

Spring 5-4-2016

# Identification of Student Nurses' Knowledge and Attitudes Regarding Pediatric Pain Management

Jessica Laprise  
jessica.l.laprise@gmail.com

Follow this and additional works at: [https://opencommons.uconn.edu/usp\\_projects](https://opencommons.uconn.edu/usp_projects)



Part of the [Pediatric Nursing Commons](#)

---

## Recommended Citation

Laprise, Jessica, "Identification of Student Nurses' Knowledge and Attitudes Regarding Pediatric Pain Management" (2016). *University Scholar Projects*. 28.

[https://opencommons.uconn.edu/usp\\_projects/28](https://opencommons.uconn.edu/usp_projects/28)

Identification of Student Nurses' Knowledge and  
Attitudes Regarding Pediatric Pain Management

Jessica Laprise

University of Connecticut

---

# University of Connecticut

---

## **Identification of Student Nurses' Knowledge and Attitudes Regarding Pediatric Pain Management**

**Jessica Laprise**

University of Connecticut, School of Nursing

April 29, 2016

### **Abstract**

#### **Background**

To determine existing knowledge and attitude gaps about pain assessment and management in junior and senior nursing students at the University of Connecticut (UConn), School of Nursing, Storrs, CT.

#### **Methods**

Student nurses were recruited through in person presentation of the study in the classroom setting on three separate occasions over a 20-day period. An email with information included during the presentation as well as the link to the online survey were sent through the School of Nursing listserv. A flyer was attached in the initial email and shown to participants during the initial recruitment meeting. As an incentive, sixty students received gift cards at the study's conclusion funded by a National Institute of Health CoEPE (Center of Excellence in Pain Education) grant awarded to the UConn School of Nursing.

#### **Results**

The majority of nursing students had the most difficulty with questions relating to pharmacology in pediatric pain management including proper dosages, drug ceilings, and proper medication uses. Surprisingly, juniors performed better than 4<sup>th</sup> and 5<sup>th</sup> year seniors when caring for hematology/oncology patients. However the differences were not statistically significant.

#### **Conclusions**

Overall, difficulty in questions related to pharmacology may be related to the timing in which the initial pharmacology course is taken, during the sophomore year, at UConn School of Nursing as well as the difficulty of the subject. One strength we found was a lack of bias in managing pediatric pain which we believe may be a result of baccalaureate education degree that includes additional courses related to the art of nursing in addition to the science.

## Background and Significance

Less than thirty years ago, it was a commonly held belief that infants did not suffer pain and therefore were not provided anesthesia, analgesics, or pain management interventions for surgery and medical procedures. While research indicates progress has been made in improving the knowledge and attitudes of healthcare providers regarding pain and its treatment; pediatric patients remain more vulnerable to pain from disease, surgery and medical procedures than adults (Chiang et al., 2006). Research verifies that pain in children is more prevalent and less likely to be adequately treated because of myths about pain intensity, drug mechanisms and fear of addiction (Manworren, 2010; American Academy of Pediatrics & American Pain Society, 2001).

Comprehensive education about pain and pain management is necessary to provide optimal treatment for this common and often severe condition. Unfortunately, there are strong indications that managing pain receives insufficient attention in virtually all phases of healthcare professionals' undergraduate, graduate and post-graduate continuing education (Vincent, 2004). There is no correlation to link the number of instructional hours or provider confidence to good treatment decisions, emphasizing a need to shift focus from contact hours and learner satisfaction to assessments of learner demonstrated competencies (Lippe et al., 2010; Gallagher, 2003).

In 2011, the Institute of Medicine identified education as a central part of the cultural transformation necessary to improve pain management. The committee recommended: 1) the expansion and redesign of educational programs to transform healthcare provider's "expectations, beliefs, and understanding of pain and its consequences, its management and its prevention" (Gallagher, 2003); and 2) to improve pain education curricula for training healthcare professionals at the undergraduate and graduate level. However, the first step is assessment. Before we can intervene to create a more effective interdisciplinary approach to pediatric pain management education, we need an assessment of the current knowledge and attitudes of pediatric healthcare providers and healthcare students.

Results from studies on education of student nurses' in children's pain management indicate that nurses and student nurses lack good knowledge of pain management and confidence

# University of Connecticut

in nonpharmacologic and pharmacologic pain management (Salantera et al., 2000; Chiang et al., 2006). Such attitudes are developed early on in one's career. Therefore, in this project I am going to assess University of Connecticut nursing students' knowledge and attitudes regarding pediatric pain management.

A similar study was conducted in Taiwan evaluating student nurses knowledge, attitudes, and self-efficacy of children's pain management using a 41 item questionnaire 35 of which were adopted from McCaffery, Ferrell, and Manworren. The study evaluated student nurses in Taiwan before and after a pain management education program. The study identified undermedication as a common problem as a result of lack of knowledge, fear of patient addiction, and inadequate assessment skills. Nursing students in Taiwan responded correctly to 57% of the questions prior to a pain education program and 91.4% of questions after (Chiang et al, 2006). I am curious to see if common themes exist between junior and senior UConn nursing students with the results of Taiwanese nursing students though educational systems vary greatly.

The *Pediatric Healthcare Provider's Knowledge and Attitudes Survey* (PHPKAS) was fundamental to the implementation of this study. Dr. Renee Manworren derived this new survey instrument from the original *Pediatric Nurse's Knowledge and Attitudes Survey* created in 1999. Together, Dr. Renee Manworren and I validated the items for the new instrument through examination of the comments, questions, and results of 27 content experts including nurses, prescribers, and pharmacists completing the survey from across the United States. In 2014, this knowledge was used to convert the instrument into the *Pediatric Healthcare Provider's Knowledge and Attitudes Survey* for use by a variety of healthcare providers including prescribers, nurses, pharmacists, and students. The instrument was also converted from the original paper format to an enduring electronic format through the system REDCap. "REDCap (Research Electronic Data Capture) is a secure web application for building and managing online surveys and databases" (REDCap, 2016). A trial of the new survey instrument, the *Pediatric Healthcare Provider's Knowledge and Attitudes Survey* was launched with residents at Connecticut Children's Medical Center in Hartford, CT in August 2014 with success. In 2016, ongoing data collection is being completed at Connecticut Children's Medical Center, WakeMed

# University of Connecticut

Health and Hospitals, and St. David's Hospital with various members of each of their healthcare teams. The instrument has not been previously used with nursing students.

**Purpose.** The purpose of this study was to describe the University of Connecticut nursing student's attitudes and level of knowledge regarding pediatric pain. We believe the study results will provide an understanding of the gaps in nursing students' knowledge and attitudes regarding pediatric pain and provide baseline information for evaluating the UConn School of Nursing (SoN) pediatric pain curriculum. Study results will also be used to facilitate planning for the NIH CoEPE (Center of Excellence in Pain Education) interdisciplinary curriculum within the UConn CAMP (Center for Advancement in Managing Pain). My working hypotheses were:

- 1) There will be gaps in knowledge and attitudes regarding pediatric pain among nursing students as identified with the *PHCKAS*.
- 2) Mean *PHCKAS* scores for senior nursing students will be higher than mean *PHCKAS* scores for junior nursing students.

## Methods

The study was a prospective online survey of student knowledge and attitudes. The study was approved by the University of Connecticut Institutional Review Board (IRB) and the Connecticut Children's Medical Center Institutional Review Board (IRB). The study setting took place at the University of Connecticut, School of Nursing main Campus Storrs, CT.

**Settings.** UConn School of Nursing is fully accredited and committed to quality research and public service founded in 1942. It is ranked in the Top 20 National Public Universities and is the only public research university in New England. It provides nursing education at the undergraduate, master's, doctoral, certificate, and continuing educational levels. Staff is well qualified with internationally renowned experts in their fields. The new 15,000 square foot Widmer Wing in Storrs Hall is where the majority of recruitment took place. (UConn School of Nursing, 2016).

**Sample.** The target population for this study included 135 junior and 112 senior nursing students at UConn School of Nursing. Given the recruitment strategy and online survey design of the study, we predicted a target population of 60% participation; 67 seniors and 81 juniors. At

# University of Connecticut

the time in which the study was introduced senior students had already completed their pediatric rotation. Therefore, senior students served as the post-curriculum comparison group. Junior students were either in the very beginning of their pediatric rotation (little experience or knowledge about pediatric pain) or in the medical/surgical rotation and acted as the baseline measure of knowledge and attitudes regarding pediatric pain management.

**Recruitment.** Participants were recruited through direct invitation, e-mail, handouts, and continuous reminders for completion on the nursing listserv. Students at UConn School of Nursing were first introduced to the purpose of the study and how to access the survey instrument during a presentation provided by the principal investigator during regular class times. Students were introduced to the purpose of the survey, the 20 minute time frame to allow themselves to complete the survey, the anonymity of the survey, how to create an anonymous identifier; the closing date of the survey, and how to access the survey through the link they each would receive in an email in the nursing list serv. Students were also provided an incentive for completion of the survey. Students were told that if there was 60% participation in completion of the survey, 60 students would receive \$10 gift cards funded by the NIH CoEPE grant to the School of Nursing. Juniors and senior nursing students received separate announcements as a result of differences in scheduling. A flyer was shown to the class during the announcement. The announcement was followed up with an email from the nursing list serv with the instructions reiterated from class, the link to the survey and flyer attached. Two weeks later an additional in person class reminder was provided as well as an email. A final email reminder was sent through the nursing list serv on the final day of the study.

All participants were provided an introductory statement upon opening the web-based survey. The statement described the study and provided sufficient information for participants to make an informed decision about their participation. Completion of the survey and demographics form indicated informed consent. Demographic data includes gender, age, ethnicity, and level of academic preparation. Students then completed the *Pediatric Healthcare Provider's Knowledge and Attitudes Survey* which is an updated version of the *Pediatric Nurses Knowledge and Attitude's Survey* validated in 1999 by Dr. Manworren. This new instrument was modified with

# University of Connecticut

---

updated items (changes in pain management strategies since the original instrument was created) and validated by content experts for relevance in fall of 2014.

As a result of the 60% participation goal being reached by the senior class, 60 names were drawn at random from the senior list. Therefore, only seniors received gift cards due to reaching the participation goal while junior, not reaching the participation goal did not receive any gift cards. An email was sent to the individuals notifying them they had received a \$10 gift card funded by the NIH/CoEPE grant for members of the senior class to participate in the PHPKAS study.

**Instrument.** The Pediatric Nurses' Knowledge and Attitude Survey Regarding Pain (PNKAS) was originally a modification of the Ferrell and McCaffrey's Nurses' Knowledge and Attitude Survey Regarding Pain (NKAS) that was initially developed in 1987. The survey was first modified in 1997 for use with pediatric nurses. It is important to note that items related to management of pediatric oncology pain were among those included in the survey. Following these modifications, five national content experts in pain management rated the relevance of the items to establish content validity. Test-retest reliability of the tool using data from the original 12 subjects was found to be  $r = 0.67$ , indicating acceptable level of stability. The Cronbach's alpha was 0.72 from the responses of 247 pediatric nurses working in a large children's hospital and 0.77 using the responses from 88 members of a pediatric nursing specialty organization, indicating an acceptable level of internal consistency (Manworren, 2001). Permission for use of this survey instrument has been granted in over a hundred organizations in the United States, as well as institutions in the United Kingdom, Ireland, Australia, South Africa, Canada, & New Zealand. The tool has also been translated by researchers in China, Taiwan, Israel, Qatar, Switzerland, Indonesia, Mongolia, Norway, Peru, Portugal, and Italy for use with nurses in these countries.

In 2002, Manworren in conjunction with Shriners Hospitals for Children further modified the survey instrument for use at pediatric facilities that do not care for pediatric patients with cancer; adding items related to knowledge and attitudes about pediatric pain in burns, orthopedics, and spinal cord injuries. The modified instrument was titled the *Pediatric Nurses'*

# University of Connecticut

*Knowledge and Attitudes Survey* regarding pain.

To further test this modified instrument approval for use of the *Pediatric Nurses' Knowledge and Attitudes Survey* was obtained by the Institutional Review Board (IRB) for eight study sites, including seven Shriners Hospitals for Children (SHC) in Galveston, TX; Houston, TX; Sacramento, CA; Los Angeles, CA; Erie, PA; Philadelphia, PA; and Cincinnati, OH; as well as one non-SHC Children's Hospital in Dayton, OH between March 8 and November 9, 2002. The survey has also been used in a study titled, *Relationship between Knowledge, Attitudes, and Self-Efficacy of Nurses in the Management of Pediatric Pain*, by Mercedes Goetting, the survey instrument has also been used at UNCW, Onslow Memorial Hospital, New Hanover Regional Medical Center, and Charlotte Medical Center in North Carolina (Goetting, 2013). It was also used in Children's Medical Center of Dallas in Dallas, Texas in 2001. In 2004, the Pediatric Nurses Knowledge and Attitudes Survey was used as an innovative educational strategy to not only increase, but to change attitudes regarding children's pain at Indiana University Health Riley Hospital for Children.

An adapted version of the Pediatric Nurses' Knowledge and Attitudes Survey was used by Wen-Lin Chen RN (N.S.W., Australia.), Dip Nurs, BN, MSN in his study titled *Nurses' and Parents' Attitudes toward Pain Management and Parental Participation in Postoperative Care of Children* (Chen, 2005). The survey instrument was used in Mackay Memorial Hospital, Taichung Veterans General Hospital, and Chiayi Christian Hospital. The survey instrument was translated to Chinese by a bilingual nursing student. They then translated the work back into English by a translator with a professional translation license who had a medical education background. The original English version was then compared with the "back translated" English version, evaluating the equivalence before approving the content validity.

Permission has also been obtained to use, modify, and translate the Pediatric Nurses' Knowledge and Attitudes Survey (PNKAS) into Spanish (Manworren, 2000). For the Spanish version, the original 42-item PNKAS was shortened to 30 questions and translated by the U.S. hospital's Spanish interpreter. The twelve questions that were omitted were related to either analgesic practices that were not a part of practice in Mexico City or they were not covered in the educational program. The final Spanish version of the PNKAS consists of 19 true/false items,

# University of Connecticut

seven multiple-choice questions, and two patient case scenarios with two multiple-choice questions. The Spanish PNKAS was used in three hospitals in Mexico City including two pediatric public hospitals and one adult/pediatric private hospital. The two pediatric hospitals were 313 and 350-bed facilities, while the adult/pediatric hospital was a 220 bed facility, 20 of which were pediatric beds. The three hospitals employed a total of between 450 and 770 nurses. The Pediatric Nurses' Knowledge and Attitudes Survey has been used widely within the United States as well as around the world and its use will only continue to grow with further modification and integration of the interdisciplinary healthcare team.

The *Pediatric Healthcare Provider's Knowledge and Attitudes Survey* was used to better understand student nurse knowledge and attitudes about pain management in this study. Dr. Renee Manworren derived this survey instrument from the original *Pediatric Nurse's Knowledge and Attitudes Survey* created in 1999. Together Dr. Renee Manworren and I validated the modified survey instrument through the comments, questions, and results of 27 content experts including nurses, prescribers, and pharmacists completing the survey from across the United States. This knowledge was used to convert the survey instrument into the *Pediatric Healthcare Provider's Knowledge and Attitudes Survey* for use by a variety of healthcare providers including prescribers, nurses, pharmacists, and students in 2014. The new survey instrument was also converted from the original paper format to an enduring electronic format through the system REDCap. "REDCap (Research Electronic Data Capture) is a secure web application for building and managing online surveys and databases" (REDCap, 2016). REDcap is an electronic survey format that is designed to assure data are de-identified and confidential; while also stored on a secure site.

## Results

SPSS version 22.0 was used for data analysis. Survey scores were analyzed as a whole and also by item. Each item was analyzed first by frequency of correct and incorrect answers. Validity of the updated survey was also assessed for use with nursing students. Data were examined for specific gaps in knowledge and attitudes. Data were also analyzed to better understand the influence of SoN coursework (junior versus senior nursing students).

# University of Connecticut

**Demographic Data.** The participating student consisted of 41 juniors, 60 4<sup>th</sup> year seniors, and 17 5<sup>th</sup> year seniors, 15 participants did not specify their grade level when asked on their survey. Thus, there were a total of 130 participants in the School of Nursing including 118 (90.80%) females, and 12 (9.20%) males. The target population for this study included 135 junior and 112 senior nursing students, thus 30% of the juniors and 69% of the seniors participated in the survey. Overall, the majority of the participants were white (86.2%). Ethnically the group of participants consisted of 4.6% of black or African Americans, 2.3% of Hispanic or Latinos, and 4.6% of Asian Pacific Islanders. The median age of student participants was 21 years old.

**Survey Findings.** Besides UConn coursework, previous education related to pain management was assessed prior to taking this survey. Five student participants attended unit/hospital in services on pain management. One student participant attended a hospital-sponsored continuing education on pain management. One other individual attended a continuing education program on pain management workshop. Participants were also asked a determining question after the demographics section, “Do you care for Hematology/Oncology patients?” The answer to this question determined which of two surveys they would receive. Out of the 130 student participants 97 students answered no to this question while 26 participants answered yes to this question. It is important to note that 60 of the 130 participants (46%) felt that during classroom and or clinical orientation to their current employer they received instruction information about pain management that was adequate to their needs while 12 reported receiving no instruction information about pain management.

There were several questions/items that student participants clearly struggled with, identifying variability in knowledge and attitude in pediatric pain management.

Within each of the student groups (juniors, 4<sup>th</sup> year and 5<sup>th</sup> year seniors), there were students who did and did not care for hematology/oncology patients that answered this particular question incorrectly; “*Anxiolytics, sedatives, and barbiturates are appropriate medications for the relief of pain during painful procedures*”. The correct answer is FALSE. The majority of nursing students who did not care for hematology/oncology patients answered incorrectly at 72

# University of Connecticut

participants (70.6%). Nursing students with experience in caring for hematology/oncology patients also answered incorrectly at 21 participants (75%).

Nursing students who cared for hematology/oncology patients, and nursing students who did not care for hematology/oncology patients also answered the following questions incorrectly; *“Non-drug interventions (e.g. guided imagery, biofeedback, transcutaneous electrical nerve stimulation (TENS) etc.), are very effective for mild-moderate pain control but are rarely helpful for more severe pain”*, the correct answer is FALSE and *“Beyond a certain dosage of morphine increases in dosage will NOT provide increased pain relief”*, the correct answer is FALSE. In relation to the question pertaining to non-drug interventions, nursing students who did not care for hematology/oncology, 60 participants (58.8%) answered incorrectly while in those students who did care for the hematology/oncology population, 12 participants (42.9%) answered incorrectly.

Many nursing students had difficulty with the following questions; *“Respiratory depression rarely occurs in children/ adolescents who have been receiving stable doses of opioids over a period of months”*. The correct answer is TRUE. Nursing students who cared for hematology/oncology patients answered incorrectly (64.3%) while those who did not care for hematology/oncology patients answered incorrectly (78.4%). Nursing students also had difficulty answering questions in relation to the duration of morphine, *“The usual duration of analgesia of Morphine IV is 4-5 hours”*. The correct answer is FALSE. Students who did not care for hematology/oncology patients answered incorrectly (64.6%) while students who did care for hematology/oncology patients answered incorrectly (63%) scoring very similarly.

All participants varied on the question, *“what do you think is the percentage of patients who over report the amount of pain?”* The correct answer is 0-10%. Interestingly, the majority of participants answered between 10-50%.

As each of the questions in the survey had a correct answer, I was able to calculate a total score for the survey. One point was given to all true or false questions answered correctly. In addition one point was given to each multiple choice answered correctly. Therefore the highest score one could achieve was 42 points as there are 42 questions. After totaling the scores of

# University of Connecticut

participants I found several outcomes. For participants who cared for hematology oncology patients, refer to Figure 1, juniors ( mean = 22.5) scored the highest, with 5<sup>th</sup> year seniors (mean = 21.5), and 4<sup>th</sup> year seniors (mean = 21.05). For participants who did not have experience caring for hematology/oncology patients, refer to Figure 1, 4<sup>th</sup> year seniors did the best with a mean of 21.78. They were followed closely by juniors at 21.21, and 5<sup>th</sup> year seniors at 20.18. Figure 1 also provides information about overall scores, juniors scored the best at 21.86, with hardly any difference for 4<sup>th</sup> year seniors 21.42, and 5<sup>th</sup> year seniors 20.84.

Relating back to my working hypothesis:

- 1) There will be gaps in knowledge and attitudes regarding pediatric pain among nursing students as identified with the *PHPKAS*.

The Pediatric Healthcare Provider's Knowledge and Attitudes Survey (*PHPKAS*) results expressed more gaps in knowledge than in attitudes in nursing students at UConn School of Nursing. Knowledge gaps were primarily found in the subject of pharmacology. Difficulties were expressed in questions related to choices related to medications for sedation procedures, non-pharmacologic pain management interventions, medication duration, and medication side effects. The attitude gap that was primarily addressed was in the misunderstanding in pediatric patients that over report their pain.

- 2) Mean *PHPKAS* scores for senior nursing students will be higher than mean *PHPKAS* scores for junior nursing students.

Mean *PHPKAS* scores for senior nursing students were not higher than mean *PHPKAS* scores for junior nursing students. The mean score for junior nursing students was 21.855. The mean score for 4<sup>th</sup> year seniors was 21.42, and the mean score for 5<sup>th</sup> year seniors was 20.84.

## Discussion

It was surprising that juniors scored better than senior nursing students. However, it is important to note that these differences were not significant. This finding may be due to the fact that juniors completing the survey are primarily in their pediatrics/maternity rotation at the time

# University of Connecticut

---

the survey was administered. The information is fresh in the mind and they are consistently looking for new learning opportunities to better understand the patients they are caring for. 4<sup>th</sup> year seniors scored best when they did not care for hematology/oncology patients by a very small margin, followed by juniors, and 5<sup>th</sup> year seniors. The overall results show what was to be expected; with more education and experience less knowledge and attitude gaps existed expressed by better scores.

Knowledge gaps uncovered in relation to pharmacology particularly in the UConn School of Nursing population may be related to the timing in which the initial pharmacology course is taken, during the sophomore year as well as the difficulty of the subject. The strength in lack of bias in managing pediatric pain may be a result of the BSN degree with additional courses structured on the art of nursing in addition to the science, an extremely important part of the nursing practice. Although the main attitude gap uncovered was in relation to a belief in an increased percentage in the amount of patients over reporting the amount of pain they have there was no correlation with students nor healthcare providers in not trusting a patient's pain score and likewise treating the pain properly expressed through questions in the case study at the end of the survey.

Overall, The results of this study established a better understanding of the educational gaps in knowledge and attitudes regarding pediatric pain that exist among nursing students primarily in pharmacology of pediatric pain management. The results provided a standardized method to evaluate the current SoN curriculum related to pain and specifically pain in children. The knowledge gained will be instrumental for planning curriculum revisions and educational interventions to increase sensitivity and competence in caring for pediatric patients with pain. This information will be used by UConn CAMP to develop interdisciplinary curricular resources to address both gaps in each discipline's knowledge and interprofessional educational needs. SoN students could potentially be surveyed longitudinally to assess changes in attitudes and in levels of knowledge across time.

## **Significance and Sharing my Work.**

# University of Connecticut

---

This project is significant in the nursing field because research continuously verifies that pain in children is more prevalent and less likely to be adequately treated.<sup>2-3</sup> If knowledge deficits can be identified and targeted educational interventions implemented, UConn nursing students may be better prepared to provide optimal management of pediatric patients' pain.

Originally the inspiration to be apart of this project came from my mother and her suffering as a child. My sister, mother and myself all suffer from migraines. As a child my mother was misdiagnosed with anything from the flu to dizzy spells. It was not until she was 20 years old that her pain was properly diagnosed and managed. It is stories such as these that inspire me to evaluate and eventually correct misconceptions, knowledge, and attitude gaps on pediatric pain. It is also meaningful to me because I am currently a nursing student at the University of Connecticut and I will be surveying my peers. I feel like I am somehow making a small difference by working with my generation to gather data on a topic that is important to me.

This project fits perfectly into my goals and aspirations because I one day hope to pursue both my Advanced Practice Registered Nurse and Doctor of Nursing practice degrees enabling me to work with patients and pursue research in pediatric pain and palliative medicine. This research gives me a jump-start into the field working with the population I enjoy and learning immensely in the process.

I have shared my work with members of the nursing and medical community during the ATHENA Conference held at UConn School of Nursing. I also shared my project with the UConn Community at Frontiers in Undergraduate Research as well as the IDEA Grant Showcase.

## **Acknowledgements**

This study was funded by an IDEA grant to Jessica Laprise from the Office of Undergraduate Research at the University of Connecticut and a grant to Dr. Renee Manworren from the UCONN NIH Center of Excellence in Pain Education. Thank you for the unwavering support of my mentors Dr. Jacqueline McGrath, Dr. Renee Manworren, and Dr. Cheryl Beck.

# University of Connecticut

## References

- 2012 Annual Report. (2012, January 1). . Retrieved June 3, 2014, from [http://www.connecticutchildrens.org/files/4013/8850/9027/annual\\_report\\_2012](http://www.connecticutchildrens.org/files/4013/8850/9027/annual_report_2012)
- American Academy of Pediatrics & American Pain Society. (2001). The assessment and management of acute pain in infants, children and adolescents. *Pediatrics* 108 (3), 793-797.
- American pain society*. (2014). Retrieved from <http://www.americanpainsociety.org>
- Arber, A., (2001). Student nurses' knowledge of palliative care: Evaluating an education module. *International Journal of Palliative Nursing*, 7(12), 597-603. Retrieved December 2, 2014, from <http://www.ncbi.nlm.nih.gov/pubmed/11842683>
- Chen, W. (2005). Nurses' and Parents' Attitudes toward Pain Management and Parental Participation in Postoperative Care of Children. *Queensland University of Technology School of Nursing Center for Health Research*, 1-142.
- Chiang, L. (2004). A concept analysis of self-efficacy. *Journal of Nursing Taiwan*, 51, 67-72. Retrieved December 2, 2014, from <http://www.ncbi.nlm.nih.gov/pubmed/1513718>
- Chiang, L., Chen, H., & Huang, L. (2006). Student Nurses' Knowledge, Attitudes, and Self-Efficacy of Children's Pain Management: Evaluation of an Education Program in Taiwan. *Journal of Pain and Symptom Management*, 32(1), 82-89.
- Connecticut Children's Medical Center : Care That's Critical to Connecticut's Future. (2016). Retrieved April 04, 2016, from <http://www.connecticutchildrens.org/>
- Gallagher, R. (2003). Physician variability in pain management: Are the JCAHO standards enough? *Pain Medicine* 4 (1): 1-3.
- Goetting, M. (2013). Relationship between Knowledge, Attitudes and Self-Efficacy of Nurses in the Management of Pediatric Pain. *Pediatric Nursing*, 39(4), 1-5.
- Institute of Medicine. (2011). *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*.
- Institute of Medicine. (2011). *The Future of Nursing: Leading Change, Advancing Health*.
- Lippe, P.M., Brock, C., David, J., Crossno, R. & Gitlow (2010). The first national pain medicine summit – final summary report. *Pain Medicine* 11:1447-1468.

# University of Connecticut

---

Manworren, R.C.B. (2001). Development and Testing of the Pediatric Nurses' Knowledge and Attitudes Survey Regarding Pain. *Pediatric Nursing*, 27 (2) 151-158

Manworren, R.C. B. (2010). Pediatric Nurses' Journeys to Relieve Children's Post-operative Pain. ProQuest LLC.

REDCap. (2016). Retrieved April 04, 2016, from <http://www.project-redcap.org/>

Salanterä, S., & Lauri, S. (2000). Nursing students' knowledge of and views about children in pain. *Nurse Education Today*, 20, 537-547. Retrieved December 2, 2014.

University of Connecticut School of Nursing. (2016). Retrieved April 04, 2016, from <http://nursing.uconn.edu/>

Vincent, C. V. H. & Denyes, M. J. (2004). Relieving children's pain: nurses' abilities and analgesic administration practices. *Journal of Pediatric Nursing* 19 (1), 40-50.

# University of Connecticut

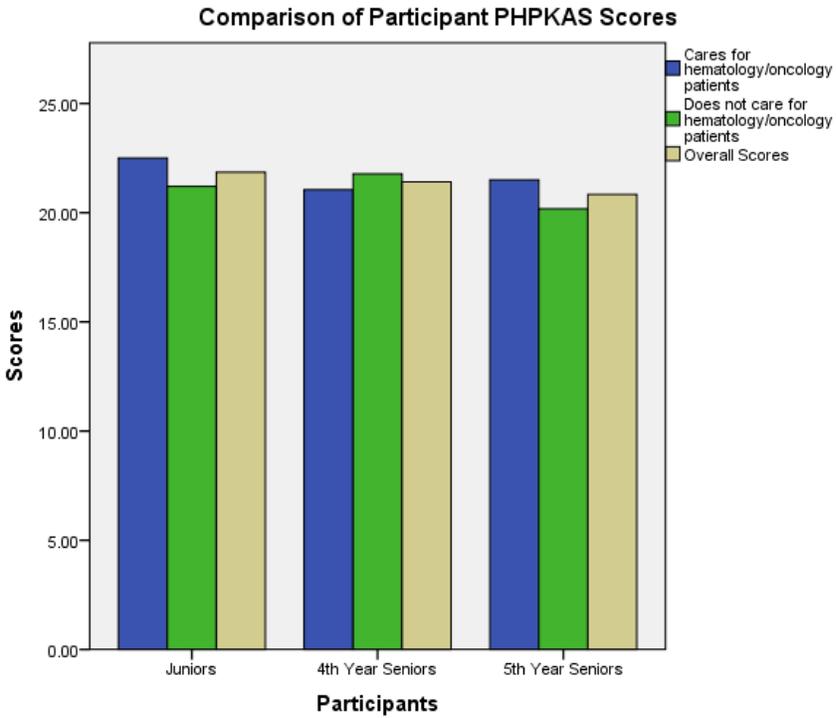


Figure 1. Comparison of Participant PHPKAS Scores