

# Honors Program

Katie Pfannenstein

*The Role of Nurses in  
Pediatric Pain Assessment and Interventions*

Nursing  
25 April 2013

The Role of Nurses in Pediatric Pain Assessment and Interventions

Katie Pfannenstein

Bemidji State University

### **Abstract**

Many factors affect one's perception of pain. Nurses assess and treat the pain of their patients. Children may not have the developmental abilities to describe the pain that they are experiencing; therefore it is up to the nurse to interpret pediatric pain levels. There are varying tools available to assess the verbal and non-verbal indications of pain. After the pain is assessed, the nurse decides how to treat the pain. There are two general categories for treating pain; pharmacological, which uses medication, and non-pharmacological, which uses distraction methods instead of medication. This study surveyed which non-pharmacological interventions (NPIs) are currently being used by Bemidji State's Registered Nurse to Bachelor of Science (RN to BS) students, the respondents' opinions on the effectiveness of the interventions, and the nurses' willingness to try new methods of pain intervention for their pediatric patients. The surveys were distributed via SurveyMonkey and the nurses were given two weeks to complete it. The results were then collected and analyzed using descriptive statistics.

## The Role of Nurses in Pediatric Pain Assessment and Interventions

### Introduction

Pain in the pediatric population remains a delicate subject. The Royal Council of Nursing reports that pain assessment and management in children is suboptimal (RCN, 2009). The International Association for the Study of Pain defines pain as, “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (IASP, 2007). Pain is experienced in pediatrics. “It has been established that infants have a neural pathway that responds to painful stimuli... There are anatomical, physiological, and biochemical prerequisites for pain perception from early intrauterine life” (Baulch, 2010, p. 35). At birth, an infant’s pain receptors and spinal cord are still changing; some receptors develop faster than others and in denser concentrations. Because of this knowledge, some argue that neonates actually experience more pain than older children and adults (ANZCA 2005; Stewart 2010).

Many factors affect nurses’ understanding of pediatric pain; education and knowledge deficits, personal beliefs about pain in children, decision making strategies, and culture (Twycross, 2010). Previously it had been believed that children experienced less pain than adults do and that some pain was to be expected while staying at a hospital (Twycross, 2010). In a pair of studies, nurses appeared to negate children’s pain if it did not conform to the routine schedule of recovery and managed pain with behavioral milestones (Twycross et al, 2007, 2008).

Several pain measuring scales have been developed specifically for infants and children. A few examples of these scales include the Wong-Baker’s (1988) FACES scale, for children

who can speak, and the FLACC: Face, Legs, Activity, Consolability, Cry scale (Merkel, Voepel-Lewis & Shayevitz, 1997), for assessing the non-verbal cues of newborns.

Once the pain has been assessed, interventions need to be implemented. The most common method of relieving a child's pain has been pharmacological (Melby, 2011). Research has begun to focus on the non-pharmacological aspects of relieving pain (Pölkki, Vehviläinen-Julkunen, & Pietilä, 2001 and He, Lee, Jahja, Sinnappan, Vehviläinen-Julkunen, Pölkki, & Ang, 2011). Non-pharmacological interventions (NPIs) attempt to distract the child from their pain.

Medication can become expensive if the patient has chronic pain or is experiencing a lengthy painful situation. By using non-pharmacological pain strategies to relieve the child's pain the parents and hospitals will be saving money. Also, some medications can have negative side effects and long term adverse effects. These can be avoided if nurses and parents are willing to try alternative, non-pharmacological methods of pain relief before medication. Non-pharmacological pain relief methods can also be used alongside medications to amplify the effects of pain relief, thus reducing both the cost and the side effects.

### **Purpose and Research Questions**

This thesis paper is focused on reviewing non-pharmacological pain interventions for pediatric patients. It examines which non-pharmacological interventions (NPIs) are being used, how nurses perceive the usefulness of these interventions, what do nurses see as barriers and benefits of these interventions, as well as how willing nurses are to try new NPIs for their pediatric patients. It will also explore how the demographic factors of the individual RN to BS students attending Bemidji State University (BSU) affect their use of, and opinion about, non-

pharmacological pain interventions. To achieve these results a questionnaire was distributed to BSU's RN to BS students.

The survey that was distributed seeks to answer the following questions:

1. Which non-pharmacological interventions are currently being used by BSU's RN to BS students to treat pediatric patients?
2. How effective do BSU's RN to BS students perceive the use of non-pharmacological interventions for pediatric patients?
3. Where do BSU's RN to BS students believe they received most of the information that they have accumulated about pain and how to manage it?
4. Are BSU's RN to BS students receiving further education about pain management after they have completed college?
5. What barriers are perceived by BSU's RN to BS students pertaining to the use of non-pharmacological pain interventions for pediatric patients?
6. What benefits are perceived by BSU's RN to BS students when using non-pharmacological pain interventions for pediatric patients?
7. Which non-pharmacological interventions are perceived as most effective by BSU's RN to BS students for treating pediatric patients?
8. Which non-pharmacological interventions are perceived as least effective by BSU's RN to BS students for treating pediatric patients?
9. How do demographic factors affect the opinions of BSU's RN to BS students when pertaining to non-pharmacological interventions for pediatric patients?

## Literature Review

### Physiology of Pain

Pain can be described as many different sensations; from mild to sharp, tingling, aching, throbbing, etc. No matter the name for it, pain is the brain's perception of an unpleasant stimulus. The types of pain can be divided into two categories, nociceptive pain and neuropathic pain. Nociceptive pain serves as a protective function for the body, letting the brain know when tissue is being damaged and that the current action should be avoided to prevent further tissue damage from occurring. The process of nociception begins with a painful stimulus, that stimulus is then transmitted through electrical nerve impulses from the point of stimulation to the spinal cord and then to the brain where the body becomes consciously aware of the pain and the pain signal is altered (McCaffery & Pasero, 1999; Briggs, 2010). These stages are labeled transduction, transmission, perception, and modulation (McCaffery & Pasero, 1999). Nociceptive pain has a definitive cause and location, so treatment methods are more easily identified and utilized.

Neuropathic pain is the result of lesions, damage, or dysfunction of the peripheral or central nervous system and it serves no protective function for the body (Urch & Dickenson, 2008). The nerve impulses are misinterpreted or amplified by the malfunctioning nervous system. Neuropathic pain is felt as sensations of stabbing, shooting, burning, tingling, pins and needles, or numbness, and the pain is usually unprompted (Briggs, 2010). It may also include allodynia, pain experienced from non-painful stimuli such as light touch (Johnson, 2009).

Pediatric patients can experience both nociceptive and neuropathic pain, as well as chronic and acute pain. There are various ways to treat these differing types of pain, but each method of treatment can be assisted with the help of non-pharmacological interventions (NPIs).

**Acute vs. Chronic Pain**

Pain severity is divided into the categories of acute and chronic pain. Both types of pain can be experienced by adults and children. Acute pain is defined by Merriam-Webster (2012) as, “having a sudden onset, sharp rise, and short course” (Acute, para. 1) Examples of acute pain include post-surgery pain, athletic injuries such as bruises, breaks and sprains, and illnesses that last less than six months or proceed along the expected course of recovery (Greener, 2009). The cause of acute pain is usually easily identified by health professionals and treating the cause of the pain typically alleviates the discomfort effectively. Acute pain responds well to simple treatments such as pain relievers (Greener, 2009).

Merriam-Webster (2012) explains that chronic pain is, “marked by long duration, by frequent recurrence over a long time, and often by slowly progressing seriousness” (Chronic, para. 1) Chronic pain can initially appear to be acute pain, but becomes chronic when recovery time exceeds the expected time frame or the illness has recurring episodes. Chronic pain can disrupt the patient’s school and home life. Chronic pain can be caused by tissue or nerve damage. It can include common ailments such as headaches, backaches, a cough, or diarrhea that persists for an extended period of time. These chronic disorders have origins that are difficult to identify and can also be difficult to treat (Amabile & Bowman, 2006).

**Assessment of Pediatric Pain**

The assessment of pain is used to determine the level of suffering a patient is enduring and to determine whether there is a need to intervene. It is helpful to know the 7 factors that make up the pain history (quality, severity, location, radiation, duration, timing, and



exacerbating/relieving factors) before looking for a way to treat the pain (Hockenberry & Wilson, 2011).

Assessing pain can be done using subjective or objective data. Subjective data is obtained through self-report of the patient. Common subjective pain assessment tools include the numerical rating and visual analog scale, which uses a scale of 0-10, 0 being no pain and 10 being the worst pain; and the Oucher and Wong-Baker's (1988) FACES scale, which are posters that have pictures of faces in increasing amounts of pain. The Oucher has pictures of real children whereas the FACES scale has animated faces. With these tools, the patient is able to share with the nurse the severity of the pain he/she is experiencing. If the child is old enough, self-report is quite a reliable method, but infants and young children who have not developed their communication skills, cannot come out and tell the nurse what level of pain they are experiencing. This is where objective assessments come into play.

Objective assessments require the nurse to look at the patient's nonverbal and psychosomatic cues to interpret the level of pain. Frequently used tools include the PIPP: Premature Infant's Pain Profile (Stevens, Johnston, Petryshen & Taddio, 1996), CHEOPS: Children's Hospital of Eastern Ontario Pain Scale (McGrath, Johnson & Goodman, 1985), FLACC: Face, Legs, Activity, Consolability, Cry (Merkel, Voepel-Lewis & Shayevitz, 1997), and CRIES: Crying, Requires O<sub>2</sub>, Increased BP and HR, Expression, Sleeplessness (Krechel & Bildner, 1995). Each of these scales rates and scores the behaviors of the infant or child; a lower score indicates a lower level of pain.

Thorough pain assessment information can be gathered most effectively when the nurse uses a pain assessment model that uses both the nurse's objective observations and the patient's

subjective reports of the pain (Nilsson, Finnstrom & Kikinsky, 2008). One example of this was created by the College of Emergency Medicine (CEM). It utilizes four faces similar to the Wong-Baker scale, numbers as used in the 0-10 numerical scale, nurses' observations of the child's expected behavior, and lists examples of injuries that fit into the categories (CEM, 2010).

### **Interventions for Pediatric Pain**

Once the level of pain is assessed, the nurse must determine the necessary actions to take to lessen the patient's pain. This can include either pharmacological or non-pharmacological interventions (NPIs), or the mutually beneficial use of both.

The World Health Organization (WHO) recommends a three step pain relief ladder for pharmacological interventions. The steps include, first using "non-opioids (aspirin and paracetamol); then, as necessary, mild opioids (codeine); then strong opioids such as morphine, until the patient is free of pain" (WHO, 2012). Adjuvant medications, such as antidepressants, anxiolytics, or anticonvulsants, may be used along with the listed analgesics to reduce the sensation of pain (WHO, 2012).

NPIs for pain in children include various methods of distracting the child from the pain. These interventions are also known as Complementary and Alternative Medicine. The Texas Cancer Council (2011) suggests an assortment of techniques that may help the child relax and forget about their pain such as listening to music, telling stories, reading books, blowing bubbles, watching TV, using humor, breathing exercises, muscle relaxation, and guided imagery, depending on the child's age. The Council also encourages implementing comfort measures such as quiet presence, massage, music, hot/cold compresses, baths, or soothing smells (TCC, 2011).

## **Methodology**

### **Study Design**

A descriptive survey, which was created and distributed, gathered information from the RN to BS students who have worked with neonatal and pediatric patients. Nurses are often pressed for time while at work, so a survey allows for specific information to be collected in a timely manner. The survey was expected to take approximately 10-15 minutes to complete, but respondents completed it in 4-6 minutes. The study was completed after approval from the Institutional Review Board at Bemidji State University.

### **Instrument- Survey**

The survey was entitled Pediatric Pain Survey and consisted of 27 questions. The first seven questions were demographic questions that asked about age, gender, and experience and knowledge of the nurses. The next 16 questions used a Likert-type scale; the first ten asked about which non-pharmacological methods were used by the nurse, the next six questions asked about the preference to use NPIs. For these 16 questions, the options for answers were “Not at All”, “Very Seldom”, “Sometimes”, “Nearly Always”, and “Always”. The last four questions, after the Likert questions, were short answer questions which asked the RN to BS students about what they perceive to be the barriers and benefits of NPIs, and which NPIs they recognize as being the most and least effective.

The survey was recreated based on the questionnaire used in a Finland study focusing on treating pediatric post-operative pain through non-pharmacological methods (Pölkki, Vehviläinen-Julkunen, & Pietilä, 2001). Permission was gained, via e-mail, from Dr. Tarja Pölkki to recreate the survey and distribute it to nurses in Minnesota. Some of the questions were

altered so that they would more broadly apply to the pediatric population in general, not just those who were post-operative. Also, a number of the questions from Dr. Pölkki's original survey were removed to shorten the length of the survey in hopes of increasing the number of nurses willing to complete the survey. An emailed letter of approval to use a recreation of the survey is included at the end of this paper, in Appendix A. The Pediatric Pain Survey used in this study is also attached at the end, in Appendix B.

### **Expected Outcomes**

The Pediatric Pain Surveys were delivered to 77 RN to BS students attending Bemidji State University and were collected in February of 2013. It was expected that the response rate would be 33%, meaning that about 25 of the survey recipients would complete the survey. Most of the students were expected to be female, as that ratio of female to male nurses is quite high. An additional assumption was that, because the RN to BS students have had experience being two-year graduate nurses, that they would have a general knowledge base about non-pharmacological pain interventions for neonates and pediatrics allowing them to have begun using some of these non-pharmacological interventions already. If they were not using these interventions, then most RN to BS students would be open to using new interventions to help reduce pain in their patients. Nursing education teaches nurses that their goal is to help their patients heal and recover, so any method to decrease the amount of pain that their patients were experiencing should be sought after by nurses to help their patients feel more comfortable. It is expected that some of the NPIs will be used more than others. It is also expected that the response to question "Where do you think most of your knowledge about nursing came from?" to have answers in all three of the available answer options.

### **Data Collection**

Through collaboration with Marlene Erickson, the BSU department of nursing administrative assistant, the surveys were distributed to each of the RN to BS students. Along with the survey was an explanatory e-mail that described what my thesis was about and how they could help me with the thesis process by completing the survey. Surveys were distributed in February of 2013 and the nurses were given a two week time frame to complete their surveys. Surveys may only be completed once, by each RN to BS student who receives the emailed link. The RN to BS students were assured of confidentiality through the survey taking process; SurveyMonkey allowed for anonymity. No identifying information was requested of the participants. Once surveys are completed there is no tie to the identity of the person who completed the survey. Data retrieved through the survey is securely placed in SurveyMonkey's database and the author is the only person who has access to this information through password protection.

### **Sample, Setting**

The Pediatric Pain Surveys were dispersed through a SurveyMonkey link via email to students who are participating in the Registered Nurse to Bachelor of Science in nursing program. The RN to BS students are registered nurses that have completed a two year degree and are now advancing their education to become 4-year nurses with a Bachelors of Science degree, through Bemidji State University. Bemidji State University is a rural university in northern Minnesota that has been offering a RN to BS program for 26 years. The course involves completion of 33 upper level credits to earn a Bachelor's degree in nursing. The RN to BS students have experience working as nurses for several years and are returning to school to

allow for advancement in their nursing careers. The RN to BS students were expected to have experience working with pediatric patients. The age of pediatric patients assessed in the pain survey ranged from neonates to elementary school students.

### **Data Analysis**

After the Pediatric Pain Surveys were completed, descriptive statistics were utilized to assess the results. The results looked into how often RN to BS students used non-pharmacological pain interventions, their opinions on the effectiveness of these interventions, and their willingness to try new non-pharmacological pain relief methods for their pediatric and neonate patients.

There were thirteen different non-pharmacological interventions that the respondents were asked to evaluate the effectiveness of, which included: (1) thinking about pleasant times or places, or guided imagery (2) relaxing different muscles of the body, (3) breathing techniques, (4) verbal encouragement as a reward, (5) laughter or humor, (6) thermal regulations, such as hot or cold packs, (7) massage or therapeutic touch, (8) adjusting elements of the environment to increase comfort, (9) frequent position changes, (10) having music playing in the background, (11) asking the patient for ideas about pain relief, (12) including family in pain relief, and (13) providing information about the pain.

Analyzing the results of the NPIs currently being used by the RN to BS students involved dividing the thirteen selections into generalized groups: (1) cognitive-behavioral methods (including imagery, distraction, relaxation, breathing techniques, and positive reinforcement), (2) physical methods (including thermal regulation, massage, and positioning), (3) emotional support (including humor, verbal encouragement, providing information and including patient

and their family), and (4) creating a comfortable environment. After the NPIs were divided into these groups, the percent of use for each category was analyzed using descriptive statistics.

## **Results**

### **Demographics**

Upon collection of the results, only five ( $n=5$ ) of the RN to BS students completed the survey. These five students all agreed to the consent form and all admitted to being enrolled in the RN to BS program. Of these five students, all were female, aged 20-49, with 0-20 years of experience as a nurse. All of the respondents ( $n=5$ ) were currently employed as nurses as they worked towards their Bachelors of Science degree in nursing. One was an ER/flight nurse, two worked in medical/surgical units, one was a manager of the OB/pediatric and Women's Health services, and the last one worked in pediatric cardiology. See Table 1 for a more detailed breakdown of the demographic variables.

### **Pain Education**

Of these respondents, 80% answered that they believed to have gained most of their knowledge about pain from "nursing practice after college." Twenty percent stated that it was from "life experiences before college", and 0% stated that they learned the majority of their knowledge about pain from their "formal nursing education." One hundred percent of the respondents answered that they believed they gained their knowledge about nursing before or after college and none said that it was from their nursing school. When asked if they had taken any pain education after college, 100% of respondents stated that they had attended classes or seminars on pain management since graduating from college.

Table 1  
Background Factors of the Respondents ( $n=5$ )

| Demographic Variables                 | <i>n</i> |
|---------------------------------------|----------|
| <b>Gender</b>                         |          |
| Female                                | 5        |
| Male                                  | 0        |
| <b>Age</b>                            |          |
| 20-29                                 | 2        |
| 30-39                                 | 2        |
| 40-49                                 | 1        |
| 50+                                   | 0        |
| <b>Years of Experience as a Nurse</b> |          |
| 0-5                                   | 1        |
| 6-10                                  | 1        |
| 11-15                                 | 1        |
| 16-20                                 | 2        |
| 20+                                   | 0        |
| <b>Place of employment</b>            |          |
| ER/flight nurse                       | 1        |
| Med/surg units                        | 2        |
| OB/ped                                | 1        |
| Ped cardiology                        | 1        |

---

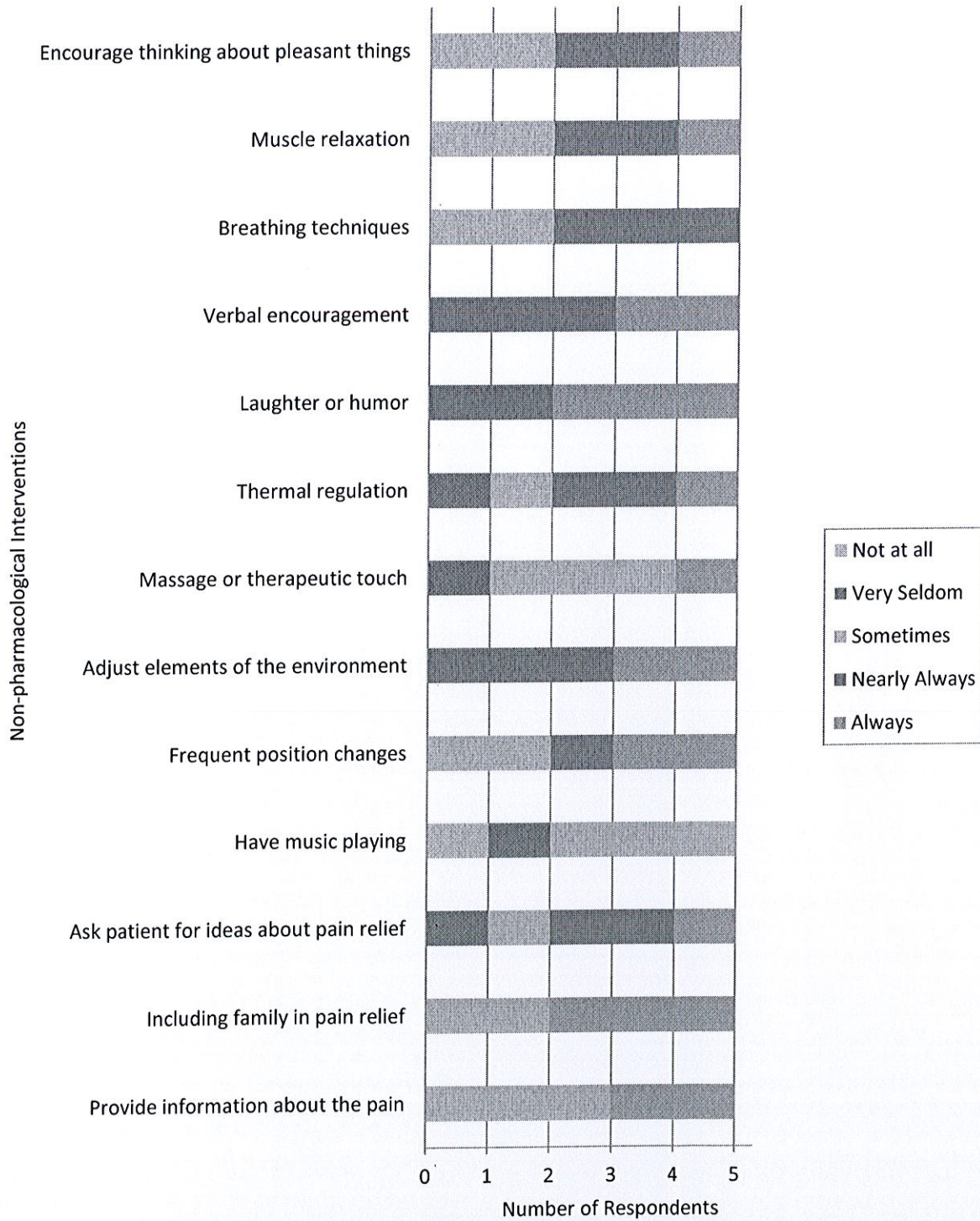
OB: obstetric. Ped: pediatric

### **Non-pharmacological Pain Interventions Currently Being Utilized**

Page three of the survey asked the RN to BS students to indicate which of non-pharmacological interventions they are currently using to relieve pain in their pediatric patients. The exact percentages of NPI use are reported in Table 2 using a Likert-type scale with labels grouped into “not at all/very seldom”, “sometimes”, and “nearly always/always”. See Figure 1 for a graphic visualization of these results without grouping of the Likert levels.



**Figure 1**  
**Respondents' Use of the Different Types of**  
**Non-pharmacological Interventions**



### **Cognitive-Behavioral Interventions**

Cognitive-behavioral interventions focus on changing the way patients think and act to decrease the level of pain they are experiencing. These interventions were each used the same amount by the RN to BS students. Sixty percent said they used guided imagery, muscle relaxation, and breathing techniques “nearly always/ always” to reduce pain in their pediatric patients, leaving the remaining forty percent to say that they used imagery, muscle relaxation and breathing techniques “sometimes” to relieve pain.

### **Physical Interventions**

Physical interventions involve making changes to the patient’s body to relieve pain. This includes hot or cold application, repositioning the patient, and massage or therapeutic touch. Sixty percent used thermal regulation (hot or cold application) and frequent reposition “nearly always/always”. Massage/therapeutic touch was “sometimes” used sixty percent of the time to reduce pain in pediatric patients.

### **Emotional Support**

Emotional support is provided to patients by comforting them and helping them feel in control of their current situation. Both Humor/laughter and verbal encouragement were used “nearly always/always” one hundred percent of the time. Providing information was used “sometimes”, sixty percent of the time. Asking the patient to suggest ways to alleviate their own pain was used “not at all/very seldom” twenty percent of the time and “sometimes” or “nearly always/always” each forty percent of the time to reduce pain in the RN to BS students’ pediatric patients

### Creating a Comfortable Environment

Many elements can be involved in creating a comfortable environment, such as changing the temperature or having the door shut to keep out excess sound. Changing the patient's environment was "nearly always/always" used one hundred percent of the time. But when asked about two specific aspects that could be changed in the patient's environment, playing music was "sometimes" used sixty percent and including the patient's family was "always" used sixty percent of the time to reduce pain in pediatric patients.

Table 2  
Respondents' Use of Non-pharmacological Intervention

| Non-pharmacological Interventions         | Not at all/<br>Very seldom (%) | Sometimes<br>(%) | Nearly Always/<br>Always (%) |
|---|--------------------------------|------------------|------------------------------|
| <b>Cognitive-behavioral interventions</b> |                                |                  |                              |
| Imagery <sup>a</sup>                      | 0                              | 40               | 60                           |
| Muscle relaxation                         | 0                              | 40               | 60                           |
| Breathing techniques                      | 0                              | 40               | 60                           |
| <b>Physical interventions</b>             |                                |                  |                              |
| Thermal regulation <sup>b</sup>           | 20                             | 20               | 60                           |
| Massage/ therapeutic touch                | 20                             | 60               | 20                           |
| Repositioning frequently                  | 0                              | 40               | 60                           |
| <b>Emotional support</b>                  |                                |                  |                              |
| Humor/laughter                            | 0                              | 0                | 100                          |
| Verbal encouragement                      | 0                              | 0                | 100                          |
| Providing information                     | 0                              | 60               | 40                           |
| Asking the patient for suggestions        | 20                             | 40               | 40                           |
| <b>Environmental interventions</b>        |                                |                  |                              |
| Adjusting the environment                 | 0                              | 0                | 100                          |
| Playing music                             | 40                             | 60               | 0                            |
| Including the family                      | 0                              | 40               | 60                           |

<sup>a</sup>Asking the patient to think about pleasant times and places

<sup>b</sup>Application of heat or cold packs

### Average Use of Non-pharmacological Categories

The total percentages for each category of non-pharmacological intervention were added together and then averaged, resulting in a number representation of the average percent of use for each NPI category (see Table 3). Upon analyzing the averages, the conclusion can be made that *emotional support* was used the most often, with an average of 70% saying that they “nearly always/always” used these interventions to relieve pain in their pediatric patients. *Cognitive-behavioral* interventions were the next most used NPI category, with an average of 60% “nearly always/always” using them. *Physical* and *environmental* interventions were used the least, with 46.7% and 53.3%, respectively, using these interventions “nearly always/always”.

Table 3

The Average Use of the Non-pharmacological Intervention Categories

| Non-pharmacological Intervention Categories | Not at all/<br>Very seldom (%) | Sometimes (%) | Nearly Always/<br>Always (%) |
|---|--------------------------------|---------------|------------------------------|
| Cognitive-behavioral interventions          | 0                              | 40            | 60                           |
| Physical interventions                      | 13.3                           | 40            | 46.7                         |
| Emotional support                           | 5                              | 25            | 70                           |
| Environmental interventions                 | 13.3                           | 33.3          | 53.3                         |

### Beliefs about Non-pharmacological Interventions

When asked about the overall effectiveness of NPIs, the respondents replied with one “sometimes”, two “nearly always”, and two “always”. The nurses believed that NPIs were mostly effective in relieving pain in their pediatric patients. When asked if NPIs should be used in combination with pharmacological pain interventions, the respondents answered with two “nearly always” and three “always”. There was a unanimous positive response for the use of both pharmacological and non-pharmacological together to help relieve pain. When asked if the

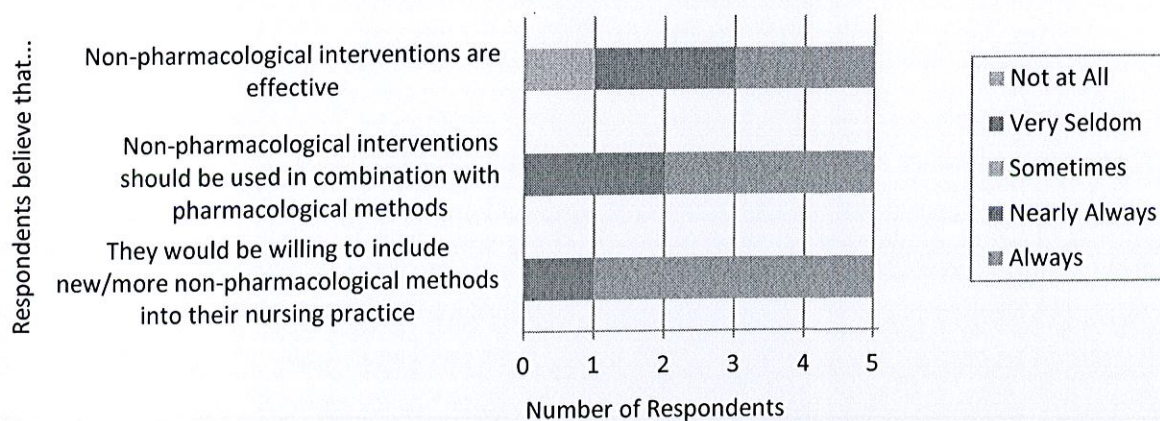
respondents would be willing to include new/more non-pharmacological methods into their nursing practice, 80% said “always” and 20% said “nearly always”. This was the highest positive response of the whole survey; the nurses believed that they would be willing and able to incorporate new or more NPIs. Table 3 displays the respondents’ percentage of beliefs about NPIs. See Figure 2 for a graphic visualization of the results.

**Table 3**  
**Respondents’ Beliefs about Non-pharmacological Interventions**

| Respondents Believe That...   | Not at all/<br>Very seldom (%) | Sometimes (%) | Nearly Always/<br>Always (%) |
|---|--------------------------------|---------------|------------------------------|
| ...non-pharmacological interventions are effective.                           | 0                              | 20            | 80                           |
| ...NPIs should be used in combination with pharmacological interventions.     | 0                              | 0             | 100                          |
| ... they would be willing to include new/more NPIs in their nursing practice. | 0                              | 0             | 100                          |

NPIs: Non-pharmacological Interventions

**Figure 2**  
**Respondents' Beliefs About Non-pharmacological Interventions**



### **Barriers and Benefits of Using Non-pharmacological Interventions**

The questions about the barriers and benefits of non-pharmacological pain interventions, as well as the questions for what the most and least effective intervention included, were worded as open responses. The respondents typed what they believed were the barriers and benefits and the most and least effective into the available space.

They believed that the major barriers to using NPIs involved “time restraints”, “parents willingness to try, they just want their child’s pain away”, “sometimes there is not the time for these interventions, ie physician is here NOW”, “parents acceptance”, and “availability of resources.” Overall these statements tie into the fact that the barriers to these interventions are based on not having enough time or cooperation from parents and doctors, as well as the fact that there are additional resources needed to use NPIs.

The respondents believed that the major benefits of using NPIs to relieve pain included, “less side effects”, “pt is not drugged up, it is natural”, “allows the patient to be in control of the situation”, “decreased use of medication is better for the body”, and “increased comfort; may decrease length of stay.” These responses centered around the idea of improving pain control without having to overmedicate a child which means fewer side effects and may be able to leave the hospital sooner.

### **Most and Least Effective Non-pharmacological Interventions**

The respondents’ beliefs, about which NPIs were the most and the least effective, were varied. They stated that the most effective were, “ice packs, distraction”, “distraction through guided imagery, breathing, or playing”, “distraction techniques”, “humor, teaching expectation, relaxation techniques, music, essential oils, touch and a smile”, and “suitable environment that

meets the patient needs; human touch.” The repetitive theme of distraction arose as being the most effective NPI. It was also noticeable that some respondents listed more NPIs than others, hinting towards the fact that various respondents liked and used NPIs more than the others did.

The respondents believed that the least effective of the NPIs included, “music playing”, “massage therapy for pediatrics, they normally don’t like the touch from a stranger”, “music”, “saying this won’t hurt a bit, just relax and it will be over soon”, and “none.” Music was seen as the least effective of the NPIs. One of the respondents even went as far as to say that “none” of the NPIs were the “least effective.”

### **The Effect of Demographic Traits on the Use of Non-pharmacological Interventions**

The correlation of the results about the effect of demographic traits on the use of NPI’s was analyzed using descriptive statistics for the individual respondents. Each respondent had varying views on the effectiveness of interventions and different rates of utilization for each NPI.

Respondent #1 was a female, aged 30-39, with 16-20 years experience as a nurse. She is currently involved in medical-surgical orthopedic management. She believes that most of her knowledge about pain came from her nursing practice after college. For the questions on page 3 of the survey, about the use of NPIs and beliefs about NPIs, she responded with 9 “always”, 5 “nearly always”, and 2 “sometimes.” For the short answer section about barriers, benefits, and the most and least effective NPIs, the nurse responded with lengthy answers and responded that “none” of the NPIs were least effective. The survey format is provided in Appendix B.

Respondent #2 was a 40-49 year old female with 16-20 years experience as a nurse. She works in pediatric oncology and believes that most of her knowledge about pain came from her nursing practice after college. For the answers to the questions on page 3 of the survey, the nurse

responded with 9 “always”, 6 “nearly always”, and 1 “sometimes.” For the short answer questions, she answered lengthy answers and listed many different NPIs as being the most effective.

Respondent #3 was a female, aged 20-29 with 6-10 years experience in nursing. She is manager of OB/Peds and women’s services, with 5+ years working specifically with newborns and pediatric patients. She believes that most of her knowledge about pain came from her nursing practice after college. For page 3 questions, the nurse responded with 7 “always”, 1 “nearly always”, 6 “sometimes”, 1 “very seldom” for thermal regulation usage, and one “not at all” for playing music in the patients room. Her answers for the short answer section were lengthy for the benefits and barriers, and short for the most and least effective NPIs.

Respondent #4 was a 20-29 year old female with 0-5 years experience as a nurse. She is a medical-surgical nurse who floats to work with pediatric patient. She believes that most of her knowledge about pain came from her nursing practice after college. For the questions on page 3 of the survey, she responded with 3 “always”, 5 “nearly always”, 7 “sometimes”, and 1 “very seldom” for massage/ therapeutic touch. For the short answer section she gave lengthy answers.

Respondent #5 was a female, aged 30-39 with 11-15 years experience as a nurse. She is an ER/flight nurse and believes that most of her knowledge about pain came from her life experiences before college. For the questions on page 3 of the survey, about the use of NPIs and beliefs about NPIs, she responded with 7 “nearly always”, 7 “sometimes”, and 2 “very seldom” For the questions about barriers, benefits, and the most and least effective NPIs, the nurse responded with short 2-3 word answers.



The answers differed for each respondent based on their individual experiences working as nurses. Some answers for the open ended questions were lengthy and some were short. Some answers from respondents for the Likert-type questions all remained towards the middle of the spectrum whereas other chose answers that were closer to the “always” or “not at all” side of the spectrum. Each respondent may have tried various types of non-pharmacological pain interventions in their nursing practice and found that they had varying degrees of effectiveness. They continue to use the NPIs that help their patients, and avoid reusing the interventions that did not seem to be helpful or were too much trouble to utilize.

## **Discussion**

### **Limitations**

As with every research project, there are limitations. The greatest limitation of this project was acquiring participants. The initial idea for my survey was to distribute it to nurses at Sanford Bemidji Medical Center. Unbeknownst to the BSU faculty and administration that were helping with this thesis, an official agreement had to be created between BSU and Sanford so that BSU students could complete studies on the nurses at Sanford, even if that study was a simple emailed survey. The agreement between Sanford and BSU was finally approved in March, but it was too late for my project. As a Plan B, advisors suggested that the survey be sent to BSU’s RN to BS students instead. Survey distribution began in late February, 2013. By March, there were only five responses to the survey. A second email with the survey was sent out, but there were no additional survey completions. With a population sample size of 5 out of 77 subjects, the results were not as high as expected. There was a 6.5% response rate to the survey.

The survey was distributed to all of the RN to BS students, so it was hoped that they would talk and encourage each other to complete the survey. The survey was short and to the point compared to Dr. Tarja Pölkki's survey, from which this thesis was based. But Dr. Pölkki's survey response rate was much higher, despite the extended length. The estimated time that the survey would take was 10-15 minutes to complete, but upon examination of SurveyMonkey's records, the survey only took participants 4-6 minutes to complete.

The information that was gathered through the survey could possibly be generalized to other nurses in BSU's RN to BS program. But, since the response rate was low and the survey was only sent to nurses from one university, the results cannot be expanded to apply to more than the nurses in BSU's RN to BS program. Having a low response rate also makes it difficult to conduct statistical analysis of the results. The correlation of the results about the effect of demographic traits on the use of NPI's was initially going to be analyzed with SPSS. But due to time constraints, technological confusion, and a small response rate ( $n=5$ ), I was unable to utilize the analysis of SPSS. Instead, I made conclusions based on the respondents' responses using descriptive statistics.

### **Conclusion and Future Research**

Pain occurs at all levels of development and throughout the lifespan. Pediatric patients experience multiple kinds of pain and there is a plethora of options available to treat this pain; both pharmacologically and non-pharmacologically. Nurses must have the knowledge to assess the level of pain in their pediatric patients, which may be difficult if the child is not developmentally old enough to speak. After assessing the patient's pain level, the nurse has the

ability to intervene and provide comfort for the patient; this can include the many different types of NPIs from distraction to changing the environment.

The results of this survey are optimistic, they show that the RN to BS students at BSU who completed the survey are currently using some NPIs and are willing to try some new interventions for treating their pediatric patients' pain. The results also show that the respondents have all received further education on pain management after graduating from college. The barriers to the use of NPIs for pediatric patients related to parental opinion, lack of resources, and lack of time. The benefits of using NPIs focuses on the fact that these interventions allow for smaller doses of medication and can save the patients and the hospital some money.

The respondents believed each non-pharmacological method had varying levels of efficacy. Overall, most concluded that music therapy was the least effective, and distraction was most effective. They greatly disagreed on the effectiveness of thermal regulation and massage; some respondents thought it was very effective by "always" using it to treat their pediatric patients, and some thought it was much less effective and "very seldom" used these two interventions. The most often used interventions were humor/laughter, verbal encouragement, and adjusting the environment where 100% of the respondent "nearly always/always" used these interventions.

Further research should be completed in the area of non-pharmacological pain interventions, especially for pediatric patients. It would be helpful to know the clinical effectiveness of various NPIs. It would also be helpful to know which of the interventions are easiest to use and enforce into new policies for nursing staff to help alleviate pain in their

pediatric patients. By increasing the nursing knowledge base about NPIs, there is a greater likelihood that more nurses will utilize these methods.

Further research could also be done with a larger group of nurses and with nurses from a larger regional area and multiple health care settings, not just hospitals. Nurses care for pediatric patients in many different settings; from hospitals to home care. Perhaps more specific studies could be conducted with populations of pediatrics who are just post-operative, or who have chronic conditions that cause pain, or with a specific age group of pediatrics. This research focused on a wide range of pediatric ages, from neonates to elementary school children.

Research could also be done by assessing the parents' beliefs about NPIs for their children, instead of asking the nurses. Or research could assess which NPIs are perceived by the children to be effective. The area of non-pharmacological pain interventions, in general, needs further research to improve the support rate for its usage. If more people knew about its effectiveness and the various techniques available, there would be less hesitancy by both nurses and parents to use these non-pharmacological interventions.

### References

- Baulch, I. (2010). *Assessment and management of pain in the paediatric patient*. Nursing Standard, 25(10), 35-40. Retrieved from <http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=d9d295cc-4ca5-4379-accd-f7bcc3192c73%40sessionmgr104&vid=17&hid=127>
- Bradt, J. (2010). The effects of music entrainment on postoperative pain perception in pediatric patients. *Music and Medicine*, 2(3), 150-157. doi: 10.1177/1943862110369913
- Brolinson, P., Price, J., Ditmyer, M., & Reis, D. (2001). Nurses' perceptions of complementary and alternative medical therapies. *Journal of Community Health*, 26(3), 175-189.
- College of Emergency Medicine (2010). *Guideline for the management of pain in children*. CEM: London. doi:10.1111/j.1440-1754.2006.00780.x
- Cregin, R., Rappaport, A. (2008). Improving pain management for pediatric patients undergoing non-urgent painful procedures, *American Society of Health Systems Pharmacists Inc.* 65, 723-727. doi:10.2146/ajhp070094
- Ellis, J.A., McCleary, L.M., Blouin, R., Dube, K., Rowley, B., McNeill, M., & Cooke, C. (2007). *Implementing best practice pain management in a pediatric hospital*. *Journal for Specialists in Pediatric Nursing* 12(4), 264-277.
- He, H., Lee, T., Jahja, R., Sinnappan, R., Vehviläinen-Julkunen, K., Pölkki, T., & Ang, E. (2011). The use of nonpharmacological methods for children's postoperative pain relief: Singapore nurses' perspectives. *Journal For Specialists In Pediatric Nursing*, 16(1), 27-38. doi:10.1111/j.1744-6155.2010.00268.x

- Hedén, L., Von Essen, L., & Ljungman G. (2009). Randomized interventions for needle procedures in children with cancer. *European Journal of Cancer Care*, 18, 358-363. doi:10.1111/j.1365-2354.2008.00939.x
- Hockenberry, M.J. & Wilson, D. (2013). *Wong's nursing care of infants and children* (9<sup>th</sup> ed.). St. Louis, MO: Mosby Elsevier
- Kankkunen, P., Vehviläinen-lulkunen, K., Peitila, A., & Halonen P. (2003). Parents' use of nonpharmacological methods to alleviate children's postoperative pain at home. *Journal of Advance Nursing*, 41, 367-375.
- Lynch, M. (2001). Pain as the fifth vital sign. *Journal of Intravenous Nursing*, 24, 85-93.
- Manworren, R. (2000). Pediatric nurses' knowledge and attitudes survey regarding pain. *Pediatric Nursing*, 26, 610-614.
- Melby, V., McBride, C., & McAfee, A. (2011). Acute pain relief in children: use of rating scales and analgesia. *Emergency Nurse*, 19(6), 32-37.
- Nilsson, S., Hallqvist, C., Sidenvall, B., & Enskär, K. (2011). Children's experiences of procedural pain management in conjunction with trauma wound dressings. *Journal Of Advanced Nursing*, 67(7), 1449-1457. doi:10.1111/j.1365-2648.2010.05590.x
- Pederson, C., & Harbaugh, B. (1995). Nurses' use of nonpharmacologic techniques with hospitalized children. *Issues in Comprehensive Pediatric Nursing*, 18(2), 91-103.
- Pölkki, T., Vehviläinen-Julkunen, K., & Pietilä, A. (2001). Nonpharmacological methods in relieving children's postoperative pain: a survey on hospital nurses in Finland. *Journal of Advanced Nursing*, 34(4), 483-492. doi:10.1046/j.1365-2648.2001.01777.x

Royal College of Nursing (2009). *Recognition and assessment of acute pain in children*. RCN, London.

Salantera, S., Lauri, S., Salmi, T., & Helenius, H. (1999). Nurses' knowledge about pharmacological and nonpharmacological pain management in children. *Journal of Pain and Symptom Management*, 18, 289-299.

Sinha, M., Christopher, N., Fenn, R., & Reeves, L. (2006). Evaluation of nonpharmacologic methods of pain and anxiety management for laceration repair in the pediatric emergency department. *Pediatrics*, 117(4), 1162-1168.

Twycross, A. (2010). Managing pain in children: Where to from here. *Journal of Clinical Nursing*, 19(15-16), 2090-2099.

## Appendix A

Email approval from Dr. Tarja Pölkki to use a re-creation of her survey

**From:** Tarja Pölkki [tarja.polkki@nic.fi]  
**Sent:** Thursday, October 04, 2012 12:27 PM  
**To:** Katie Pfannenstein  
**Subject:** Re: nonpharmacological methods in relieving children's postoperative pain

Dear Katie

I give my permission to use the survey in your thesis. Good luck for the study!  
I would be also happy to hear the results from your country in the future.

With best regards,  
Tarja Pölkki  
PhD, Adjunct Professor  
University of Oulu  
Institute of Health Sciences  
Finland



## Appendix B

## Pediatric Pain Survey

The SurveyMonkey Link to the survey is <http://www.surveymonkey.com/s/XN7VFT2>

**Pediatric Pain Survey****Page 1: Informed Consent**

You are invited to participate in a study relating to non-pharmacological pain interventions in the pediatric population, conducted by Katie Pfannenstien, an undergraduate nursing student at Bemidji State University, under the supervision of Jeanine Gangeness, RN, PhD. I hope to learn which non-pharmacological interventions are currently being used and which interventions are most likely to be accepted into nursing scope of practice. You were selected as a possible participant in this study because you have worked as a nurse, with pediatric patients.

All data obtained will remain confidential. Any information that can be identified with you will not be disclosed. You will not receive any compensation for participating in this survey.

You are free to decline to participate or withdraw your consent and discontinue your participation at anytime throughout the survey. There are no penalties for withdrawing participation after signing consent and it will not prejudice your future relationships with BSU.

If you decide to participate, complete the following survey. This survey will take approximately 10 minutes and covers your use and knowledge of non-pharmacological pain interventions for pediatric patients. There are three pages of questions, please answer all questions that apply to you.

If you have any questions, please ask. If you have questions later, you can contact me or Jeanine via email at [katie.pfannenstien@live.bemidjistate.edu](mailto:katie.pfannenstien@live.bemidjistate.edu) or [jgangenness@bemidjistate.edu](mailto:jgangenness@bemidjistate.edu). We will be happy to answer your questions.

\*1. I have read the Informed Consent and agree to participate in the survey:

- Yes
- No

**Page 2: Demographic Information**

2. What is your gender?

Female

Male

3. What is your age?

20 to 29

30 to 39

40 to 49

50 to 59

60 to 69

70 or older

4. Are you currently enrolled in the RN to BS program?

Yes

No

5. How many years have you been working as a nurse?

0-5

6-10

11-15

16-20

20+

6. If you currently work as a nurse, please identify which area of nursing you primarily work in (ex. pediatrics, med/surg...):

7. Where do you think most of your knowledge about pain came from?

Life Experiences Before College

Formal Nursing Education

Nursing Practice After College

8. Have you had any classes or attended any seminars on pain management since graduating college?

Yes

No

**Page 3:** Non-pharmacological Intervention Questions

The following statements pertain to the use of non-pharmacological methods in pain management among your pediatric patients. For each item, select the number that best represents your own actions. If you do not use one of the listed methods, select option 1 “Not at all”.

9. To alleviate pain in my pediatric patients...

|   | <b>Not at All</b>     | <b>Very Seldom</b>    | <b>Some-times</b>     | <b>Nearly Always</b>  | <b>Always</b>         |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I encourage the patient to think about pleasant times and places.                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I encourage the patient to relax different parts of his/her body.                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I teach the patient a breathing technique.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I reward him/her with verbal encouragement about what the patient has done well so far. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I use laughter or humor.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I use thermal regulation, such as hot or cold packs.                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I use massage or therapeutic touch.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I adjust elements in the environment to make the patient comfortable.                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I encourage the patient to change positions frequently.                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I have music playing in the patient's room.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I ask the patient to suggest ways to alleviate pain.                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I include family members of the patient in the pain management                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

|  | <b>Not at<br/>All</b> | <b>Very<br/>Seldom</b> | <b>Some-<br/>times</b> | <b>Nearly<br/>Always</b> | <b>Always</b>         |
|--|-----------------------|------------------------|------------------------|--------------------------|-----------------------|
| regimen.   |                       |                        |                        |                          |                       |
| I believe that giving the patient information about their pain will help decrease the level of pain being experienced. | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/> |
| I believe non-pharmacological methods are effective.   | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/> |
| I believe non-pharmacological methods should be used in combination with pharmacological methods.                      | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/> |
| I would be willing to include new/more non-pharmacological methods in my nursing practice.                             | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/>    | <input type="radio"/> |

**Page 4:** Short Answer Section

10. Pertaining to non-pharmacological pain interventions for pediatrics...

What are the BARRIERS to the use of these interventions?

What are the BENEFITS of the use of these interventions?

Which interventions do you think are MOST effective?

Which interventions do you think are LEAST effective?

**Page 5:** Debriefing Statement

“Thank you for completing this survey. It is greatly appreciated and will help me explore aspects of non-pharmacological nursing interventions for pediatric pain that I would otherwise not been able to explore. The purpose of this study was to determine the current use of non-pharmacological interventions, their perceived effectiveness and the willingness of nurses to incorporate new pain management methods into their practice.

The results of this study will be analyzed at the Student Scholarship and Creative Achievement Conference at Bemidji State University on April 10th, 2013. And will be posted on BSU's Honors Department website after May 2013.

If you have any questions or you would like more information about this study, please contact me, Katie Pfannenstein, at [Katie.pfannenstein@live.bemidjistate.edu](mailto:Katie.pfannenstein@live.bemidjistate.edu), or Jeanine Gangeness in the Nursing Department for Bemidji State University at [JGangeness@bemidjistate.edu](mailto:JGangeness@bemidjistate.edu) or 218-755-3870.

Thank you again for your participation in this study.”