assuming care of the child. This would mean that the child's pain might have been out of control, thereby altering the nurses' ability to effectively control the pain. Lastly, the subjective rating of pain on an ordinal scale of 0-10 has inherent limitations. One nurse's rating of "9" may not be comparable to another nurse's rating of "9".

Summary

Inadequate pain control in children has been a continuing problem perpetuated by myths and a lack of knowledge. This study will ask the question, "Is there a relationship between nurses' experience and the effective management of pain in preverbal children?" This problem results in unnecessary pain and suffering of children, distress to parents and more complicated recoveries. Anand and Hickey (1987) demonstrated how postoperative pediatric cardiac surgery patients receiving analgesic infusions recovered with fewer complications and with improved clinical outcomes. Increasing acknowledgement of the problem of pediatric pain has resulted in increased

research and a more proactive stance toward this problem by healthcare professionals and scholars.

Using Patricia Benner's Theory of Novice to Expert, it is hypothesized that nurses who have more clinical nursing experience will be able to better control pain in pediatric patients. The results of this study will be used to formulate protocols for the assignment of staff with varying skill mix to appropriate pediatric patients. The investigator has assumed nurses to be graduates from an accredited nursing programs and holders of a valid nursing license. Nurses were expected to perform within the rules and standards of their profession as it pertains to pain control in children. This study uses a small sample and is therefore not generalizable to other populations and relies on the integrity of the nurses participating in the study.

CHAPTER 2

REVIEW OF LITERATURE

Literature review for this study was conducted through the examination of medical and nursing peer reviewed journals and books. Online searches of Academic Search Premier, Cumulative Index to Nursing & Allied Health Literature (CINAHL), Journals@Ovid, Medline, and NexisLexis were accessed through the Texas Woman's University Blagg-Huey Library. Topics reviewed included the under-medication of pediatric patients, validity of self-report pain assessment tools, validity of observational pain assessment tools, validity of physiologic indicators as manifestations of pain, and nurses' ways of knowing.

Under-Medication of Pediatric Patients

Eland and Anderson (1977) conducted a study involving the postoperative administration of analgesics to pediatric patients. In their study the investigators reviewed the experiences of 25 children hospitalized for surgery. Eland and Anderson found that 21 of the 25 children had analgesics ordered and that 13 of the 25 children never received any analgesics. During one interview with a mother of a child in this study who had had 12 other surgical procedures in the same hospital, the investigators found that he had only been given one dose of analgesics for all 13 surgeries.

Eland and Anderson (1977) then conducted a matched-pair study of adults and children with identical diagnoses and matched 18 of the 25 subjects by diagnosis only.

In comparison to the 25 children who had a total dosing of 25 analgesics, the 18 adults received 372 narcotics analgesics and 299 non-narcotic analgesics for a total of 671 doses of analgesics.

For most of the 20th century, the dominant view was that children experienced less pain than adults and that neonates felt no pain at all (Lynn, 1999). This view stemmed from the belief that complete mylenation of nerve fibers was required for mature nerve tract function and that neonates and young children lacked this mylenation (Lynn, 1999; McGraw, 1941). Anand and Hickey (1987) and Fitzgerald, Millard, and Macintosh (1988) challenged this idea with studies that clearly indicate that infants have the biochemical pathways to perceive and react to pain stimuli.

Lynn (1999) reverberates the idea that pain in infants and young children is often under-treated and is one of the most feared symptoms of disease. Jacob and Puntillo (1999), while conducting a study on nurses' practice and management of pediatric pain, reported how pediatric patients routinely receive inadequate pain medication. Raj (2000) points out children are often not properly medicated for pain because the symptoms of pain are unrecognized by caregivers and that many caregivers believed giving analgesics to children especially young children would do more harm than good.

McCaffery and Beebe (1989) discuss how healthcare professionals need to be educated about pain and pain control and that pain control must become a priority. Nurses are given a unique role in terms of pain management as noted by McCaffery and Beebe. By their constant presence around the patient, nurses form the cornerstone of the

pain management team and are often the last line of defense against improper pain management.

The U. S. Department of Health and Human Services (1992) discussed how acute pain management begins with the belief that patients have access to the best pain management resources available and that this availability includes the access to caregivers who have been properly trained in pain management. In 2001, The American Academy of Pediatrics (AAP) described acute pain as one of the most common adverse experiences for a child and noted that healthcare workers are not providing adequate pain management due to a lack of knowledge and improper application of knowledge. It was not until 2001 that the AAP published a report discussing the under-treatment of pediatric pain and recommended that pediatricians and healthcare providers begin taking a more proactive approach to the management of pain in pediatric patients.

Although pain is a common experience for many patients, only recently has attention been directed to pain in children (Knoblauch & Wilson, 1999; Lynch, 2001; Lynn, 1999). Even with advances in technology that have allowed healthcare professionals to treat increasingly sick children, very little attention has been given to their pain control (Zisk, 2003). Myths persist about pain in children that propagate poor pain control in pediatric patients (Knoblauch & Wilson, 1999; Lynn, 1999; McCaffery & Beebe, 1989; Rush & Harr, 2001; Zisk, 2003).

Validity of Self-Report Pain Assessment Tools

Self-report measures of pain have been considered the gold standard for pain assessment in pre-school age children or older, however this method is unreliable in

preverbal children or in those who are physically unable to verbalize responses (McCaffery & Beebe, 1989). Soetenga, Frank, Pellino, and Hayes (1999) notes this to be true for children as young as three years, however this method is not adequate in infants and young children unable to verbally communicate (Lynn, 1999). The AAP (2001) notes that self-report tools are the most reliable assessment tool available for assessing pediatric pain; however, there are questions as to the validity of these tools in children ages 3 to 7 years, and children under 3 years are absolutely unable to self-report.

Numeric pain assessment tools provide one method that have been used for the subjective report of pain by children. Jacob and Puntillo (1999) reported that the most frequently used tool for assessing pain in pediatric patients is the Numeric Rating Scale (NRS). The NRS is a tool that uses a 0 (no pain) to 10 (worst pain) scale to describe the child's pain and is a self-report tool (Wong, 1995). Wong suggested that the NRS be used in children as young as 5 years of age given they can count and have some concept of numbers and their values. The NRS is widely used for all ages and shows strong reliability among older pediatric patients but may be inappropriate for those children who do not yet possess concrete thinking skills (Jacob & Puntillo, 1999), a characteristic in children that does not develop until the approximate age of seven years (Piaget, 1969). According to Piaget (1969), children less than the age of seven are in the preoperational stage of development, a stage involving egocentric language and intuitive thought.

A scale that is reported to be appropriate for children as young as three is the FACES Pain Rating Scale or the Wong - Baker Faces Scale (FACES) (Wong & Baker, 1988; Wong 1995). The FACES tool uses six different facial expressions that were identified by children through drawings to indicate various degrees of feelings (Wong & Baker). Each face has a numeric descriptor ranging from a 0 (smiling face/no pain) to a 5 (crying/frowning face/worst pain) that indicates the intensity of pain that the child is experiencing.

The FACES is a widely used self-report numeric tool (Wong & Baker, 1988). A convenience sample of 150 hospitalized children were selected and separated into three age categories: 3 - 7 years, 8 - 12 years, and 13 - 18 years. During a time of no experienced pain each child was asked to rank a list of potential pain producing procedures and then rank each procedure using a variety of pain scales including: simple descriptive, numeric, FACES, glasses scale, chips, and color scales. Each child was then asked to rate each scale based on their preference.

Wong and Baker determined concurrent validity by comparing the pain rankings of each event by the subject to the ranking of the pain scores for each pain scale to determine consistency of each pain scale. Each scale that showed a consistent response was given a score of one; inconsistent results were given a score of zero. The number of consistent scores for each pain scale was then totaled for each age group in the study. The total number of consistent scores was then divided by the number of subjects in each age group to arrive at a percentage. Reliability was tested in a similar manner only now using the pain ratings from the first test compared with ratings from the retest.

Wong and Baker reported the FACES scale to be valid and reliable for children over 3 years of age (1988). When compared against the Poker Chip, the NRS, FLACC, and the Oucher there were no significant differences in validity and reliability between the pain scales was. However, they found that the FACES was the most preferred scale for all ages. Wong and Baker reported that even though there was no significant difference between the validity and reliability of pain scales, because the preference for the FACES scale was statistically significant ($x^2 = 135.81, p < .001$) for ages 3 – 18 years, it is considered appropriate for use. The FACES was reported to be valid and reliable for assessing pain in children as young as 3 years (Soetenga, Frank, Pellino & Hayes, 1999; Wong & Baker 1988).

The Oucher scale uses six photographs representing "no hurt" to "biggest hurt" as well as a numeric scale from 0 to 100 (Beyer, 1989). As with the FACES, the child selects the number or the face that best represents the level of pain. Beyer (1989) explains that the numeric scale is used as long as the child can count up to 100; otherwise the photographic scale is used. Beyer and Ardine (1986) tested the content validity of the Oucher using a sample of 78 three to seven year olds. Each child was asked to sequence pictures showing faces with no hurt to faces with biggest hurt. Kendall's coefficient was strong (0.726) showing agreement between photograph rankings of all subjects. Seventy-seven percent of the children sequenced five to six of the photographs correctly.

Beyer's original Oucher scale has since been developed into African-American and Hispanic versions and both have been validated (Beyer, Denyes, & Villarruel,

1992). The investigators examined content validity in a similar manner as in the original study; however this time African-American and Hispanic subjects served as expert panelists. After a series of photograph selections, the final six scale photographs were then tested using African-American and Hispanic subjects. Kendall's coefficients were 0.67 for African - Americans and 0.65 for Hispanics demonstrating respectable validity for each ethnic group.

Wong (1995) also lists the Poker Chip Tool, Word Graphic Rating Scale, Visual Analog Scale, and Color Tool as potential pain assessment tools, but states that the lowest age limit for which theses tools have valid use is four years. Thus they are not discussed in this study.

Validity of Observational Pain Assessment Tools

Qualitative assessment tools are based on behavioral observations of pediatric patients by clinicians and have been used in research as a reliable tool for pain assessment, especially in infants and non-verbal children (Soetenga, Frank, Pellino, & Hayes, 1999). The reliability of such tools has led the Acute Pain Management Guideline Panel to recommend the use of behavioral observation as the method for assessing pain in infant and nonverbal children (U.S. Department of Health and Human Services, 1992; 1999).

Clearly the use of self-report pain indicators for infants and preverbal children is not appropriate (Soetenga, Frank, Pellino, & Hayes, 1999; Schmidt, Alpen, & Rakel, 1996). Feldt (2001), while studying pain indicators in cognitively impaired and

cognitively unimpaired patients, reports that the single most frequent sign of pain in both populations was facial grimacing.

Puntillo, Miaskowski, Kehrle, Stannard, Gleeson, and Nye (1997) studied the relationship between physiological and behavioral pain indicators in 31 intensive care unit patients age all over the age of 18. They found that as the mean number of behavioral indicators increases (M = 1.2 to M = 2.9) the nurses' pain intensity ratings increased (2.1 – 4.0) as well as the reliability of behavioral pain indicators ($p < .05$). Also, when behavioral indicators are combined with physiologic indicators, there is increased correlation to analgesic administration.

In a study involving 64 low-birth weight, pre-term infants undergoing painful procedures, Grunau, Holsti, Whitfield, and Ling (2000) found that physiologic indicators such as facial brow rising, finger splay, and leg extension were a function of the number of invasive procedures the neonate experienced in the past 24 hours. This led the investigators to report that behavioral indicators could possibly be used as a measure of sensitization to pain in neonates.

The FLACC (face, legs, activity, cry, and consolability) pain scale was developed for clinical use and is a five-category tool with three descriptors rated 0 to 2 for each category. By summing the ratings of each behavioral category there is a possible range from 0 (no pain) to 10 (highest pain) (Merkel, Voepel - Lewis, Shayevits, & Malviya, 1997). Voepel - Lewis, Merkel, Tait, Trzcinka, Malviya (2002) conducted a study to evaluate the FLACC's validity and reliability with 79 cognitively impaired children ages 4 to 18 years. Each child was evaluated for their ability to

properly self-report pain using the FLACC tool prior to having surgery. After recovery from general anesthesia and before the administration of intravenous analgesics nurses were asked to observe and score pain using the FLACC while parents simultaneously scored pain using the visual analog scale. Self-report scores from children able to use the FLACC were also collected.

One hundred-forty observations were video taped and then viewed by nurses who were blind to the analgesic administration and the pain scores. The FLACC scores correlated with visual analog scores (r = .5 to .8; $p < .001$). They also reported correlations in each category of the FLACC and visual analog scale (r = .30 to .80; $p <$ .001). Test-retest reliability was supported by high correlations (r = .80 to .88; $p < .001$) (Voepel - Lewis, Merkel, Tait, Trzcinka, Malviya, 2002; Willis, Merkel, Voepel-Lewis, & Malviya, 2003).

The University of Wisconsin Children's Hospital utilizes a pain scale that was developed by their own staff from a combination of existing tools (Soetenga, Frank, Pellino, & Hayes, 1999). The University of Wisconsin Children's Hospital Pain Scale (UWCHPS) blends the use of five behavioral categories identified by review of the observational tool developed by the Children's Hospital of Eastern Ontario, the Children's Hospital of Eastern Ontario Pain Scale (CHEOPS), Numeric Rating Scales, and FACES pain scale (Soetenga, Frank, Pellino, & Hayes, 1999).

Soetenga, Frank, Pellino, and Hayes (1999) used a convenience sample of 74 children admitted to the University of Wisconsin Children's Hospital and were either preverbal (less than age 3 years) or non-verbal (mentally handicapped). Each subject

was then observed and pain rated using the UWCHPS. When possible the investigators had the parents or a second nurse rate the child's pain using either a behavioral scale or the FACES scale. Content validity was achieved through expert review by five pediatric pain experts. Criterion validity was evaluated by having a second nurse or the parent rate the child's pain using the FACES pain scale.

Interrater reliability was tested by having two nurses independently and simultaneously observe the child. In 1999 Soetenga et al. reported the results of the study on the validity of the UWCHPS. Experts noted that the content was valid but that the tool should be modified to have more distinct descriptors in each category. The UWCHPS and the FACES were examined using correlations and paired t-tests. The correlation was modestly high at .62 ($p < .001$); however, paired t-tests showed significant differences ($t = -8.53, p < .001$). Soetenga et al. explained that the low criterion validity was possibly related to the difference in nurse and parent ratings of the child's pain.

Interrater validity was assessed by correlating the scores of two raters who independently and simultaneously examined the child using the UWCHPS. The investigators reported correlations of .92 ($p < .001$) with raters reporting the same ratings 78% (45 of 58 raters) of the time. Investigators determined the tool to be promising and valid when used with infants rather than older preverbal children (1 – 3-year-olds). Investigators did note that further testing with infants and preverbal children is needed, as well as an examination of the scale's acceptability by clinical nurses.

Validity of Physiologic Indicators as Manifestations of Pediatric Pain

Physiologic indicators of pain such as the measurements of heart rate, blood pressure, respiratory rate, and oxygen saturation have proven to be useful in acute pain situations, but less reliable with chronic pain (Soetenga, Frank, Pellino, & Hayes, 1999). To date there are no reliable physiologic or biochemical measures of pain that can be easily applied in an acute care clinical situation that is simple to use, concise, practical and cost effective (Lynn, 1999).

Jacob and Puntillo (1999) reported 59.6% of nurses responding to their questionnaire about nursing practice and pain management used physiologic indicators as predictors of a child's pain. They also reported a major discrepancy between pain assessment and pain reducing interventions. Possible reasons cited for the disparity in pain identification and pain reducing interventions include fear of respiratory depression (19.2% of nurses reporting), lack of time to provide interventions (6.1% of nurses reporting), and lack of knowledge (3.5% of nurses reporting).

Burokas (1985) studied 134 nurses and asked what pain indicators they most often used in deciding when to medicate a child after surgery. These were found to be vital signs, type of surgery, severity of pain, and nonverbal cues. Another study showed that nurses depended more on vital signs than any other pain indicator to indicate a need for analgesics (Gadish, Gonzales, & Hayes, 1988), and that the use of a combination of physiologic and behavioral indicators were more reliable than either one alone.

Coffman, Alvarez, Pyngolil, Petit, Hall, and Smyth (1997) conducted a study of pain management in a pediatric intensive care unit, using a descriptive, comparative design with a sample of 24 nurses and 25 pediatric intensive care patients (ages 1 month to 18 years). Investigators gathered background data on nurses using a demographics sheet, patient demographics such as diagnosis and clinical information, pain data, and responses to questions that prompted nurses to indicate the type of pain-reducing intervention used. Nurses completed a pain assessment data tool each time they assessed a child they believed was in pain.

They found that nurses used vital sign measurements more than any other pain indicator; observational indicators were second. There were 112 observations made by the nurses in this study. Nurses also reported use of analgesic interventions 100% of the time and non-pharmacological interventions only 46% of the time (Coffman et al., 1997). The investigators also conducted Pearson correlations for the relationships between child's age, years of nurse's experience and number of pain indicators chosen. More behavioral and physiological indicators were selected when the children were younger ($r = -.23$; $p = .02$), when nurses had more clinical experiences ($r = .39$; $p < .01$) and when nurses had more pediatric experience ($r = .44$; $p < .001$). Education was also shown to be a factor in nurses' selection of pain indicators. Coffman et al. (1997) reported that nurses with a bachelor's degree selected 6.29 pain indicators; those with an associate degree selected 4.79 indicators, and those with a diploma selected 3.71 indicators.

Nurses' Ways of Knowing

Prowse and Lyne (2000) discuss how nurses in a post-operative care unit use "personal knowledge" and "referential knowledge" in making decisions regarding pain management. Personal knowledge is that knowledge that each nurse has at that very moment in time (bio-statistics, nonverbal, and verbal cues of the patient). Referential knowledge is that knowledge the nurse has due to past experiences, which can be incorporated into daily practice (Prowse & Lyne). Some nurses describe this referential knowledge as a "gut feeling." It is not always a feeling of impending doom, but can take the form that something being done is just "right" (Hansten & Washburn, 2000). Benner (2000) reports this intuition or referential knowledge as critical to a nurse's ability to individualize a plan of care that is safe and sensible. Since this knowledge is based on past experiences, it is reasonable to deduce that the more experience a nurse possesses, the greater the referential knowledge from which the nurse has to draw.

Knoblauch and Wilson (1999) reported that pain management is a complex and challenging issue to nurses and that before adequate pain control can be given, knowledge of pediatric pain assessment and management must be present. Hamers, Abu-Saad, Halfens, and Schumacher (1994) studied nurses' feelings about analgesics and found that they had negative feelings about analgesics administration to children and were intimidated by the use of analgesics. McGrath (1995) found that nurses lacked knowledge about analgesics and side effects and thus were less likely to dispense analgesics to pediatric patients.

When Simons and Roberson (2002) conducted a literature review for a study involving the communication and knowledge deficits that present barriers to adequate pain control, they found that the nurses' lack of knowledge toward pediatric pain management was an international problem. They reported that despite an increase in nurses' knowledge, there was still no increase in the knowledge of pediatric pain management.

Summary

The literature review demonstrates a deficiency in pain assessment and control in pediatric patients. Validity of self report, behavioral, and physiologic pain assessment tools are strong, but for specific age populations. The literature does demonstrate a lack of study of useful tools for infants and preverbal children and suggests that the ideal pain assessment tool for pediatric patients is one that is age appropriate and includes both physiologic and behavioral indicators.

The responsibility falls on the clinician at the bedside to remain diligent in assessing and managing pain. The body of literature demonstrates that nurses are deficient in the area of pediatric pain assessment and control. Since nurses are the major healthcare providers at the bedside, and since they are the ones responsible for assessing and managing pain, it is imperative that we gain a deeper understanding of how nurses can improve their assessment and management of pain in children.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study will use a retrospective descriptive correlational design (Norwood, 2000). The purpose of a descriptive correlational design study is to describe a variable and examine relationships between identified variables (Burns & Grove, 1999). In this study the relationship of variables are examined in a situation in which they have already occurred therefore making this a retrospective study (Norwood, 2000)

Setting

The setting of the study is a rural county in north Texas. The hospital (Hospital) where the study will be conducted is a non-profit hospital with ten of its 401 licensed beds designated as pediatric beds. The Hospital provides a range of pediatric services from minor emergency care to full inpatient admission care. Although the Hospital maintains a Level III Trauma designation, there is no pediatric intensive care unit. The staff consists of nine board-certified pediatricians, 14 full-time and four part-time registered nurses who work on the pediatric unit.

Population and Sample

Pediatric Nurse

A convenience sample of pediatric nurses was selected from the Hospital's pediatric unit staff. Nurses attending a regularly scheduled mandatory department, meeting were given questionnaires to complete. Of 18 nurses in the pediatric

department, all are registered nurses and 14 are full-time and four are part-time. Twelve were in attendance at the department meeting that the investigator attended for recruitment of nurse participants. Nine nurses out of the 12 in attendance voluntarily completed the questionnaire. Those nurses not in attendance were not contacted for participation in the study. Inclusion criteria for nurses in this study were that they had to be licensed in Texas (Registered Nurse or Licensed Vocational Nurse), declare themselves to be a pediatric nurse on a demographic questionnaire (see Appendix A), and report that they spend at least 80% of their time caring for children.

Pediatric Patient Charts

Consistent with a retrospective study, the investigator reviewed closed charts obtained from the medical records department of the Hospital. The selection criteria of charts included: pediatric patients who are age 3 years or less, discharged between the dates of January 1, 2000 and December 31, 2002, and have a diagnosis categorized by the International Classification of Diseases (ICD-9) of acute otitis media, otitis media, acute pharyngitis, acute tonsillitis, peri-tonsillar abscess, Kawasaki's, mononucleosis, pneumonia, or cellulitis (see Table 1). In addition, all patients whose charts were to be included in the study must have had one of the nine nurse participants assigned for care during their stay on the pediatric unit.

The sampling frame was obtained using the above selection criteria and consisted of 84 charts. A table of random numbers (Polit & Hungler, 1999) was used to select a sample of 50 charts (see Appendix B). The table of random numbers was generated from Research Randomizer, an online randomizer program

(www.randomizer.org, 2003). These 50 charts constituted the sample size based on a power of .80 with an effect size of .40 and an alpha of .05 (Polit & Hungler, 1999). Table 1.

Medical Diagnoses and International Classification of Diseases Codes

Medical Diagnosis	ICD-9 Code
Acute Otitis Media/Otitis Media	381
Acute Pharyngitis	462
Acute Tonsillitis	463
Peri-tonsillar Abscess	475
Kawasaki's	446
Mononucleosis	075
Pneumonia (unspecified)	486
Cellulitis (unspecified site)	682.9

Note. The data in columns 1 & 2 are from EICD.com, 2003, Yaki Technologies. Available: *http://www.eicd.com* and E-MD.com, 2003, AMT Solutions. Available: *http://www.e-md.com*.

Protection of Human Subjects

Approval from the Institutional Review Boards (IRBs) at Texas Woman's University and the Hospital were obtained prior to data collection. IRB approval from the Hospital included consent from the hospital's administration to release medical

records. Full disclosure and consent was obtained from each nurse identified in the chart review (see Appendix C).

Instruments

Two instruments were used in this study: a researcher-developed nurse questionnaire (see Appendix A) and a researcher-developed chart data tool (see Appendix D). Data pertaining to each nurse was obtained from a researcher-developed nurse questionnaire. Data included: nurse's name, highest level of education obtained, type of licensure (Registered Nurse of Licensed Vocational Nurse), unit of primary staffing, years of clinical nursing experience, years of pediatric clinical experience, and whether the nurse spends at least 80% of his or her clinical time caring for pediatric patients.

Data were collected from the selected charts using a researcher-developed chart data tool (see Appendix D). This tool identified the nurse who was caring for the child in the selected chart using a capital letter (A, B, C, … etc) to keep the nurse's name confidential yet provide the investigator with a way to match the data from the nurse questionnaire with the nurse named in the chart. Also, the nurse's total years of clinical experience and the nurse's years of pediatric clinical experience (obtained from the nurse questionnaire) were included in this data tool for ease in data entry.

Data from the selected patient charts that were placed on the chart data tool were obtained from the Hospital's approved pain documentation system. This data included the age of the child, pre-pain intervention and post-pain intervention rating on a scale from 0 to 10, location of pain (body site), quality of pain as perceived by the nurse

(sharp, dull, stabbing, burning, … etc.), frequency of pain (constant or intermittent), ICD-9 diagnostic code, modality of pharmacologic pain management (e.g., Tylenol, and codeine), and modality of non-pharmacologic pain management (e.g., cool mist, and holding).

Data Collection

A single investigator provided the nurse questionnaire to each nurse attending a regularly scheduled mandatory department meeting and 9 out of 12 nurses attending the meeting voluntarily completed the questionnaires. Charts were selected using the sampling criteria above and chart reviews were conducted. The primary investigator reviewed the selected charts for data entry on the researcher-developed tool using the facility's pain-charting system. Chart reviews were conducted in the medical records department with all information kept confidential.

Data were hand-recorded on the tool by the researcher while in the medical records department and later transcribed into the investigator's personal computer. No nurses' names were associated with the data in the computer. The code letters assigned to each nurse were maintained in a separate locked file cabinet.

Treatment of Data

Data were to be tallied and subjected to descriptive statistics. The investigator initially planned to test the hypothesis using Spearman's Rho (Norwood, 2000) with an alpha of .05. This was selected based on the ordinal data being collected in this study (Norwood, 2000) and the desire of the researcher to be 95% certain that the null hypothesis is rejected (Norwood, 2000). However, due to insufficient documentation,

the hypothesis could not be tested. Because of this unexpected problem the investigator described the data using tables and graphs in order to identify patterns that existed between nurses' years of clinical experience and pain management.

CHAPTER 4

ANALYSIS OF DATA

The purpose of this study was to explore whether the level of a pediatric nurse's clinical experience is related to effective pain management in hospitalized preverbal children age three years or less. This study used a retrospective descriptive correlational design (Norwood, 2000). Consistent with a retrospective study, the investigator reviewed closed charts obtained from the medical records department of the Hospital. Data were hand-recorded on the tool by the investigator while in the medical records department and later transcribed into his personal computer. Data were examined in the form of tables and graphs to identify patterns between nurses' years of clinical experience and pain management.

This chapter will provide a description of the sample and findings based on the examination of data in relation to the stated research purpose. The null hypothesis was that there will be no statistically significant correlation between nurses' years of clinical experience and change in pain level on a 0 - 10 scale from pre to post-treatment as recorded in charts of hospitalized children age 3 years and younger. Because the data revealed so few pre and post-pain intervention ratings, the hypothesis could not be tested. There were only two pre-pain intervention ratings greater than zero thus not providing enough variability to determine if any relationship exists between nurses' years of clinical experience and pain management in preverbal children.

Description of Sample

Pediatric Nurses

Nine nurses completed the researcher-developed nurse questionnaire as instructed by the investigator. In order to protect confidentiality each nurse was assigned a letter designation of A - I. Nurses F, G, and H were eventually dropped from the study, as they were never identified in any of the reviewed charts. Thus the nurse sample was reduced to six.

The years of experience reported by the remaining six nurses ranged from one year to twenty years of pediatric clinical experience and one year to thirty-three years of total clinical nursing experience. All of the nurses reported their unit of primary staffing to be the pediatric unit and reported that they spent at least 80% of their clinical time with pediatric patients. All six nurses were Associate Degree (AD) trained nurses and all were licensed registered nurses (RNs) in the state of Texas (see Table 2). Sex, age and ethnicity of the nurses were not examined in this study.

Pediatric Charts

The Book of Life is a unit-specific logbook of all admits and discharges for the pediatric unit at the Hospital and is maintained by the charge nurse of the pediatric unit. The Book of Life contains the name of the child, medical record number of the chart, date of admission and discharge, medical diagnosis, and admitting nurse. The 50 charts reviewed were of pediatric patients discharged between the dates of January 1, 2000 and December 31, 2002, age 3 years or less at time of admission, and with an International

Classification of Diseases (ICD-9) diagnosis for acute otitis media, pharyngitis, acute tonsillitis, peri-tonsillar abscess, Kawasaki's, mononucleosis, pneumonia, or cellulitis. Table 2.

Pediatric Nurse Demographics

Nurse	Ped Yrs	Clin Yrs	Prim Unit	80%Ped	Edu Lvl	Licen
E	1	1	Pedi	Y	AD	RN
	4	6	Pedi	Y	AD	RN
D	4	9	Pedi	Y	AD	RN
B	5	17	Pedi	Y	AD	RN
C	14	33	Pedi	Y	AD	RN
A	20	25	Pedi	Y	AD	RN

The most frequent ICD-9 was 486 (pneumonia) with 20 occurrences. The remaining ICD-9s included 381 (acute otitis media/otitis media) with 10 occurrences, 682.9 (cellulitis) with 6 occurrences, 462 (acute pharyngitis) and 463 (acute tonsilitis) each with 5 occurrences, and 446 (Kawasaki's) with 4 occurrences. There were no occurrences of 075 (Mononucleosis) and 475 (peri-tonsillar abscess), thus they are not included in the table (see Figure 1). Patient ages ranged from one to 36 months. The modal age was 24 months and the mean age was 14.35 months (SD = 9.95) (see Figure 2).

Findings

Selected data from the Nurse Questionnaire and the reviewed charts were documented on the researcher-developed Pain Documentation Tool. Fifty charts were

Figure 1. Frequency of ICD - 9 Codes.

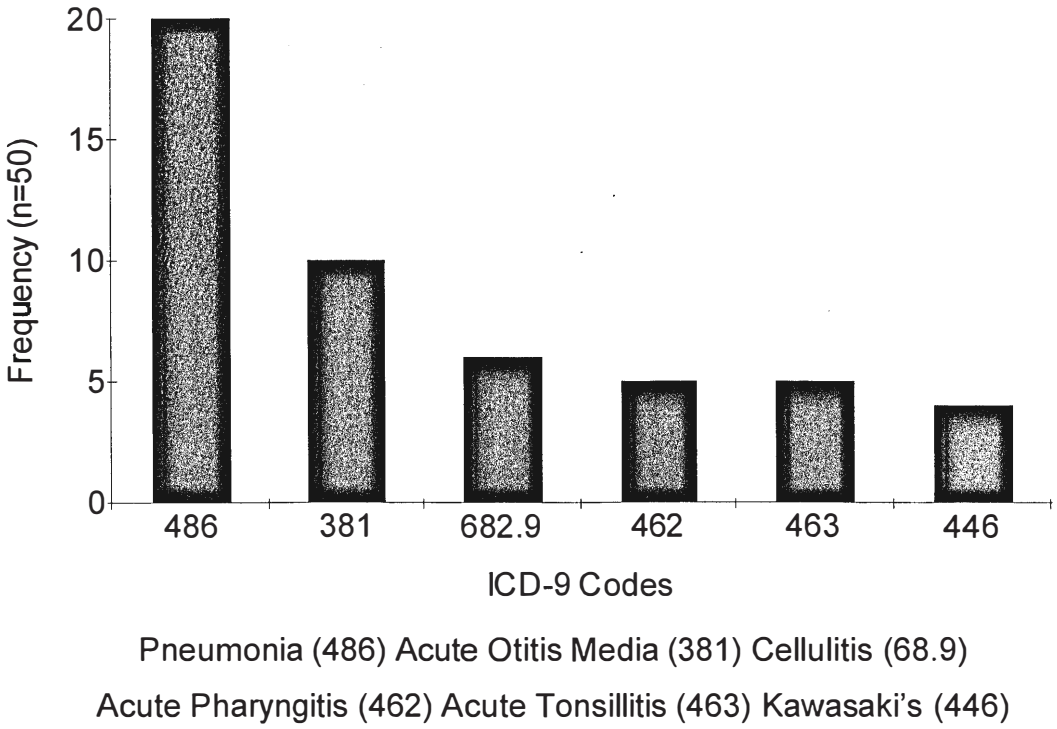
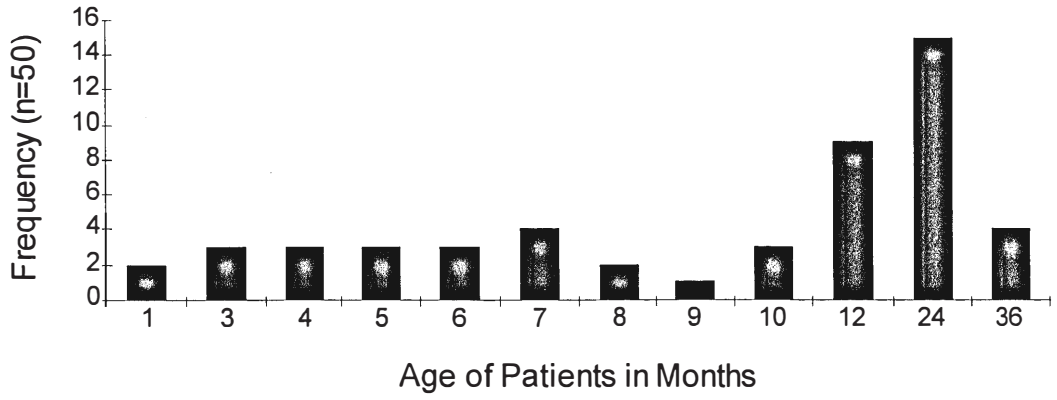


Figure 2. Age Distribution of Pediatric Patients.



reviewed with 54 total entries from the six nurses identified. Identification of a nurse in a chart was based on a study nurse having signed her name on the nurses'

documentation tool of the Hospital. The difference in charts and entries results from one nurse (nurse B) documenting twice in a single shift on a patient while a second nurse (nurse I) documented four times in a single shift. The remaining entries were single entries from an entire shift. Nurses were only identified in a single shift of each chart due to the rotating nature of shifts that the nurses on the pediatric unit at the Hospital work and the short stays of the pediatric patients. The investigator attempted to identify nurses in other shifts on the same chart but was not successful.

Nurses' Pain Assessments

Pain assessments were identified from the 54 chart entries as those quantitative recordings by the nurse on a scale from zero being no pain to 10 being most pain or qualitative assessment of pain (location, quality, and frequency of pain). Each entry accounts for a single data point. Therefore each entry could have a quantitative pre and post-pain intervention assessment documented, however this would still count as a single assessment and could have multiple qualitative pain descriptors that still counts as a single assessment. Or, if the nurse only documented a qualitative pain assessment with no numerical pain rating, this would also count as a single assessment.

Out of the 54-charted entries, there were 30 entries identified that had documented some form of pain assessment, either quantitative pain ratings or qualitative pain assessments. Twenty out of the 30 entries contained both quantitative and qualitative data. Of the 20 quantitative data entries six consisted of both a pre and post-pain intervention assessments and the remaining 14 entries consisted of pre-pain intervention assessments without a concurrent post-pain intervention assessment. Some

nurses recorded qualitative information about the pain without a concurrent quantative pain rating. Of the 30 entries, 10 contained qualitative pain assessments without a concurrent quantitative pain assessment. Twenty-four entries had no quantitative or qualitative pain data and none of the 24 had pain interventions documented.

Individual Nurse's Pain Documentation

Nurse A was identified in two of the 50 charts. One entry had no documentation of pain and the second listed a pre-pain intervention rating of 0, and no post-pain intervention rating with a single qualitative pain assessment (see Table 3).

Table 3.

Nurse A Pain Documentation

Nurse	Pedi Yrs	Entry #	Pain Ratings		Descriptors		
			Pre-Pain	Post-Pain	Location	Quality	Duration
A	20	1	–	–	–	–	–
		2	0	–	Knee	–	–

Nurse B was identified in 16 of the 50 charts and documented twice in a single shift on one chart for a total of 17 of the 54 entries. Of the 17 entries there were five entries that contained quantitative pain assessments (all were zeros). Nurse B documented in three of the five entries a pre and post- pain intervention assessment leaving two pre-pain intervention assessment with no post-pain intervention assessment. All five entries in which nurse B documented quantitative data also contained

qualitative data as well as five entries that contained qualitative data and no quantitative data (see Table 4).

Table 4.

Nurse B Pain Documentation

Nurse	Pedi Yrs	Entry #	Pain Ratings		Descriptors		
			Pre-Pain	Post-Pain	Location	Quality	Duration
B	5	3	–	–	–	–	–
		4	0	0	General	–	–
		5	–	–	General	–	–
		6	–	–	–	–	–
		7	0	0	IV Site	–	–
		8	0	0	General	–	–
		9	–	–	Mouth	Hurts	Intermit
		10	–	–	ABD	Scream	Intermit
		11	0	–	Knee	–	–
		12	–	–	Buttock	Scream	Intermit
		13	0	–	Face	Rash	–
		14	–	–	–	–	–
		15	–	–	–	–	–
		16	–	–	–	–	–
		17	–	–	–	–	–
		18	–	–	General	Crying	–
		19	–	–	–	–	–

Nurse C was identified in seven charts with only a single quantitative data point entry. There were two qualitative pain assessment entries with one of the entries occurring concurrently with the quantitative data point (see Table 5).

Table 5.

Nurse C Pain Documentation

Nurse	Pedi Yrs	Entry #	Pain Ratings		Descriptors		
			Pre-Pain	Post-Pain	Local	Quality	Duration
C	14	20	–	–	–	–	–
		21	–	–	–	–	–
		22	0	–	General	–	–
		23	–	–	–	–	–
		24	–	–	–	–	–
		25	–	–	–	–	–
		26	–	–	Mouth	Crying	Intermit

Nurse D was identified in four separate charts with no quantitative pain documentation. There was a single entry of qualitative data for nurse D (see Table 6).

Nurse E was identified in six charts with a single entry each. There were three quantitative pain assessments with two of them being a pre and post-pain assessment. Each of the three also included a qualitative pain assessment, as did the single pre-pain assessment entry. There were two qualitative pain assessment entries leaving only a single chart with no pain documentation at all (see Table 7).

Table 6

Nurse D Pain Documentation

Nurse	Pedi Yrs	Entry #	Pain Ratings		Descriptors		
			Pre-Pain	Post-Pain	Local	Quality	Duration
D	4	27	–	–	–	–	–
		28	–	–	–	–	–
		29	–	–	–	–	–
		30	–	–	General	Fussy	Intermit

Table 7.

Nurse E Pain Documentation

Nurse	Pedi Yrs	Entry #	Pain Ratings		Descriptors		
			Pre-Pain	Post-Pain	Location	Quality	Duration
E	1	31	0	0	L Hand	–	–
		32	–	–	–	Crying	–
		33	–	–	–	Crying	–
		34	0	–	General	–	–
		35	10	0	Foot	Sharp	Intermit
		36	–	–	–	–	–

Nurse I was identified in 15 charts with one chart having four entries for a total of 18 chart entries. Of the 18 entries there were 10 quantitative pain assessments that also included a qualitative pain assessment. One of the 10 quantitative pain assessments included a pre and pos-pain assessment. There was only one entry with qualitative data

and no quantitative data, and seven entries with no pain documentation (see Table 8).

Table 8.

Nurse I Pain Documentation

Nurse	Pedi Yrs	Entry #	Pain Ratings		Descriptors		
			Pre-Pain	Post-Pain	Location	Quality	Duration
I	4	37	–	–	–	–	–
		38	–	–	–	–	–
		39	8	0	Throat	Sore	Intermit
		40	–	–	–	–	–
		41	–	–	–	–	–
		42	–	–	–	Irritable	Intermit
		43	0	–	Buttock	–	–
		44	0	–	Buttock	–	–
		45	0	–	Buttock	–	–
		46	5	–	Buttock	Sore	Constant
		47	–	–	–	–	–
		48	0	–	Body	Rash	–
		49	–	–	–	–	–
		50	0	–	Hand	–	–
		51	–	–	–	–	–
		52	0	–	ABD	–	–
		53	3	–	Mouth	Sore	Intermit
		54	0	–	General	–	–

Nurses' Qualitative Assessment Percentages

By totaling the number of qualitative assessments for the nurse and then dividing by the total number of charts the nurse documented in (number of entries) a percentage is obtained. When comparing the nurses' pain assessment percentages in terms of their qualitative assessments a pattern appears of the nurse with the least pediatric clinical experience having the highest percentage of pain assessments (see Table 9) except for nurses A and D.

Table 9.

Nurses' Qualitative Assessment Percentages

Nurse	Ped Yrs	Clin Yrs	#Total Entries	% Qualitative Assess
E	1	1	5	83.33
I	4	6	11	61.11
D	4	9	1	25
B	5	17	10	58.82
C	14	33	2	28.57
A	20	25	1	50

Nurse A having documented 50 percent of the time is based on only two entries. Thus, it is difficult to determine if this is a pattern for this nurse or not. Nurse D who had four years of pediatric clinical experience only documented once out of four entries for 25 percent. Nurse D lacked documentation in general and this cannot be explained. Nurse E who had six and documented qualitative pain assessments in five of them for 83.33 percent. Nurse I with four years of pediatric clinical experience had 18

entries and documented qualitative assessment in 11 of them for 61.11 percent. Nurse B reported five years of pediatric clinical experience and documented 58.82 percent of the time while nurse C with 14 years of pediatric clinical experience documented 28.57 percent of the time.

Nurses' Quantitative Assessment Percentages

Out of the 54 charted entries there were 20 entries identified that had documented quantitative pain ratings. Six consisted of both a pre and post-pain intervention assessment. By using the same formula as above, only this time totaling the number of quantitative pain assessments, then dividing by the total number of entries a percent is obtained for how often the nurse performed quantitative assessments.

Nurse E who had one year of pediatric and clinical experience documented a quantitative assessment in three out of six entries (50 percent). Nurse I who had four years of pediatric clinical experience and six years of total clinical experience performed quantitative assessments 10 out of 18 entries (55.56 percent).

Nurse D who had four years of pediatric clinical experience but documented no quantitative assessments. Nurse B who had five years of pediatric clinical experience and seventeen years of total clinical experience documented five quantitative assessments out of 17 entries (29.41 percent).

Nurse C who had 14 years of pediatric clinical experience documented only a single pre-pain intervention assessment out of seven entries (14.29 percent) and nurse A who had 20 years of pediatric clinical experience documented one quantitative pain assessment out of two entries. Again nurse A's percentages are based on two entries,

and there is no explanation for why nurse D did not document at all (see Table 10).

Table 10.

Nurses' Quantitative Assessment Percentages

Nurse	Ped Yrs	Clin Yrs	Total # Entries	#Quantitative Assess	%Pre/Post Assess
E	1	1	6	3	50
I	4	6	18	10	55.56
D	4	9	4	0	0
B	5	17	17	5	29.41
C	14	33	7	1	14.29
A	20	25	2	1	50

Nurses' Interventions

Of the 54 entries there were 22 documented entries of pain relieving interventions (pharmacological and/or non-pharmacological). There were 10 uses of pharmacological agents that included Tylenol, Tylenol #3, phenergan, Aquaphor, Atarax, and intravenous fluids. There were 20 uses of non-pharmacological modalities of pain reduction, which included the use of warm compresses, holding, rest, sips of water, discontinuation of intravenous fluids, making patients NPO (nothing per mouth), cool mist, and the use of comfort care (as indicated in the nurses' notes as minimal stimulation and relaxation).

Individual Nurses' Interventions

Nurse A intervened once out of two entries. Nurse A used warm compresses and no pharmacological modalities (see Table 11).

Table 11.

Nurse A Pain Interventions

Nurse	Pedi Yrs	Entry #	Pharm Modality	Non-Pharm Modality
A	20	1	–	–
		2	–	Warm Compress

Nurse B who was identified in 16 charts and had two entries in one of those charts accounting for 17 of the 54 entries, intervened eight times with a pharmacological or non-pharmacological modality to relieve pain. Of those eight interventions nurse B utilized a pharmacological and non-pharmacological modality simultaneously in three of the entries. There were three entries in which a non-pharmacological modality was used alone and one entry where a pharmacological modality was used alone (see Table 12).

Nurse C documented in seven charts. One entry of pain intervention out of seven chart entries was observed. This consisted of both a pharmacological and non-pharmacological modality for pain reduction. Nurse D documented in four charts. Only one documented entry of pain reducing intervention out of four entries was observed. This consisted of the simultaneous use two non-pharmacological methods (rest and warm compresses) (see Table 13).

Table 12

Nurse B Pain Interventions

Nurse	Pedi Yrs	Entry #	Pharm Modality	Non-Pharm Modality
B	5	4	–	Holding
		5	Tylenol	–
		7	–	Holding
		9	IVF	NPO
		10	Phen/Tyle	NPO
		12	Tylenol #3	Rest
		13	–	Warm Comp
		18	–	Rest

Table 13.

Nurse C and D Pain Interventions

Nurse	Pedi Yrs	Entry #	Pharm Modality	Non-Pharm Modality
C	14	26	Tylenol	Sips Water
D	4	30	–	Rest/Comp

Nurse E was identified as having documented in six charts, each with a single entry. There were four documented uses of pain relieving interventions, two pharmacological entries and two non-pharmacological entries (see Table 14).

Table 14.

Nurse E Pain Interventions

Nurse	Pedi Yrs	Entry #	Pharm Modality	Non-Pharm Modality
E	1	32	Tylenol #3	–
		33	Tylenol #3	–
		35	–	Comfort Care
		36	–	Warm Comp

Nurse I used Tylenol #3, Aquaphor and Atatrax once each. Nurse I also utilized rest twice, sips of fluids twice, discontinuation of intravenous line and cool mist once each, and comfort care once (see Table 15).

Table 15.

Nurse I Pain Interventions

Nurse	Pedi Yrs	Entry #	Pharm Modality	Non-Pharm
I	4	39	Tylenol #3	–
		42	Aquaphor	Rest/Fluids
		46	–	Rest
		48	Atarax	–
		50	–	DC IV
		53	–	Fluids/Cool Mist
		54	–	Comfort Care

Nurses in this study assessed pain either quantitatively or qualitatively in 55.56 percent of the entries (30 pain documentation entries out of 54 total chart entries). They intervened with pain reducing interventions in 40.74 percent of the entries (22 documented interventions out of 54 entries).

The investigator will further explore the relationship between nurses' clinical experience and pain management by examining the relationship of the nurses' years of experience and pain assessments to the patients' diagnosis. The investigator will also examine the qualitative pain assessment as described by the nurse in relationship to the number of interventions used by nurses.

Nurses' Pain Assessments and Diagnosis

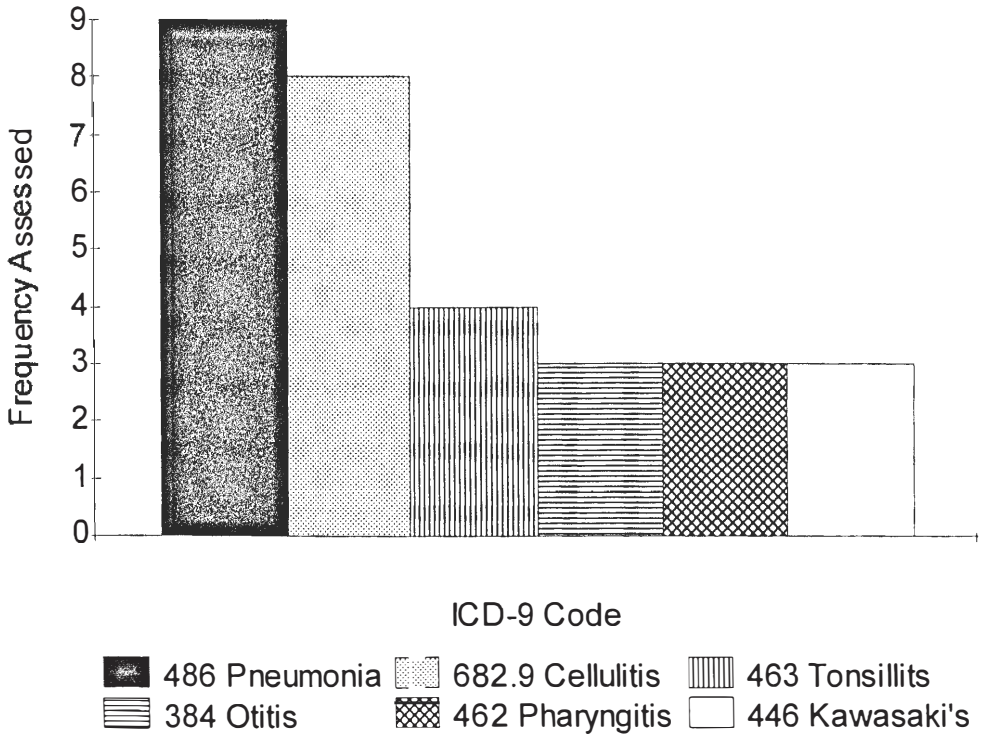
The most frequent ICD-9 was 486 (pneumonia) at 20 entries. The remaining ICD-9s included 381 (acute otitis media/otitis media) with 10 entries, 682.9 (cellulitis) with 6 entires, 462 (acute pharyngitis) and 463 (acute tonsillitis) each with 5 entries, 446 (Kawasaki's) with 4 entries, and 075 (Mononucleosis) and 463 (peri-tonsillar abscess) each with zero entries (see Figure 1). ICD-9 codes 075 and 463 will not be considered in comparisons since there were no charts that listed these two codes as diagnosis.

When examining the numbers of pain assessments based solely on frequency of occurrence, pneumonia was assessed most frequently with nine pain assessments. Cellulitis was the second most frequently assessed ICD-9 diagnosis with eight assessments and acute tonsillitis third with four pain assessments. The remaining ICD-9 diagnoses that contained documented quantitative or qualitative pain assessments were

acute otitis media/otitis media, acute pharyngitis, and Kawasaki's each with three documented pain assessments (see Figure 3). This however, does not represent accurately the true number of nurse assessments based on ICD-9 codes in that pneumonia was identified as an ICD-9 code 20 times and thus had more opportunity to be documented on.

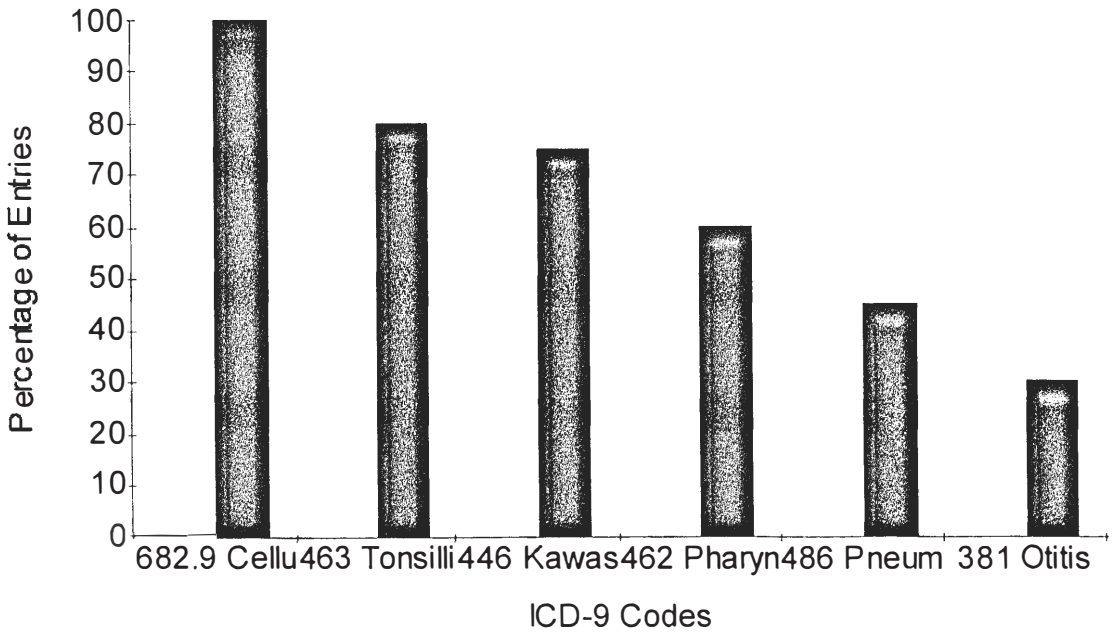
By dividing the number of pain assessments for each ICD-9 by the number of times that a particular code was listed, this result will provide the percentage for which pain was assessed within a specific ICD-9 code. This will provide a more accurate representation of how nurses in this study assessed pain based on the ICD-9 diagnosis.

Figure 3. Frequency of Pain Assessments and ICD-9 Code.



Cellulitis was documented on eight out of six entries (100 percent). The discrepancy occurred because nurse I documented four times on a single chart with cellulitis as the ICD-9 diagnosis. Acute tonsillitis was observed in five entries with four documented pain assessments (80 percent). Kawasaki's was diagnosed four times and documented on three times (75 percent). Acute pharyngitis was diagnosed five times and documented on three times (60 percent). Pneumonia was documented on nine times out of 20 entries (45 percent). Acute otitis media/otitis media occurred 10 times and was documented on three times (30 percent) (see Figure 4).

Figure 4. Percentages of Assessed ICD-9 Codes.



Individual Nurses' Percentages

The previous section demonstrated how those diagnoses that are associated with pain are assessed more frequently. The investigator in this section will examine if this

pattern is true for each individual nurse. Addressing the individual nurses in ascending order of years of pediatric clinical experience, nurse E, with only one year of pediatric clinical experience, documented pain assessments in five of six charts. Of the five entries nurse E documented on three acute tonsillitis and two pneumonias. There was a quantitative or qualitative pain assessment for all five documented entries.

Nurse I, with four years of pediatric clinical experience, charted in 15 of the 50 charts with four chartings in a single chart for a total of 18 of the 54 total entries. These included six pneumonias, one tonsillitis, two Kawasaki's and pharyngitis each, and three acute otitis medias. Cellulitis was the listed diagnosis on the single chart that nurse I documented four times on. Nurse I documented four pain assessments on the cellulitis chart, once for the tonsillitis , two Kawasaki's, one pahryngitis and otitis media each, and two pneumonias.

Nurse D, with four years of pediatric clinical experience, charted a single time on four separate charts accounting for four of the 54 entries. The diagnoses included three acute otitis media/otitis media and one pneumonia. The only documentation about pain was a qualitative pain assessment for one of the acute otitis media diagnosis.

Nurse B, who had five years of pediatric clinical experience, was identified in three charts with acute otitis media/otitis media, six charts with pneumonia but with two entries for one of the charts for a total of seven entries, two charts with acute pharyngitis, two charts with Kawasaki's, three charts with cellulites. Of the seventeen entries, nurse B documented a pain assessment once out of three acute otitits

media/otitis media entries, four out of seven pneumonia entries, one out of two acute pharygitis entries, one out of two Kawasaki's entries, and all three cellulites entries.

Nurse C, with 14 years of pediatric clinical experience, documented in one chart with cellulitis, one with pharyngitis, four with pneumonia, and one with otitis media. Pain assessments were found in one of the pharyngitis and one of the pneumonia charts. Nurse A, with 20 years of pediatric clinical experience, was identified in one chart each of cellulitis and acute tonsillitis. Pain assessments were identified in the cellulitis chart only (see Table 16).

Table 16.

Number of Nurses' Pain Assessments per ICD-9 Diagnosis

ICD-9 Diagnosis	#Entries/Nurse						#Assessments/Nurse					
	E	D	I	B	C	A	E	D	I	B	C	A
Cellulitis	0	0	4	3	1	1	–	–	4	3	0	1
Tonsillitis	3	0	1	0	0	1	3	–	1	–	–	0
Kawasaki's	0	0	2	2	0	0	–	–	2	2	–	–
Pharyngitis	0	0	2	2	1	0	–	–	1	1	1	0
Pneumonia	3	1	6	7	4	0	2	0	2	4	1	–
Otitis Media	0	3	3	3	1	0	–	1	1	1	0	–

Note. Dash under "#Assessments/Nurse" indicates that the nurse was not identified in a chart with that diagnosis. Zero under the "#Entries/Nurse" indicates no identified charts with that diagnosis while 0 under #Assessments/Nurse indicate lack of documentation.

Nurses' Description of Pain and Interventions

Out of 54 identified nursing entries, there were 27 (50 percent) documented entries of interventions either pharmacological and or non-pharmacological. Five entries consisted of both a pharmacological and non-pharmacological intervention, five consisted of a pharmacological intervention alone and 12 non-pharmacological interventions alone (see Table 17).

Individual Nurses' Pain Descriptions and Interventions

The relationship between the presence or observance of qualitative pain assessments and interventions will be examined next. The data from each nurse will be

Table 17.

Pain Descriptions and Interventions

Nurse	Ped Yrs	Clin Yrs	Number of Interventions		
			Pharm	Non-Pharm	Total
E	1	1	2	2	4
I	4	6	3	5	8
D	4	9	0	1	1
B	5	17	4	7	11
C	14	33	1	1	2
A	20	25	0	1	1

addressed in ascending order of pediatric clinical experience except for nurse D, who because of a lack of documentation, will be addressed with nurses C and A. The investigator was not able to explain nurse D's lack of documentation.

Nurse E who had one year of pediatric clinic experience intervened with Tylenol #3 twice, and with comfort care and warm compresses once each out of six entries. Each intervention corresponded to a concurrent qualitative pain assessment except for the single use of warm compresses (see Table 18).

Table 18.

Nurse E Pain Description and Interventions

Nurse	Pedi Yrs	Entry #	Qual Data	Pharm	Non-Pharm
E	1	31	Y	–	–
		32	Y	Tylenol #3	–
		33	Y	Tylenol #3	–
		34	Y	–	–
		35	Y	–	Comfort Care
		36	N	–	Warm Compress

Nurse I conducted 11 qualitative pain assessments. Out of those 11 qualitative assessments there were seven entries that had concurrent documentation of pain-reducing interventions. Nurse I used Tylenol #3 and Atarax once each without simultaneous use of a non -pharmacological modality. Aquaphor was also used once and in combination with rest and fluids. Comfort care was used once, as was the discontinuation of intravenous fluids. There was a single use of rest without any other interventions. There was also one entry in which fluids and cool mist were used simultaneously without concurrent use of pharmacological modalities (see Table 19).

Table 19.

Nurse I Pain Description and Interventions

Nurse	Pedi Yrs	Entry #	Qual Data	Pharm	Non-Pharm
I	4	37	N	–	–
		38	N	–	–
		39	Y	Tylenol #3	–
		40	N	–	–
		41	N	–	–
		42	Y	Aquaphor	Rest/Fluids
		43	Y	–	–
		44	Y	–	–
		45	Y	–	–
		46	Y	–	Rest
		47	N	–	–
		48	Y	Atarax	–
		49	N	–	–
		50	Y	–	DC IV
		51	N	–	–
		52	Y	–	–
		53	Y	–	Fluids/Cool Mist
		54	Y	–	Comfort Care

Nurse B documented 11 qualitative pain assessments, all 11 with a corresponding pain-reducing intervention. There was a single use of Tylenol without a concurrent use of a non-pharmacological intervention and two entries of holding and one entry each of warm compresses and rest without a concurrent use of pharmacological intervention. Nurse B also documented a single use of intravenous fluids, simultaneous use of phenergan and Tylenol, and a single use of Tylenol #3 with concurrent uses of rest and two uses of making patients NPO (nothing per oral) (see Table 20).

Nurse D conducted one qualitative pain assessment and documented rest and warm compresses for the same entry (see Table 21). Nurse C documented qualitative pain assessments twice out of seven charts and with only a single concurrent documentation of the use of Tylenol and sips of water (see Table 22). Nurse A had only one documentation of qualitative data, which also contained the use of warm compresses (see Table 23).

Summary

Data were hand-recorded on the tool while in the medical records department and later transcribed into the investigator's personal computer. Data were examined in the form of tables and graphs to identify patterns between nurses' years of clinical experience and pain management.

Nurses were Associate Degree (AD) trained nurses and all were licensed registered nurses (RN) in the state of Texas. All of the nurses reported their unit of primary staffing to be the pediatric unit and reported that they spent at least 80% of their

Table 20.

Nurse B Pain Description and Interventions

Nurse	Pedi Yrs	Entry #	Qual Data	Pharm	Non-Pharm
B	5	3	N	–	–
		4	Y	–	Holding
		5	Y	Tylenol	–
		6	N	–	–
		7	Y	–	Holding
		8	Y	–	–
		9	Y	IVF	NPO
		10	Y	Phen/Tylenol	NPO
		11	Y	–	–
		12	Y	Tylenol #3	Rest
		13	Y	–	Warm Compress
		14	N	–	–
		15	N	–	–
		16	N	–	–
		17	N	–	–
		18	Y	–	Rest
		19	N	–	–

Table 21.

Nurse D Pain Description and Interventions

Nurse	Pedi Yrs	Entry #	Qual Data	Pharm	Non-Pharm
D	4	27	N	–	–
		28	N	–	–
		29	N	–	–
		30	Y	–	Rest/Compresses

Table 22.

Nurse C Pain Description and Interventions

Nurse	Pedi Yrs	Entry #	Qual Data	Pharm	Non-Pharm
C	14	20	N	–	–
		21	N	–	–
		22	Y	–	–
		23	N	–	–
		24	N	–	–
		25	N	–	–
		26	Y	Tylenol	Sips of Water

Table 23.

Nurse A Pain Description and Interventions

Nurse	Pedi Yrs	Entry #	Qual Data	Pharm	Non-Pharm
A	20	1	N	–	–
		2	Y	–	Warm Compress

clinical time with pediatric patients. The years of experience reported ranged from one year to twenty years of pediatric clinical experience and one year to thirty-three years of total clinical nursing experience. The most frequent ICD-9 was 486 (pneumonia) with 20 occurrences. The remaining ICD-9s included 381 (acute otitis media/otitis media) with 10 occurrences, 682.9 (cellulitis) with 6 occurrences, 462 (acute pharyngitis) and 463 (acute tonsillitis) each with 5 occurrences, and 446 (Kawasaki's) with 4 occurrences. There were no occurrences of 075 (Mononucleosis) and 475 (peri-tonsillar abscess).

Out of the 54-charted entries, there were 30 entries identified that had documented some form of pain assessment, either quantitative pain ratings or qualitative pain assessments. When comparing the nurses' pain assessment percentages in terms of their qualitative assessments a pattern appears of the nurse with the least pediatric clinical experience having the highest percentage of pain assessments (see Table 9) except for nurses A and D. When comparing the nurses' pain assessment percentages in terms of quantitative data a similar pattern is identified with the nurses that have fewer years of pediatric clinical experience documenting more. Another

pattern that emerges was that four out of six nurses qualitatively documented the presence of pain at least once without intervening. A third pattern that was interesting was that non-pharmacological interventions were more frequent than pharmacological interventions by a rate of 17: 10.

CHAPTER 5

SUMMARY OF THE STUDY

A phenomenon that most people experience as a minor inconvenience in daily life is a major issue for children (Lynch, 2001). Generally, it is agreed upon that for most of modern medicine, pain in children has not been a topic of importance and that children do not get the relief they require for pain (Lynn, 1999). This problem may be perpetuated by the inexperience of nurses who must interpret the intensity and quality of pain in a child who is unable to verbalize. Hamers, Abu-Saad, Halfens, and Schumacher (1994) and Hamers, Abu-Saad, van den Hout, and Halfens (1998) suggest children who are unable to vocalize pain are at risk for under-medication of pain. Is there a relationship between nursing experience and the ability of nurses, to effectively manage pain in preverbal children?

Summary

This study used a retrospective descriptive correlational design (Norwood, 2000). The setting of the study was a rural county in north Texas. The hospital (Hospital) where the study was conducted is a non-profit hospital with 10 of its 401 licensed beds designated as pediatric beds. The Hospital provides a range of pediatric services from minor emergency care to full inpatient admission care. The pediatric staff consisted of nine board-certified pediatricians, 14 full-time and four part-time registered nurses who work on the pediatric unit.

A convenience sample of six pediatric nurses was selected from the Hospital's pediatric unit staff. Nurses attending a regularly scheduled mandatory department meeting were given questionnaires to complete. The investigator reviewed closed charts obtained from the medical records department of the Hospital. The selection criteria of charts included: pediatric patients who are age three years or less, were discharged between the dates of January 1, 2000 and December 31, 2002, and had an International Classification of Diseases (ICD-9) diagnosis for acute otitis media, otitis media, acute pharyngitis, acute tonsillitis, peri-tonsillar abscess, Kawasaki's, mononucleosis, pneumonia, or cellulitis.

Approval from the Institutional Review Boards (IRBs) at Texas Woman's University and the Hospital were obtained prior to data collection. IRB approval from the Hospital included consent from the hospital's administration to release medical records. Full disclosure and consent was obtained from each nurse identified in the chart review.

Six nurses, all Associate Degree (AD) nurses and licensed registered nurses (RN) in the state of Texas comprised the final sample of nurses in this study. All of the nurses reported their unit of primary staffing to be the pediatric unit and reported that they spent at least 80% of their clinical time with pediatric patients. The years of experience reported ranged from one year to twenty years of pediatric clinical experience and one year to thirty-three years of total clinical nursing experience. Eighty-four charts meeting the inclusion criteria were found in the logbook of admissions to the pediatric unit. Each medical record number was assigned a numerical

value of one to 84. Of the 84 charts identified, 50 were randomly selected using the Research Randomizer program (http://www.randomizer.org) to generate a table of random numbers.

There were 54-charted entries with 30 entries containing quantitative or qualitative pain assessments. Only six of the pain assessments included a quantitative pre and/or post-pain intervention evaluation. Of the 54 entries there were 22 documented entries of pain relieving interventions (pharmacological or non-pharmacological). There were 10 uses of pharmacological agents that included Tylenol, Tylenol #3, phenergan, Aquaphor, Atarax, and intravenous fluids. There were 20 uses of non-pharmacological modalities of pain reduction which included the use of warm compresses, holding, rest, sips of water, discontinuation of intravenous fluids, making patients NPO (nothing per mouth), cool mist, and the use of comfort care (as indicated in the nurses notes as minimal stimulation and relaxation).

Pain assessments were documented for cellulitis eight times out of six entries (100 percent), the discrepancy here occurring because nurse I documented four times on a single chart with cellulitis as the ICD-9 diagnosis. Acute tonsillitis was observed in five entries with four documented pain assessments (80 percent). Kawasaki's was diagnosed four times and documented on three times (75 percent). Acute pharyngitis was diagnosed five times and documented on three times (60 percent). Pneumonia was documented on nine times out of 20 entries (45 percent). Acute otitis media/otitis media occurred 10 times and documented on three times (30 percent). This pattern suggests

those diagnoses that are associated with more pain are assessed more frequently than those diagnoses that are not associated with pain.

Discussion of Findings

These findings were unexpected since the inclusion criteria were selected based on diagnoses known to be painful. Nurses in this study assessed pain either quantitatively or qualitatively in 55.56 percent of the entries (30 pain documentation entries out of 54 total chart entries) and intervened with pain reducing interventions in 40.74 percent of the entries (22 documented interventions out of 54 entries).

Using Benner's Theory of Novice to Expert, the investigator originally hypothesized that nurses with more clinical experience would be able to more effectively manage pain in pediatric patients. In this study the nurses with less pediatric clinical experience documented more about the patients' pain and intervened more often. Nurse E had one year of pediatric clinical experience and nurse I had four years of pediatric clinical experience. Nurse E documented pain assessments 83 percent of the time while nurse I documented pain assessments 61 percent of the time. Nurse D who had nine years of clinical experience had only a single documentation of pain and a concurrent intervention for 25 percent. The lack of documentation for nurse D can not be explained but was left in the study as it is relevant to the AAP's position statement that health care workers are on the frontlines of pediatric pain control and it is up health care workers to effectively manage pain in children (2001).

In examining the data from Table 17 an interesting finding is made. Table 17 examines the nurses' pain assessments in relation to the ICD – 9 code of the patient. It

was found that diagnoses that are generally associated with more pain were assessed more frequently. In this study ICD-9 code 682.9 (cellulitis) was assessed most frequently with 462 (pharyngitis) and 463 (tonsillitis) next. Graphs 3 and 4 also display the pattern in which diagnoses that were perceived as more painful were assessed more often. This would indicate that nurses in this study used criteria other than quantitative and qualitative data to make decisions about pain management. It would appear that nurses in this study incorporated the patient's diagnosis into the decision-making process to assess pain and provide pain relieving interventions. The use of extraneous variables such as the patient's diagnosis was identified by Coffman et al. in 1997 as a factor that nurses used to make pain management decisions when they found that pediatric trauma patients were assessed more frequently and given analgesics more often than non-trauma pediatric patients.

In an effort to better understand the scarcity of pain documentation that was generally present in the 50 charts reviewed, the investigator obtained IRB approval to interview the sample nurses and pose the question: "What factors do you feel contributed to the lack of pain documentation?" Only five of the six nurses were contacted either in person or by phone. The sixth nurse (nurse E) had left the Hospital for another institution and was not contacted. Of the five nurses remaining, only two were willing to speak with the investigator, nurse A and I. Nurses B, C, and D all refused to be interviewed without citing reasons for their refusal.

Nurse A and I were interviewed separately and in private. Both nurses indicated that they were not aware that there was a lack of documentation. They stated they felt

that they assessed pain with each set of vital signs and believed they were documenting the findings in the charts. Nurse A could not give any reasons for why nurses were not charting pain assessments or findings. Nurse I noted that the use of the Numerical Rating Scale and FACES in children this age may hinder some nurses who are less experienced in making accurate assessments of pain. Nurse I also noted that there are occasions when the patient-to-nurse ratio does not allow for thorough charting. Nurse I felt that even though the patient-to-nurse ratios were not generally excessive, the ratio frequently did not allow for thorough charting. Nurse I repeatedly remarked on the surprise that nurses were not charting as they should in relation to pediatric pain control.

Conclusions and Implications

Conclusions

Based on the findings of this study, a relationship between nurses' clinical experience and pain management in preverbal children could not be determined. There is evidence that indicates variables such as the quality of clinical experience (e.g., pediatrics versus adult) and the diagnosis of the child impacts the frequency of pain assessments and interventions. Benner's Theory of Novice to Expert (1984) discusses how experience can be in the form of quantity (years of experience) or quality (intensive saturation of experience) and that nurses can possess either one. In this study the quality of pediatric clinical experience was in the form of how much time was spent in pediatrics alone. In this study those nurses who had less pediatric clinical experience evaluated pain more often. Nurses E with one year of pediatric clinical experience documented about pain in five of six of entries (83.33 percent) and nurse I with four

years of pediatric clinical experience documented about pain in 11 of 18 entries (61.11 percent). Also, these same nurses intervened more frequently (nurse E 66.67 percent and nurse I 44.44 percent) to reduce pain and utilized more qualitative pain descriptors.

This same relationship was also evident when looking at the nurses' overall clinical experience and the frequency of pain assessments and interventions. Table 9 demonstrates this pattern as nurse E who had one year of clinical experience had 5 documented assessments while nurse C who had 33 years of clinical experience had only one documented assessment. Table 16 also demonstrates this pattern with nurse E who had one year of clinical experience intervening four times and nurse I who had four years of clinical experience intervening eight times. Compared to nurse C who had 33 years of clinical experience intervening twice and nurse A who had 25 years of clinical experience intervening only once. This would support Benner's idea that the quality (type of clinical experience) of a nurse's experience is just as important as the quantity of experiences.

The pediatric nurses in this study did not assess, intervene, or document pain in preverbal children as much as one would expect. Thus, much of the literature is supported by this study. For example, Schechter, Allen and Hanson (1986) found a lack of research in pain control in children and cited difficulties with assessing this experience as a major factor. Hamers, Abu-Saad, van den Hout, and Halfens (1998) suggest children who are unable to vocalize pain are at risk for under-medication of pain. The AAP (2001) notes that self-report tools are the most reliable assessment tool available for assessing pediatric pain; however there are questions as to the validity of

these tools in children ages 3 to 7 years, and children under 3 years are absolutely unable to self-report. In this study, all the patients were preverbal and unable to verbalize pain. In addition, Piaget notes that concrete thinking does not develop until age seven years (Piaget, 1969), the ages of these patients are below the age of children for which concrete thinking has developed thereby invalidating the reports of pain tools such as the NRS and FACES which are both used by the pediatric department of the Hosptial. The American Academy of Pediatrics (AAP) (2001) has gone as far as to say that insufficient knowledge and inadequate application of knowledge by healthcare workers has contributed to poor pain management in children. This statement seems to be supported by this study in that there was a lack of pain documentation and intervention as a whole.

Implications

Usefulness of this study is greatest to the Hospital where the study took place. There were clear deficiencies in the assessment, intervention, and documentation of pain by nurses in this study and the two follow-up interviews showed a clear lack of awareness to the situation. Jacob and Puntillo (1999) cited possible reasons for disparities in pain identification and pain reducing interventions to include fear of respiratory depression (19.2% of nurses reporting), lack of time to provide interventions (6.1% of nurses reporting), and lack of knowledge (3.5% of nurses reporting). Based on the outcomes of this study, nurses at the Hospital need much improvement in pain assessment, intervention, and documentation.

As indicated by nurse I the Hospital may need to also evaluate the pain assessment tools utilized and perhaps adopt a tool that is more valid and useful for preverbal children. The NRS is widely used for all ages and shows strong reliability among older pediatric patients but may be inappropriate for those children who do not yet possess concrete thinking skills (Jacob & Puntillo, 1999). The Acute Pain Management Guideline Panel recommends the use of behavioral observation as the method for assessing pain in infants and nonverbal children (U.S. Department of Health and Human Services, 1992).

Nurses need more education and training in pediatric pain assessment, intervention, and documentation. Perhaps the use of required in-services on pediatric pain management, occasional tests of interrater reliability to ensure pain ratings are being made consistently, and Joint Commission on the Accredidation of Healthcare Organizations requirements for pain documentation would be beneficial to the pediatric nurses at the Hospital. Staffing assignments that allow for more attention to details such as pain documentation may also need to be evaluated.

Recommendations for Further Study

Because this was a very small sample from a single hospital, no generalizations can be made to other hospitals or nurses. It would be interesting to see if the trends discovered in this sample are evident in other samples of pediatric nurses. A wider study with multiple sites and a larger sampling frame would be appropriate to better examine the relationship between nurses' clinical experience and pain management in pre-verbal children.

Additionally more research is needed into why nurses are not documenting pain assessments and pain interventions at the Hospital. One method for investigating why nurses are not documenting about pain management would be to conduct a qualitative study of pediatric nurses and their perceptions of pediatric pain management. A second approach would be to conduct an experimental study using a pre-test/post-test control group in which nurses were evaluated on their abilities to assess and manage pain before and after an in-service on pediatric pain management. A third approach would be to examine the nurses' interventions in relation to staff education and how this guides the practice of assessing and treating pain.

If the findings of this study are prepresentitive of pediatric nurses in general, then much of the literature is supported by this study. For example Eland and Anderson (1977) reported the under-medication of 25 children hospitalized after surgery. In their study, 13 of the 25 children never received any analgesics post-operatively. The finding that the patients in this study only received pain relieving interventions 40.74 percent of the time would also indicate that children in this study are being under-medicated, especially when viewed in light of the painful diagnoses selected as study criteria.

McCaffery and Beebe (1989) reported that pain is not a priority to health care professionals, and this is supported by the study's findings that nurses only assessed patients 55.56 percent of the time. This finding also supports the idea that nurses need to become more proactive as they are on the frontlines of pain control (McCaffery & Beebe, 1989; AAP, 2001). Although statistical correlations were not able to be completed, the comparisons of nurses' pediatric clinical experience with pain

assessment and intervention did indicate that those nurses (E and I) with less years of clinical experience but more quality of experience assessed and intervened more often. This supports the notion by Benner (1984) that the quality of experience is just as important and the quantity of experience.

Nurse I noted that one possible reason why nurses in this study were not documenting pain as they should could be related to the documentation tools utilized by the Hospital. That is the use of self-report Numeric Rating Scale (NRS) and the FACES. Wong and Baker (1988) discuss how the NRS and FACES are both valid and reliable tools for as young as three years of age and in fact are widely used for all ages. Use of these self-report tools however is questionable in infants and preverbal children (those less than 3 years) (McCaffery & Beebe, 1989; Jacob & Puntillo, 1999; AAP, 2001) and would indicate a need for the Hospital to use different pain assessment tools.

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APPENDIX A

Nurse Questionnaire

Nurse Questionnaire

NAME: _____

EDUCATIONAL LEVEL (AD, BS, MS, ETC…): _____

LICENSURE (RN OR LVN): _____

UNIT OF PRIMARY STAFFING: _____

YEARS OF CLINICAL EXPERIENCE: _____

YEARS OF PEDIATRIC CLINICAL EXPERIENCE: _____

DO YOU CURRENTLY SPEND AT LEAST 80% OF YOUR CLNICAL TIME

CARING FOR PEDIATRIC PATIENTS? _____

APPENDIX B

Table of Random Numbers

Table of Random Numbers

Research Randomizer Results

1 Set of 50 Unique Numbers Per Set.
Range: From 1 to 84. -- Unsorted.

Job Status: **Finished.**

Set #1:

p1=**82**, p2=**34**, p3=**42**, p4=**46**, p5=**7**, p6=**32**, p7=**12**, p8=**20**, p9=**35**, p10=**81**, p11=**53**, p12=**21**, p13=**4**, p14=**23**, p15=**30**, p16=**70**, p17=**50**, p18=**60**, p19=**11**, p20=**39**, p21=**67**, p22=**28**, p23=**13**, p24=**15**, p25=**59**, p26=**69**, p27=**25**, p28=**16**, p29=**6**, p30=**61**, p31=**73**, p32=**36**, p33=**75**, p34=**31**, p35=**51**, p36=**56**, p37=**55**, p38=**2**, p39=**68**, p40=**8**, p41=**78**, p42=**19**, p43=**62**, p44=**63**, p45=**71**, p46=**33**, p47=**84**, p48=**57**, p49=**74**, p50=**3**

Available: Research Randomizer (http://www.ranomizer.org)

APPENDIX C

Nurses' Consent Form

TEXAS WOMAN'S UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

Title: The Relationship Between Clinical Nursing Experience and Pain Management in Preverbal Children

Investigator: Rick Calhoun BSN, RN.....903/465-7025
Advisor: Anne Stiles, PhD, RN.....940/898-2436

Explanation and Purpose of the Research

You are being asked to participate in a research study for Mr. Calhoun's master's thesis at Texas Woman's University. The purpose of this research is to describe the relationship between nurse's years of clinical experience with the effectiveness of pain management in preverbal hospitalized children.

Research Procedures

For this study, the investigator will provide you with a self-report questionnaire. You will be asked to complete this questionnaire in private and return it in the accompanying envelope. There will be a yellow clasped envelope located in the break room of your department where you may place your completed and sealed questionnaire. The investigator will then retrieve this clasped envelope in twelve hours. The purpose of the questionnaire is to obtain information regarding your experience as a nurse. Your expected time to complete the questionnaire is approximately ten minutes. The investigator will use a randomizer program to select 50 charts from the time frame 1/1/2000 to 12/31/2002 that also complies with the investigator's inclusion criteria. The investigator will then compare degrees of pain control documented in the charts with nurses' level of clinical experiences to determine any relationship between nurses' level of clinical experience and pain control in preverbal children.

Potential Risk

There is the risk of the release of confidential information. Confidentiality will be protected to the extent that is allowed by law. The questionnaire is to be completed in private and code letters will be assigned to your name for use in the data collection from charts and data analysis. Chart reviews will be conducted in a private section of the medical records department. The questionnaires, signed consent forms, and identifying data will be kept in a locked file cabinet in the investigator's office separate from the coded data from charts. At the conclusion of the study the signed consent forms will be turned into the TWU IRB, and all other identifying data will be destroyed in five years. All resulting publications from this study will be presented in-group form and no real

names will be used so that no individual can be identified. No one other than the researcher and his academic committee will ever see the raw data. There is also the risk of coercion. If at any time you feel obligated to participate in the study you should notify the investigator and the investigator will exclude you immediately from the study. There is also the risk of job repercussions associated with identification of ineffective pain management. The investigator will minimize this risk by keeping all identifying data private and reporting all study results in-group form. The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.

Participation and Benefits

Your involvement is completely voluntary. You may discontinue your participation in the study at any time without penalty. The only direct benefit to you is at the end of the study a summary of the results will be mailed to you if you choose by signing this option at the bottom of this form. *

Questions Regarding the Study

If you have any questions about the research study you may call me at 903-465-7025. If you have questions about your rights as a participant in this study you may contact the Texas Woman's University Office of Research and Grants at 940-292-3375 or via e-mail at IRB@twu.edu. You will be given a copy of this signed and dated consent form to keep.

_____ _____

Signature of Participant Date

The above consent was read, discussed and signed in my presence. In my opinion, the person signing said consent form did so freely and with full knowledge of its contents.

_____ _____

Signature of Investigator Date

***If you would like to receive a summary of this study, please provide and address to which this summary can be sent.**

Name:_____

Address:_____

_____

_____

Participant's Initials

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON

Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-898-3375 Fax 940-898-3416
e-mail: IRB@twu.edu

May 29, 2003

Mr. Rick Calhoun

Dear Mr. Calhoun:

Re: The Relationship between Clinical Nursing Experience and Pain Management in Preverbal Children

The above referenced study has been reviewed by the TWU Institutional Review Board (IRB) and appears to meet our requirements for the protection of individuals' rights.

If applicable, agency approval letters must be submitted to the IRB upon receipt PRIOR to any data collection at that agency. A copy of the approved consent form with the IRB approval stamp and a copy of the annual/final report are enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. The signed consent forms and final report must be filed with the Institutional Review Board at the completion of the study.

This approval is valid one year from the date of this letter. According to regulations from the Department of Health and Human Services, another review by the IRB is required if your project changes in any way. If you have any questions, feel free to call the TWU Institutional Review Board.

Sincerely,

Dr. Linda Rubin, Chair
Institutional Review Board - Denton

enc.

cc. Dr. Carolyn Gunning, College of Nursing
Dr. Anne Stiles, College of Nursing
Graduate School

APPENDIX D

Pain Documentation Data Tool

Pain Documentation Tool

Entry	Nurse	Clin	Pedi	Age	PrePain	PostPain	Local	Qual	Freq	ICD9	Pharm	NonPharm
1	A	25	20	24						463		
2				36	0		Knee			682.9		Warm Comps
3	B	17	5	6						381		
4				5	0	0	General			486		Holding
5				12			General			381	Tylenol	
6				12						486		
7				12	0	0	IV Site			486		Holding
8				36	0	0	General			462		
9				24			Mouth	Hurts	Inter	446	IVF	NPO
10				24	0		ABD	Scream	Inter	486	Phen/Tyl	NPO
11				36			Buttock			682.9		
12				12	0		Face	Scream	Inter	682.9	Tyl #3	Rest
13				3				Rash		682.9		Warm Comps
14				7						462		
15				3						381		
16				8						486		
17				1						486		
18				12			General	Crying		486		Rest
19				24						446		

Pain Documentation Tool

Entry	Nurse	Clin	Pedi	Age	PrePain	PostPain	Local	Qual	Freq	ICD9	Pharm	NonPharm
20	C	33	14	10						381		
21				24						486		
22				24	0		General			486		
23				12						682		
24				4						486		
25				4						486		
26				24			Mouth	Crying	Inter	462	Tylenol	Sips of H2O
27	D	9	4	6						381		
28				24						381		
29				5						486		
30				9			General	Fussy	Iner	381		Rest/Comps
31	E	1	1	24	0	0	L Hand			463		
32				24				Crying		463	Tyl #3	
33				24				Crying		463	Tyl #3	
34				7	0		General			486		
35				7	10	0	Foot	Sharp	Inter	486		Comfor Care
36				10						486		Warm Comps

Pain Documentation Tool

Entry	Nurse	Clin	Pedi	Age	PrePain	PostPain	Local	Qual	Freq	ICD9	Pharm	NonPharm
37	I	6	4	10						381		
38				6						381		
39				24	8	0	Throat	Sore	Inter	463	Tyl #3	
40				5						486		
41				12						486		
42				24				Irritable	Inter	46	Aquaphor	Rest/Fluids
43				12	0		Buttock			682.9		
44				12	0		Buttock			682.9		
45				12	0		Buttock			682.9		
46				12	5		Buttock	Sore	Const	682.9		Rest
47				4						486		
48				36	0		Body	Rash		486	Atarax	
49				7						462		
50				3	0		Hand			381		DC IV
51				8						486		
52				1	0		ABD			486		
53				24	3		Mouth	Sore	Inter	462		Sips, Cool Mist
54				24	0		General			446		Comfor Care