

PEDIATRIC PAIN IN RURAL SETTINGS

Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural
Northern Ontario

Carolyn Marshall RN BScN MScN

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requirements for the Master's of Science degree in Nursing

School of Nursing
Faculty of Health Sciences
University of Ottawa

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I was taught that progress was neither swift nor easy

Marie-Curie.

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Thesis Abstract

Background: Children continue to experience pain in hospital. Few studies examine pediatric pain management in the rural context.

Objectives: 1) To explore nurses' experiences providing pain care to pediatric inpatients in Northern Ontario. 2) To identify institutional resources to support nurses' pain care practices.

Method: Across methods approach. Study I used qualitative description completed with 10 nurses using semi-structured interviews. Data were analyzed using inductive content analysis. Study II was an exploratory descriptive online survey using a study-specific questionnaire that was completed by 8 hospital administrators. Data were analyzed using descriptive statistics and narrative synthesis was used for open-ended questions.

Findings: Pediatric pain management presents challenges in Northern Ontario, including competing priorities, gaps in pain knowledge, unclear policies, and resource constraints. Potential facilitators include nurses' motivation to improve pain management, leveraging local resources, and an increase in context specific standards.

Conclusion: Context specific strategies need to be designed and implemented to support nurses' practices in delivering recommended pediatric pain management to their patients.

Co-Authorship

1. Paula Forgeron RN, PhD

Associate Professor, School of Nursing, Faculty of Health Sciences University of Ottawa

2. Denise Harrison RN, PhD

Associate Professor, School of Nursing, Faculty of Health Sciences, University of Ottawa

3. Nancy Young PT, PhD

Professor, School of Rural and Northern Health, Faculty of Health, Laurentian University

Dr. Forgeron was the thesis supervisor. All authors were members of the thesis committee.

All authors were involved with the conception of the study design; the corresponding author was solely responsible for the data collection and analysis. All authors were involved in reviewing the analyses and contributing to the interpretation of results. The corresponding author drafted all the chapters and Drs. Forgeron, Harrison and Young were involved in the revision of the chapters and both manuscripts intended for submission for publication.

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Chapter One - Introduction

Pain is a subjective phenomenon that has historically been one of the most concerning negative consequences of disease (Schechter, 2008). Formerly, pain was thought to be an unavoidable symptom of disease, and that the disease itself had to be treated in an isolated manner in order for pain to resolve (Schechter, 2008). After much research and clinical progress, we now know that pain needs to be treated often, and adequately, for without appropriate treatment, there are multiple negative consequences. Access to proper pain management is considered a human right (Lohman, Schleifer, & Amon, 2010). In a recent position paper, *The Declaration of Montreal*, the International Association for the Study of Pain (IASP), affirmed the right of, “all people to have access to pain management without discrimination” (IASP, 2015). Children have been defined as a vulnerable population, and their nurses have an ethical responsibility to deliver evidence-based pain management to them (Ballweg, 2008). Specifically, “not providing pain relief for a neonatal or pediatric patient when it would be provided for an adult violates the principal of justice” (Ballweg, 2008, p. S62).

Despite great progress in policy, these advances have not fully been implemented for children. It has recently been acknowledged that pediatric pain management is still a global issue (IASP, 2015), as evidenced by hospitalized children and adolescents continuing to experience pain that would benefit from evidenced-based management (Birnie et al., 2014; Finley, Chorney, & Campbell, 2014; Harrison et al., 2014; Kozlowski et al., 2014). For example, 86% (n=199) of children in a large tertiary center in the United States reported having pain in the hospital setting, 40% (n=80) of which was reported to be moderate or severe (Kozlowski et al., 2014). In another study in Canada, 33% (n=31) of children in a tertiary care hospital did not receive any pharmacological treatment, and of these children, 19% (n=7) had clinically significant level of pain (Birnie et al., 2014). In addition, in a study involving another tertiary

care center in Canada, 24% (n=15) of the children reported that they received nothing specific used for analgesia for their last needle prick (Harrison et al., 2014). Clearly, there is more work to be done to improve the management of pain in hospitalized children.

Children are generally defined as neonate (less than thirty days old) to adolescent (18 years of age). They experience pain during hospitalizations from multiple sources including procedures (e.g., intravenous cannulation, blood draws, lumbar punctures), disease (e.g., fractures, burns, tumour infiltrates, inflammatory diseases), and treatments (e.g., dressings, chemotherapy, surgery) (Penrose, Palozzi, & Dowden, 2014). On average, a hospitalized child receives six skin-breaking procedures per day, providing many opportunities to manage acute pain episodes (Stevens et al., 2011a). Poorly treated pain increases risks of detrimental immediate effects (e.g., poor wound healing, atelectasis, fear, suffering) as well as more long-term effects such as (e.g., needle phobia, chronic pain) (Twycross & Williams, 2014). Inadequately managed acute pain episodes can change an individual's pain processing (transduction, transmission, perception and modulation) which can result in negative changes to how they respond to pain in the future (e.g., lower pain threshold) and may lead to chronic pain (Olmstead, Scott, & Austin, 2010; World Health Organization, 2014). A reported one in five children in Canada has chronic pain (persistent or episodic) at some point in their childhood (Canadian Pain Society, 2014). This is a significant societal economic challenge as chronic pain is estimated to cost Canada approximately 56-60 billion dollars annually (Canadian Pain Society, 2014). Therefore, ensuring that children and adolescents receive effective, recommended pain management while in hospital is critical to their well being now and in the future.

Registered nurses play a key role in hospitalized children's pain management and have been described as the gatekeepers for pain management (Czarnecki et al., 2011; Namnabati,

Abazari, & Talakoub, 2012; Van Hulle Vincent, 2005) as they are the clinicians primarily responsible for the cycle of pain management (assessment, treatment, evaluation and reassessment). How nurses choose to approach pain management is influenced by their professional knowledge and attitudes (Habich et al., 2012; Latimer, Ritchie, & Johnston, 2010). When nurses and other clinicians hold inaccurate beliefs about pain, children are at risk for their pain to be inadequately addressed.

Areas that nurses struggle with in regards to pain management in children are knowledge and attitudes regarding pain and communication. A lack of education may be a contributing factor to nurses' lack of knowledge about evidenced-based pain management practices (Forgeron et al., 2009; Stanley & Pollard, 2013). A survey of Canadian Universities Faculty of Health Sciences programs were examined for the quantity of dedicated pain content curricula across at ten major universities and discovered 67.5% of them were unable to define actual hours dedicated to pain content, and out of the health science disciplines that were included (medicine, nursing dentistry, pharmacy, physical and occupational therapy) only veterinary sciences respondents could all report mandatory designated formal pain content hours (Watt-Watson et al., 2009).

In terms of communication, pediatric nurses may not always actively involve parents in their child's pain care. Although conducted over 15 years ago, a qualitative study showed that most nurses identified that they believed the patient had adequate pain care and did not believe the parents were dissatisfied with the child's pain management (Simons, Franck, & Roberson, 2001). However, out of the twenty participants in this study, only 3 of the parents expressed satisfaction with the pain care their child received. These parents also reported that they felt they did not have enough information and were concerned about being labeled as a difficult parent by

the nurses (Simons et al., 2001). Clearly, practicing nurses continue to require ongoing pain management education in order to provide evidenced-based care to children and families.

The need to improve hospitalized children's pain management was brought to the forefront after Eland (1985) reported that children received little to no pain management post-cardiac surgery when their adult counterparts had their pain managed and treated. When clinicians were asked why they were not attending to the children's pain the nurses and physicians replied, "children get better quicker and are up and around" (Eland, 1985, p. 116). Eland offers a few possible explanations regarding the children's apparent indifference to their surgery; one being the children could perceive by not being in their room, they are less likely to have further painful procedures performed. She concludes that there was still much to be addressed in terms of myths and misconceptions of children's pain and tailored strategies that are specific to children needed to be created and implemented to improve children's pain outcomes (Eland, 1985). Although improvements have been made since Eland's landmark study, recent pain prevalence studies (Birnie et al., 2014) identify that children in hospital continue to experience inadequately managed pain.

Registered nurses, as well as other clinicians such as physicians, have been found to believe myths and hold misconceptions about pediatric pain management, which may act as barriers to appropriate treatment of pain. Some examples of these misconceptions held by nurses and others are, infants' nervous systems are too immature to transmit pain, infants and children do not remember pain, children cannot reliably report their pain, sleeping children are not in pain, and pain has no long-term consequences, or treatment is harmful (Twycross & Williams, 2014). Several recent studies show that the lack of evidence-based pain management continues to be a problem for children. Even when nurses have accurate knowledge they still do not

necessarily carry out evidenced-informed pain care practices for children and adolescents (Latimer, Johnston, Ritchie, Clarke, & Gilin, 2009; Twycross, Finley, & Latimer, 2013; Twycross, Forgeron, & Williams, 2015). For example, in the Latimer et al. (2009) study, nurses had awareness of evidenced-based pain management strategies for infants for both venipuncture (62%) and heel lance (45%), yet only 8% provided this level of care for venipuncture and 4% for heel lance. In addition, in a recent study in a large tertiary care center, even after the implementation of a supportive pain management guideline and various educational sessions, nurses' knowledge of pain management in children only improved slightly from the measured baseline (Habich et al., 2012). Specifically in that study, following completion of an educational intervention, more than 75% of children continued to receive less than the recommended level of analgesic (Habich et al., 2012) based on the World Health Organization analgesic ladder (McGrath, 1996). These results indicate that there are more factors that contribute to evidenced informed pain management than knowledge alone.

Context, in relation to health care regarding nursing, is described as the environment in which nurses do their work (Squires et al., 2015). Despite a lack of clarity in the literature about what constitutes context (McCormack et al., 2002), it most often includes the concept of culture—how things are done around here (Kitson, Harvey, & McCormack, 1998). Organizational context has been found to influence a nurse's use of research in practice. Although there is "little understood about how organizational factors influence health care provider behaviours," (Stevens et al., 2011b, p.757) such as the use of research evidence in practice, evidence suggests that context can positively or negatively influence nurses practice behaviours (Cummings, Hutchinson, Scott, Norton, & Estabrooks, 2010; Latimer et al., 2010; Squires et al., 2013). Therefore, organizational contextual factors are able to influence the

success of new organizational initiatives (Hemmelgarn, Glisson, & James, 2006; Latimer et al., 2010; Squires et al., 2013) such as improvements in children's pain outcomes. Leadership, culture and measurement have been purported to be components of context (Kitson, Harvey, & McCormack, 1998a). Leadership, within context is defined as, "the nature of human relationships as summarized through leadership roles" (Kitson et al, 1998, p. 152). In a recent scoping review of issues that are present in rural nursing leadership, it was found that much of the evidence focused on how leadership is needed to facilitate better patient outcomes (Bish, Kenny, & Nay, 2012).

Rural settings have challenges that are not experienced either at all or to the same extent in urban or tertiary care settings. Some examples of these challenges include accessibility to both speciality expertise and continuing education (Bish, Kenny, & Nay, 2012). Healthcare clinicians can deliver higher quality care when they have high-quality evidence guiding them. The evidence suggests that there is a need for rural clinicians to be knowledgeable in regards to the specific needs that are present in rural communities (Bish et al., 2012). However, education alone may not significantly improve pediatric pain management. There is a paucity of literature specific to pediatric pain management in the rural setting. We did find one relevant study on pediatric pain in community hospitals in North-Eastern Ontario that focused on knowledge and attitudes of nurses (Caty, Tourigny, & Koren, 1995). While this study was published over 20 years ago, it illustrated nurses' inadequate knowledge of how to appropriately assess pain (e.g., children are not in pain if there is an absence of crying or movement, predominant chosen route of administration of a narcotic is intra-muscular), and identified that only 21% of participating nurses had ever attended any pain management education specific to children (Caty et al., 1995).

It is unclear if barriers and facilitators to provision of evidence-based pain management for pediatric patients beyond access to education need to be addressed in the Canadian rural hospital setting. Therefore the overall purpose of the study is to explore the experiences of registered nurses (RNs) in providing pediatric pain management in the rural health care setting and to understand the institutional resources to support pediatric pain management.

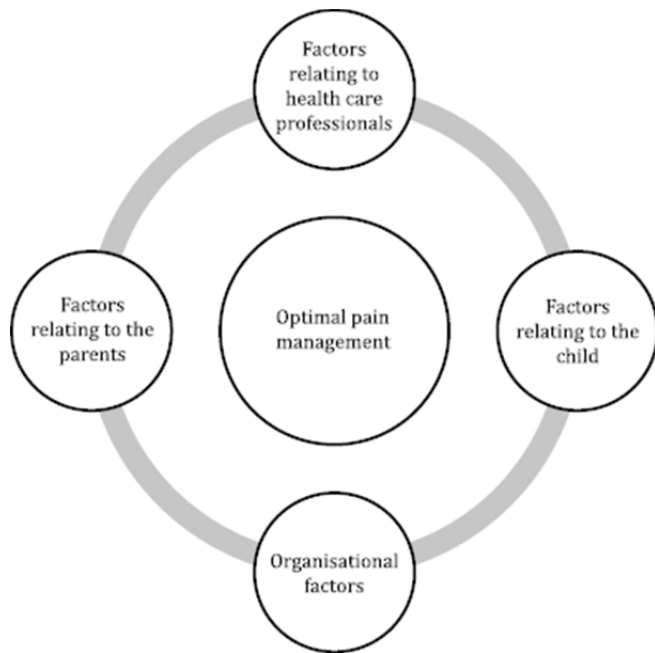


Figure 1. Barriers to Optimal Pain Management Practices Framework

Barriers to Optimal Pain Management

Practice's Framework

The complexity in understanding the challenges in providing evidenced based pediatric pain care is described by the *Barriers to Optimal Pain Management Practices Framework* published by Twycross and Williams (2014). The framework proposes four factors, or types of barriers, which influence the provision of appropriate pain care. See *Figure 1* for more

detail.

From *Managing Pain in Children: A clinical guide for nurses and healthcare professionals* (2nd Ed), (p.8), by Alison Twycross and Anna Williams, 2014, West Sussex, United Kingdom: John Wiley & Sons Ltd. Copyright 2014 by John Wiley & Sons, Ltd. Reprinted with permission.

Factors relating to the health care professionals

This set of factors encompasses variables that affect appropriate pediatric pain management relating to staff. Staff can be defined as all health care professionals involved in the

care of the child, including: nurses, physicians, pharmacists, and allied health professionals. Some examples of this set of factors are: personal judgements or beliefs about pain; lack of knowledge about current pain practices; passing the responsibility onto the parent to alert the nurse when the child is in pain; and communication between health care professionals (Twycross & Williams, 2014).

Factors relating to the child

This set of factors encompasses those related to the child that might influence appropriate pediatric pain management. Pain is a complex subjective phenomenon influenced by biological, psychological and social factors (IASP, 2012). Biological factors that can influence the pain a child experiences include: age, cognitive development, genetic makeup, and temperament. Psychological factors include fear and previous experiences of pain that may also be influenced by developmental stage. Lastly, social factors include culture, family learning, social relationships, and sex. All of these factors can contribute to how the child perceives pain (Twycross & Williams, 2014). Other examples that have been identified in the literature include child's age, diagnosis, reluctance to report pain, refusing pain medication, and time since surgery (Twycross & Williams, 2014).

Factors relating to the parents

This set of factors encompasses those related to parent(s) or the responsible caregiver(s) (e.g. biological or adoptive parents; foster parents; or legal guardians). These factors include barriers such as: reliance on behavioural cues to assess child's pain; incorrect beliefs about the consequences of pain and pain medication; fears about the child developing addiction; and fears of the side effects of opioids (Twycross & Williams, 2014).

Organizational factors

This set of factors encompasses variables that may be present in organizations. Organizational factors include unit and organizational culture and are influenced by many contextual factors. These can include: leadership; culture; evaluation; resource allocation; formal interactions; informal interactions; structural or electronic resources; and organizational slack (Twycross & Stinson, 2014). Examples identified in the literature include: unit patterns of pain care; high workload; lack of time; insufficient supply of medication; and inadequate or insufficient medication orders (Twycross & Williams, 2014).

Given the applicability of the *Barriers to Optimal Pediatric Pain Management Framework*, this framework was used to provide guidance to inform the construction of the data collection tools in the two studies in this thesis.

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Chapter Two - Literature Review

Sub-optimal management of children's pain in hospital settings has been a well-recognized problem. A comprehensive understanding of the reasons for this problem is important to the generation and implementation of solutions. This chapter reports the findings from a comprehensive review of the literature that identified three key aspects of pain management: facilitators and barriers; context; and rural health care barriers. This will determine the current state and the gaps in the literature in regards to pediatric pain management and the contextual influence in the rural setting.

Facilitators and Barriers to Pediatric Pain Management

Knowledge and attitudes

The most commonly reported barriers to provision of evidenced-based pediatric pain management within the literature have been insufficient knowledge and negative attitudes towards pain management by healthcare professionals and parents (Dowden, McCarthy, & Chalkiadis, 2008; Jongudomkarn, Forgeron, Siripul, & Finley, 2012; Namnabati, Abazari, & Talakoub, 2012). Although knowledge in of itself may not be adequate to change practice (Habich et al., 2012; Twycross, Finley, & Latimer, 2013; Twycross, Forgeron, & Williams, 2015), accurate knowledge is a necessary step in changing practice. Multiple studies in the past addressed nurses' pediatric pain management knowledge. Although knowledge has been found to be improving, (Twycross et al., 2015) not all nurses are receiving appropriate or sufficient education in this area. Recently a study from the United States conducted in two regional hospitals reported that nurses' average score on the Pediatric Nurses Knowledge and Attitudes Survey (PKNAS) test was 66% (Stanley & Pollard, 2013). In another study, in a rural tertiary hospital in India, only 39% (n=350) of the nurses who had regular contact with children had answered all of the basic questions about pain management and children correctly (Nimbalkar,

Dongara, Ganjiwale, & Nimbalkar, 2013). These test results in both studies are concerning as pediatric nurses in the study by Stanley and Pollard (2013) rated their self-efficacy for pain management very high despite their average test scores on the PKNAS only being 66%. These authors suggest that these nurses and perhaps other nurses have an inaccurate view of their pain management knowledge and practices (Stanley & Pollard, 2013). In contrast to the above-mentioned studies, a study done in two Canadian neonatal intensive care units (NICUs) identified that nurses' practice does not accurately represent the knowledge they possess specific to pain management (Latimer, Johnston, Ritchie, Clarke, & Gilin, 2009). The nurses in that study were found to score high for knowledge of pain, yet only 8% provided evidence-based pain care for venipuncture in the newborn (Latimer et al., 2009). These aforementioned studies were conducted in urban areas. Insights into the knowledge and attitudes towards pediatric pain management in the rural setting are currently unknown.

I identified one published study exploring knowledge and attitudes of pediatric pain management in rural Ontario (Coty, Tourigny, & Koren, 1995). This study, conducted in North-Eastern Ontario however, is more than 20 years old, limiting the applicability of the results in today's context. For example, in this study, 82% (n=72) of the pediatric nurses were prepared at the diploma level (Coty et al., 1995), in contrast to recent statistics which state only 41.6% (n=7033) of all pediatric nurses in Canada are now diploma prepared (Canadian Nurses Association, 2012). Exploring the experiences of registered nurses (RNs) in providing pain management provided an opportunity to understand their perceived educational needs in today's context. Additionally, by capturing data on the institutional resources to provide pain care we are able to describe the types of continuing pain related education currently available to RNs.

Inter-professional Collaboration.

Where RNs obtain their pain management knowledge is of significant value to future pediatric pain research. The evidence suggests that nurses may be receiving the bulk of their pain knowledge from their colleagues such as physicians and other nurses (Latimer et al., 2009). Future educational models and training for pain management should harness this type of knowledge exchange to change practice (Latimer et al., 2009). The evidence suggests that when staff is un-collaborative this can result in inadequate pain outcomes for the child due to the disintegration of appropriate communication (Latimer, Ritchie, & Johnston, 2010). The danger in this type of information exchange is that if nurses or physicians do not regularly attend education sessions to stay updated on current pain management knowledge, as reported in Latimer et al. (2009), (only 34% of nurses attended a pain management educational session in the last year) is that information exchanged may be inaccurate and children's pain outcomes could suffer.

Organizational Health Care Context

In this present study, context will be defined as the work setting of the registered nurses that is influenced by, "physical, organisational, institutional, and legislative structures that enable, constrain, and resource and realize people, and procedures" (May et al., 2007, p.3). The conceptualization of context, as proposed by Kitson et al. (1998), provides further understanding of how context will be defined in this study. Kitson and colleagues' conceptualization of context includes three components: culture, leadership, and measurement. Culture is defined as the normal behaviour and beliefs that influence behaviour of persons who work within a specific context (Hemmelgarn, Glisson, & James, 2006). High culture is demonstrated by a learning organization, patient centered values, valuing the staff, consistently supporting staff (Disch, 2006; Squires et al., 2013), availability of resources (Disch, 2006) and continuing education

(Kitson, Harvey, & McCormack, 1998). Leadership is defined as either a formal appointed leader or a socially accepted leader who has influence over a group of people (Chávez & Yoder, 2015). High formal leadership is demonstrated by clear leadership roles, (Cummings, Hutchinson, Scott, Norton, & Estabrooks, 2010; Kitson et al., 1998) clear roles of staff, efficient organisational structure, and interdisciplinary teamwork (Kitson et al., 1998). Measurement is the third component of context and it is defined as the use of audit, feedback and peer review to influence practice change. High measurement is demonstrated by the robust use of internal audit and feedback (Cummings et al., 2010; Kitson et al., 1998) and peer review (Kitson et al., 1998). For clinicians to deliver effective pain management, organizational context must be supportive of changing existing practice (Czarnecki, Salamon, Thompson, & Hainsworth, 2014). Hospitals are becoming more complex organizations with increasing demands on time and resources. The lack of protocols and guidelines that can influence practice are a barrier to implementing safe and effective pain practice (Bice, Gunther, & Wyatt, 2014; Habich et al., 2012). Additional external influences that have the ability to increase evidence-based practice for pain management in children include policy statements by professional organizations that may inform policies within organizations (Latimer et al., 2010).

Demands on nurses to provide care for increasing patient volumes, understaffing, and a culture of unsupported education have decreased the level of attention to pain management for children (Stanley & Pollard, 2013). Nurses need time to perform accurate and holistic assessments for children in pain and they have cited that lack of time is one of the most influential factors that decrease their ability to perform this skill (Bice et al., 2014; Simons & Macdonald, 2004). Key stakeholders are needed to commit to change if pain management for children is going to improve (Schechter, 2008). However, little research has been done to explore

the rural context and its influence on registered nurses pediatric pain management practices. My study will not only identify the institutional resources available to support RN pain practice in the rural setting but also nurses' perception of the effectiveness of these resources.

Context and pain

A high level of culture is needed for pain initiatives to be effective and resilient over the passage of time (McCormack et al., 2002). However, contexts that prove to be more difficult in facilitating change in pain management practices such as restricting nurses' professional autonomy have been noted in the literature (Kavanagh, Watt-Watson, & Stevens, 2007; Latimer et al., 2010). Lack of empowerment of nurses was found to be an organizational barrier in a longitudinal study by Czarnecki et al. (2011), The Modified Barriers to Optimal Pain Management survey was distributed to nurses (response rate 38%, n=272) in a pediatric hospital where the nurses identified several barriers to providing evidenced-based pain management to their pediatric patients. Some of the other barriers identified included delays in the availability of medications, insufficient physician medication orders, and insufficient orders and time allowed to pre-medicate patients before procedures (Czarnecki et al., 2011). Three years later it was identified that nurses believed that they were not able to overcome barriers in their institution (Czarnecki et al., 2014). However, these studies were not conducted in the rural hospital context, which has been identified as distinctly different with unique challenges. Thus, our study will provide new evidence on pediatric pain care in the rural context.

Context has been specifically investigated in regards to its influence on pediatric settings and research utilization. The evidence suggests that pediatric settings are more likely to have higher research utilization behaviours when the context has strong leadership, positive feedback from management and positive culture (Cummings et al., 2010). When investigating context and

pain, it has been documented that inter-professional collaboration is a strong indicator for effective pain management practices (Stevens et al., 2011). Contexts that provide high evidence (e.g., pediatric pain care policies, assessment standards of care) are stronger predictors of successful integration of effective pain management practice (Latimer et al., 2010; Stevens et al., 2011). For example, when nurses are supported through policies to provide pain analgesics around the clock (best-practice) children receive more analgesia (Simons & Moseley, 2008). However, the types of resources available within the rural context to support RNs pain care practices have received little attention, which the proposed study will address.

Rural Setting Challenges

The term rural setting does not have a singular definition in Canada, or in the literature (Curran, Murphy, Sinclair, & McGrath, 2012; Kaasalainen et al., 2014). In this proposal, the rural setting will be defined as a population considered to be sparsely inhabited (Fink, Oman, Youngwerth, & Bryant, 2013); specifically if there are less than 150 people per square kilometre (Kaasalainen et al., 2014). Rural context in pediatric pain management has only been explored in one other study that we were able to identify in Canada (Coty et al., 1995). Others that have been conducted in rural settings were conducted in low and middle-income countries, such as in Thailand (Forgeron et al., 2009; Jongudomkarn et al., 2012), and India (Nimbalkar et al., 2013). Results from low and middle-income countries may not be transferable to rural Canada. Nevertheless, these studies do suggest that similar barriers to pediatric pain management exist, such as clinician held myths and misconceptions about children's pain management including fear of opioids, practice change requires organizational support (e.g., policies, protocols, guidelines), and that continuing educational opportunities are limited (Forgeron, Finley, & Arnaout, 2006). Additionally an examination of the knowledge and attitudes relating to pediatric

pain care in one study from India, found that nurses felt they had adequate pain management skills (Nimbalkar et al., 2013). However, these same nurses had poor knowledge of multiple factors in pain management including assessment, general knowledge (pain in a bio psychosocial phenomenon), and treatment strategies (Nimbalkar et al., 2013). In a study that took place in Canada, some of the nurses had poor knowledge of pain management in children as indicated by the misconception that children are more likely to develop respiratory depression from opioids held by 57% of the participants (Coty et al., 1995). This current study will bring new insights to current attitudes about pain management in rural hospital settings, as well as discover the institutional supports that are available to guide nurses in their practice.

Accessibility

In Canada, the *Canada Health Act* lists accessibility to health care as one of the five principles guaranteed for citizens (Pong & Pitblado, 2005). Accessibility can be achieved through ensuring access from rural to urban health care settings. On an international level, all countries have been noted to have unequal distributions of human resources for health care between urban and rural settings (Zurn, Dal Poz, Stilwell, & Adams, 2004). In addition to human resource challenges in the rural setting, other barriers to health care in rural contexts have been identified and include knowledge and attitudes of health professionals and administrators as well as the availability of other resources (e.g., expertise, financial). Rural populations are unique and have been described as having overall poorer health, lower socioeconomic status and lower education levels (Rourke, 2000). Specifically, children in the rural setting have higher infant mortality and injury-related illnesses than their urban counterparts (Curran, Bornstein, Jong, & Fleet, 2004). A higher injury rate suggests that children in rural settings may come to hospital

with pain. Thus, we require a greater understanding of the unique challenges to pediatric pain care in this context to meet the needs of rural children and adolescents.

Speciality expertise

Access to optimal health care in rural areas is a global concern as resources are difficult to distribute effectively over large, less-populated areas (Lin, Crawford & Warren Salmon, 2005). For example, only 1.2% of specialist physicians were located in rural Canada in 2001 (Pitblado, 2012). The data on nurses illustrates that only 2.8% of all RNs are employed in pediatrics and furthermore, only 4.6% of those nurses have graduate degrees (Canadian Nurses Association, 2012). Thus, specialists (MD or RN) with expertise in pediatric pain management are most likely lacking in rural settings. We need to understand how limited specialist access impacts RNs ability to provide pain care to children and adolescents in rural hospital settings.

Continuing education

Current high quality evidence is needed for delivering quality care (Curran et al., 2012) including appropriate pediatric pain management. Fink et al. (2013), noted that only 43% of rural hospitals in the United States offered any pain management education for staff within the previous 12 months and this education was focused on adult patient populations, meaning that pain care in these settings may not be based on latest evidence. Moreover, these researchers found that clinicians who work in rural settings attend fewer traditional educational opportunities such as conferences, concluding that continuing education needs to be more flexible (Fink et al., 2013). In this present study we will focus on the experiences of RNs caring for children to understand the informal and formal educational opportunities as well as other types of rural setting factors that influence their pain care practices.

With barriers to receiving updated evidence for practice in mind, a survey involving nurses and physicians (n=105) from 11 Canadian emergency departments representing both rural and urban centres was conducted by Curran et al., (2012) to determine where health care clinicians retrieved their primary source of pediatric emergency knowledge. Results showed that most nurses and physicians relied on each other as their primary source of knowledge about pediatric emergency care, including pain management (Curran et al., 2012). Specifically, 92% (n=95) of participants stated they rely on physicians, and 69% (n=73) rely on nurses when they themselves lack knowledge on a particular topic. This reliance on each other although positive for inter-professional collaboration, may be concerning as the knowledge between individuals and groups that is shared may be out dated and therefore no longer evidenced informed, which may be emphasized in that smaller rural centres have limited specialized knowledge (Curran et al., 2012). Therefore, rural physicians and RNs may have limited access to education and sharing this out-dated knowledge puts children at risk for poor pain management outcomes.

This thesis aimed to improve understanding on the ways in which rural health care settings in Ontario influence pediatric RNs pain care practices by carrying out two studies. The first explored the experiences of RNs as they provided pediatric pain care in Northern Ontario. The second captured the institutional resources to support their practice. The findings from this thesis provided insights into how best to tailor strategies to improve pediatric pain care in the rural health care setting.

Objectives and Aims

The overall aims of this thesis were twofold. One was to explore RNs' experiences in providing pain care to children/adolescents and to understand the challenges and facilitators

within the rural hospital setting. Two, was to understand the institutional resources that support their pain care practice. This thesis had four main objectives:

- (1) To understand the barriers RNs experience when providing pediatric pain management in rural settings.
- (2) To understand the facilitating factors RNs experience when providing pediatric pain management in rural settings.
- (3) To identify and describe challenges and facilitators that are unique to the rural setting.
- (4) To identify the availability of supportive structures (i.e. policies, procedures, assessment tools, educational opportunities, and pain experts) that promote successful pain management for children and families in rural settings.

Therefore the research question for this thesis was, what are the barriers and facilitators of delivering pediatric pain management to hospitalized pediatric patients and their families in rural Ontario?

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Chapter Three - Methods

Design

This thesis used a simultaneous across methods approach involving two studies (Casey & Murphy, 2009). Study I was an exploratory descriptive qualitative study (Sandelowski, 2000), that used individual interviews with RNs to generate an understanding of their pediatric pain care experiences in rural settings. Study II was an exploratory descriptive cross-sectional survey designed to understand what institutional supports (i.e. policies and procedures) are available to support pain care practice in rural settings. Study II used an online study-specific questionnaire with hospital administrators as participants. The across methods design was chosen to provide richer data than one method alone and to increase the usefulness of the findings by suggesting possible solution recommendations to the phenomenon in question (Johnson, Onwuegbuzie, & Turner, 2007).

Descriptive qualitative studies allow the researcher to describe events from the study participants' perspective and have the flexibility to include what the participants' attribute as the meaning of the events as opposed to the researcher choosing to feature certain themes (Sandelowski, 2000). Descriptive studies allow for the freedom from a strict philosophical underpinning and allow for the reality of the study participants to be highlighted (Sandelowski, 2010). However, no study is completely emancipated from theory (Sandelowski, 2010) and without the researcher being knowledgeable on the phenomenon, the results of the study would have little meaning (Sandelowski, 2000). Therefore, it was important to ground this study theoretically as descriptive studies are founded upon existing knowledge (Neergaard, Olesen, Andersen, & Sondergaard, 2009). The *Barriers to Optimal Pain Management Framework* was chosen to guide this study as it identifies child, parents, organizational and healthcare

professional factors that can act as potential barriers or facilitators in the provision of pediatric pain care.

Study I

The aim of this study was to gain an understanding of nurses' experiences, and was conducted using a qualitative descriptive design. The rationale for choosing this design from the constructivist paradigm is that it is appropriate when there is lack of research or knowledge on a particular phenomenon and allows for naturalistic worldview (Polit & Beck, 2012). This design allowed for a description of the phenomenon (RNs experience in providing pain care in the rural healthcare context) that can lead to problem identification, hypothesis formation, theory generation, and concept development (Neergaard et al., 2009). The *Barriers to Optimal Pain Management Framework* (Twycross & Williams, 2014) informed the development of the semi-structured interview guide. However, to remain true to the underlying principles of the descriptive qualitative method, the framework was not used as an *a priori* coding scheme for the content analysis of the interviews. Given the paucity of research on the pediatric pain management practices of RNs in rural Canadian hospital settings, a qualitative descriptive design was warranted.

Study II

Study II aimed to gain an understanding of rural facilitators/barriers, and was conducted using an online survey approach to capture the institutional structural supports that are available to assist RNs in their provision of pain care to children. It is important to understand the specific rural context, as context can influence if and how research is applied in the clinical setting (Squires et al., 2013). This survey consisted of a pilot tested study specific questionnaire, which was also informed by the *Barriers to Optimal Pain Management Framework* (Twycross &

Williams, 2014) on the organizational factors that influence pediatric pain care as well as those found in the literature. The results of Study II provide an overview of the structural supports in rural hospitals to better understand the contextual factors in rural hospital settings (Squires et al., 2013).

Setting

These two studies took place in Northern rural Ontario. Northern rural Ontario has a unique culture, demographic, and geography when compared to Southern rural Ontario (Wenghofer, Timony, & Gauthier, 2014). It encompasses almost 90% of the geographic area of Ontario, however only 6% of the provincial population lives in Northern Ontario (Ontario Ministry of Northern Development and Mines, 2010). This generates a very small population density as Northern Ontario only has approximately 1 person per square kilometer as opposed to 115 persons per square kilometer in Southern Ontario (Ontario Ministry of Northern Development and Mines, 2010). In addition, specialized services are more likely to be at a greater distance from tertiary care centers than rural centers in Southern Ontario (Glazier, Gozdyra, & Yertsyan, 2011). To define Northern Ontario I used the Forward Sortation Code from postal codes to define northern Ontario – postal codes that begin with the letter P are considered northern. Ontario is the only province that has this distinction with the first letter. The second character is a numeral that identifies whether the area is urban or rural. A zero indicates a wide-area rural region, while all other digits indicate urban areas. This process could potentially be used to apply this same distinction in other provinces but was not used in this study.

As discussed earlier, rural does not have one uniformly accepted definition. For the purposes of this thesis, rural was considered to be sparsely inhabited with a population density of less than 150 persons per square kilometer (Kaasalainen et al., 2014). The study participants for

Study I were RNs who work in a Northern rural hospital setting that have dedicated inpatient pediatric beds. The study participants for Study II were hospital administrators or their delegates (e.g., nursing directors, unit managers, educators) of the eligible Northern rural sites with dedicated inpatient pediatric beds or unit. There were nine hospitals that met those criteria. For a complete list of the eligible sites see *Appendix A*.

The following process was used to derive eligible sites. All communities can be classified as a census metropolitan area (CMA), a census agglomeration (CA), and any community that does not meet these defining criteria is considered outside these areas and is further classified by how strongly they are influenced by the CA and CMA zones (Metropolitan Influenced Zones [MIZ]; strong, moderate, weak, and none) (Rambeau & Todd, 2000). First, using the sparsely inhabited definition, the author checked the population density of all cities in Ontario with hospital corporations using the Statistics Canada website (Statistics Canada, 2015). The communities classified as MIZ and CA that had population densities under 150 persons per square kilometer were considered to be rural for this study. CAs are communities that have been amalgamated around a central urban core of at least 10 000 people but less than 100 000 (Rambeau & Todd, 2000). As the population density is still less than 150 persons per square kilometer they still reflect rural sparsely inhabited areas. In addition, while distance from tertiary centers is important in considering a community rural, other factors can impact a clinician's perception that they work in a rural area. For example, one study involving rural nurses described that feelings of isolation, lack of access to social amenities, few opportunities for work and leisure for themselves and for their families, limited healthcare resources, and demographics of a community contributed to these nurses' belief that they worked in a rural setting (Macleod, Kulig, Stewart, Pitblado, & Knock, 2004). Therefore, communities such as North Bay, (a CA) is

357 km from Toronto and 360km from Ottawa where the nearest tertiary children's hospitals are located. A more restrictive definition of rural would remove some of the communities that represent the majority of the population of Northern Ontario (Ontario Ministry of Northern Development and Mines, 2010) and pediatric nurses who work in hospitals that have dedicated inpatient pediatric beds. CMAs that had a population density of less than 150 persons per square kilometer were not included in this study because the central urban core had equal to or greater than 100 000 people, reflecting an urban center.

Once the community met the definition of rural being used in this study the next step in site selection was to determine if the hospital in the community had dedicated inpatient pediatric beds. This was accomplished by information obtained from the hospital's website. Finally, to define northern Ontario, the Forward Sortation Area from postal codes was used. Postal codes that begin with the letter, 'P' are considered northern, and those that begin with, 'K', 'L', 'M', and 'N' are considered southern Ontario (Wenghofer, Timony, & Pong, 2011). Out of the 155 hospital corporations in all of Ontario (Ministry of Health and Long Term Care, 2014) there were 9 sites that fulfilled the definition of northern Ontario rural hospital used in this study and also had dedicated inpatient pediatric beds.

Sample

Purposeful sampling was used in order to gain a broad understanding of the phenomenon by those who experience it. This approach was more likely to include informants who had experience with this phenomenon (Neergaard et al., 2009; Whiting, 2008). The study targeted pediatric nurses and hospital administrators/delegates of dedicated inpatient pediatric beds as they most likely had enough experience to accurately inform the study. The author used snowball sampling for Study I by asking participants to refer other RNs, who work with children at their

site, to the study to help locate those with experience in providing pain care to children and thus helped recruit sufficient participants (Polit & Beck, 2012).

Inclusion Criteria for Study I.

1. Regularly employed staff RN (full or part-time);
2. Employed at one of the eligible sites;
3. Worked directly with children;
4. Able to communicate (write, read, speak) in English.

Exclusion Criteria for Study I.

1. RNs who had less than three months experience on the unit where children are admitted;
2. RNs who had casual employment status.

Sample size for Study I. Sample sizes in qualitative research are not predetermined as there are several factors that influence when data saturation has been reached (Morse, 2000). Factors such as the scope of the study, nature of the topic, duration of the interviews quality of the data obtained, and the study design all influence how many participants are needed to ensure richness of data (Morse, 2000). Sample sizes of eight (Boström, Magnusson, & Engström, 2012) to 22 or more (Goldblatt, 2009) have been used for qualitative interview studies using individual interviews to collect data. A sample size of ten participants was targeted, with the recognition that this sample may have been expanded based on depth and breadth of concepts drawn from the iterative analysis.

Inclusion criteria for Study II.

1. Managers of the pediatric inpatient beds, representatives from senior management, clinical educators affiliated with the units responsible for the pediatric inpatient beds;
2. Employed at one of the eligible sites;

3. Able to communicate (write, read, speak) in English.

Exclusion criterion for study II

1. Managers or directors or clinical educators or nurse clinicians with less than three months experience in their position

The exclusion criterion was meant to eliminate participants who may not have had sufficient knowledge or recent experience with the phenomena under study.

Sample size for Study II. The purpose of an exploratory cross-sectional survey was to catalogue what was available in the specific context or phenomenon, and to summarize and describe what is available (Robinson et al., 2013). Studies with samples as small as six institutions have been used for studies using online surveys (Liu, Palmer, Herndon, & Maizels, 2015). Therefore, all administrators (e.g. nursing directors, clinical educators, unit managers) who work at each site were invited to participate in the study to enhance survey completion for each site. We aimed to have at least one participant from each eligible site participate.

Recruitment Strategy

Participants for both Study I and II were recruited through a combination of efforts to ensure sufficient participants were recruited. The first was an invitation directly mailed to a list of RNs who work in the selected sites in Northern Ontario. The second was a social media campaign (see *Appendix B* for Study I; and *Appendix C* for Study II) and community advertisement. The first effort was a letter sent by mail that contained a cover letter, information sheet and consent form to participate in the study. The letter was sent to all members of the College of Nurses of Ontario (CNO) who had provided the CNO with their permission to release their contact information for the purposes of research (College of Nurses of Ontario, 2015). This ensured that the *Freedom of Information and Protection of Privacy Act* was respected

(Information and Privacy Commissioner of Ontario, 2015). The CNO extracted the list of members who met this study's inclusion and exclusion criteria, so that only eligible RNs were invited to participate in the study. However, upon receiving the actual list from the CNO, pediatric nursing is not an exclusive category, therefore some RNs were contacted that may not have worked with children but indicated that they worked with 'all ages'. Only RNs who met inclusion criteria and did not meet exclusion criteria were confirmed to participate in the study as I confirmed they met all eligibility criteria before proceeding with the study.

The cover letter for the mail-out effort (*Appendix D* for Study I and *Appendix E* for Study II) explained the voluntary nature of the study and that neither the CNO nor their employer would know if they took part in the study or not. There was a promise of confidentiality of the potential participant (e.g., their names would not be used in the dissemination of findings) and discussion of why their participation is important to the study (Crosby, Ventura, & Feldman, 1989). The letter included the contact information of the researcher and her thesis supervisor for further information and/or to express their interest in participating. There was an information sheet (*Appendix E* for study I; *Appendix F* for Study II) and consent form (*Appendix G* for Study I; *Appendix H* for Study II) containing details of the study provided in the information package so that the participant could read it at their leisure and discuss it with the researcher.

The recruitment strategy involving the mail outs loosely followed the strategies proposed by the Total Design Method (TDM) by Dillman (1978). The TDM discusses specific strategies that are associated with high response rates for surveys (Dillman, 1978) however, these strategies were applied to both studies in an attempt to increase the response rate for participating in the interviews as well as the online survey. As proposed in the TDM a follow-up postcard was mailed to all subjects that had not responded after two weeks (Crosby et al., 1989). For the CNO

mail-out recruitment strategy, the potential participants received *Appendix G* to serve as a reminder to contact the researcher. If after three weeks there was no response, a second letter was sent to potential participants with another copy of the cover letter, information sheet and consents form, and followed the procedure listed in the TDM (letterhead, blue ink, personally addressed and dated) (Crosby et al., 1989).

Due to a slow response to recruitment for Study II a modification to the original protocol was made. An ethics modification was submitted and approved. The researcher telephoned and/or emailed the chief nursing executives of the eligible hospitals using their publicly available information such as telephone numbers or emails, inviting them to participate in the study. In many cases voicemails were left and returned to the researcher. If the chief nursing executive expressed interest in completing the survey himself or herself they were sent the recruitment package including the cover letter, information sheet, and consent form. Two sites did request a copy of the list of questions on the survey and this was provided. One of these two sites did request that a member of their ethics board review the list of questions, but no formal ethical approval was required and they agreed to participate in the online survey. If the chief nursing executive suggested a delegate, their delegate was assured that their supervisor would not be notified of their decision to participate or not. They were also sent a copy of the cover letter in, information sheet and consent letter prior to completing the survey.

Data Collection and Procedures

Study I. Study I data was collected using semi-structured interviews (Neergaard et al., 2009; Whiting, 2008) over telephone or Skype. Although the participants for this research study were at distance from the interviewer, in-person interviews were considered but were determined to be too expensive and time consuming to conduct which has been found by others as well

(Oates, 2015; Sedgewick & Spiers, 2009). Skype is an Internet based application that allows users to make free video and voice calls globally (Skype, 2015). Skype allows for both parties to remain in a neutral location thereby ensuring comfort for the participant (Hanna, 2012). Additionally, the researcher was able to record both the audio and video digitally therefore preserving the interaction for further analysis (Hanna, 2012). Skype allows for the researcher to conduct an interview and gain the benefits of video thereby increasing visual interaction, which closely mimics a face-to-face interview (Hanna, 2012). Allowing for visual interaction may increase the connectedness the participant and the researcher having during the interview (Hamilton, 2014). Therefore, the interviewer primarily asked the participants to conduct a Skype interview. However, as with many technological advances, possible technical difficulties can occur. In order for Skype to work properly, each party needs an Internet connection and appropriate bandwidth (Hamilton, 2014). If there was inherent difficulty using Skype as a medium for the interview, the interviewer used the telephone instead and called the participant for the interview or to finish the interview if technical difficulties were encountered during the Skype interview. Telephone interviews are an acceptable narrative option to gain access to individuals that are geographically dispersed when face-to-face interviews are not possible (Holt, 2010). Although the ability to see the person and therefore non-verbal language provided additional data than voice alone, a review by Holt (2010), argues that lack of visual cue does not necessarily result in less rich interviews. When the telephone interviews took place either by request of the participant or due to technical difficulty the researcher called the participant on the phone number they provide at no cost to the participant. Participants were made aware that the telephone interviews would be recorded. Assurances of privacy were given, as the researcher conducted the interviews alone in a private room with the door closed.

The semi-structured interview commenced with the verbal consent, (*Appendix H*), and then proceeded with the demographic questionnaire (*Appendix I*) and finally progressed to the interview guide. The guide contained specific open-ended questions to guide the interview (Neergaard et al., 2009; Whiting, 2008). Probes were used as necessary to elicit more details and clarify understanding. It has been reported that trust is easier to establish with a person similar to oneself (Fielding, 1994). In our case, the principal researcher had several factors in common with participants: being an RN; living in northern Ontario; and experience with working with children. The semi-structured interview guide is provided on *Appendix L*.

The interviews lasted approximately thirty to sixty minutes. When the interview took place on Skype it was audio and video recorded, and if the interview took place on the telephone it was audio-recorded to ensure maximum attention was placed in the moment of the interview and there was a permanent record of the interview (Whiting, 2008). The researcher made field notes immediately after the interview was over, to capture any thoughts about body language, or feelings during the interviews. The researcher transcribed two of the interviews, and a professional transcription service was employed for the rest of the interviews after a modification to the original protocol. A confidentiality agreement (*Appendix M*) was signed by the transcription service prior to data transfer. The researcher ensured each transcription was accurate by listening to each interview word for word while reviewing the transcript. The individual's name was not recorded in the transcription. The participant was given a unique study participant identification number (PIN) in the transcription and was referred to by that number for the entire transcription. This unique PIN was also used for identification on the participant's demographic questionnaire.

Study II. The data collection for Study II used an online cross-sectional questionnaire. The questionnaire link was mailed/emailed (depending on recruitment process) to participants so that they could complete the survey at a time most convenient to them. The advantage of using an online survey is ease of use for both the researcher and the participant (Mcfall & Milke, 2007). Boasting over three billion users, the Internet is widely available and potential participants will most likely have access to a high-quality source of Internet to complete the survey, therefore exclusion of participants without Internet access was unlikely (Internet Society, 2015). Online surveys are gaining popularity in nursing research, and the results involving preference of online or paper-based methods are mixed (VanGeest & Johnson, 2011). There are few studies that have examined nurses' preferences when participating in survey research (VanGeest & Johnson, 2011). However, in one Canadian study, it was found that nurses, including nurse managers, preferred online questionnaires compared to traditional paper questionnaires (Mcfall & Milke, 2007). Additionally, in the same study the response rates were the same for the paper-based and web-based questionnaires (Mcfall & Milke, 2007). Therefore, given the comfort with both online and pen and paper surveys, an online method was chosen removing the need for participants to mail their completed surveys.

The questionnaire was developed and hosted at the Children's Hospital of Eastern Ontario Research Institute (CHEO RI) using the Research Electronic Data Capture (REDCap) platform. The questionnaire questions are provided on *Appendix N*. The advantage of using REDCap, hosted at the CHEO RI, was that it permitted direct export of data into data analysis software and generated reports on the open-ended data (Braithwaite, Emery, de Lusignan, & Sutton, 2003). In addition, as opposed to paper questionnaire, the questions were developed using branch logic, where some options are only visible to participants dependent on their

answers to higher-level questions (Braithwaite et al., 2003). Finally, CHEO RI's server secured the data collected in REDCap (through backing up data, encryption of data, security against non authorized users) and the researcher remained the owner of the data. Therefore, the results have been downloaded in an electronic file and are stored on my supervisor's private password protected University of Ottawa server and will be kept for five years. The online version will be deleted permanently from the CHEO RI's server after acceptance of this thesis.

Data Analysis

Study I. Iterative inductive content analysis was used to analyze the data for Study I. Content analysis is the preferred method when analyzing any form of communication, therefore it is appropriate to use in this study (Cole, 1988). This method employs a systematic means of making sense of the data by organizing it using coding, categorization, and abstraction to produce main categories that describe the phenomenon under study (Elo & Kyngäs, 2008). Inductive content analysis is appropriate when the phenomenon in question has not been explored or has not been explored to a great extent (Elo & Kyngäs, 2008).

The following steps guided the inductive content analysis. Step one involved me immersing myself in the data by reading each transcript several times. Step two involved open coding (Elo & Kyngäs, 2008). Although the *Barriers to Optimal Pediatric Pain Management Framework* was used to inform the data collection, it was not used as an *a priori* coding scheme for the analysis. This ensured the study maintained trustworthiness by keeping the analysis true to the participants' experiences (Sandelowski, 2000). I created an inductively developed coding sheet by examining the first three interviews for meaningful passages (Elo & Kyngäs, 2008). The thesis supervisor reviewed this coding sheet with the transcripts (where the participant identifiers have been removed) to ensure the codes were grounded in the data. This coding sheet was used

to code the remaining interviews. If new codes were needed in the subsequent interviews these codes were added to the coding sheet and previously coded interviews were reviewed. New codes only appeared twice after the initial coding sheet was developed. Step three commenced after all interviews were coded by grouping quotations pertaining to each code from across interviews to create a map for each code. Step four involved the collapsing of codes into larger categories by comparing the code maps with each other to determine which codes link together and create a summary of the meaning of the category (Elo & Kyngäs, 2008). Finally, step five involved a further analysis by determining linkages between categories and allowed for refinement and amalgamation of categories into main categories. Once the main categories were developed, they were shared with the thesis committee with quotes from the data as exemplars to further ensure that the categories were grounded in the data. Including the thesis supervisor and committee in various steps helped ensure the trustworthiness and integrity of the study as these debriefings and discussions were used as a form of peer review (Milne & Oberle, 2005).

Study II. The data from the cross-sectional survey were analyzed using descriptive statistics (Polit & Beck, 2012) for the types of policies, protocols, and guidelines available to nurses to support the pain care in children. In addition, a narrative synthesis of open-ended questions at the end of the survey was compiled.

Confidentiality and Data Management

To promote confidentiality, participants were assigned a unique alias in Study I. The alias was used throughout the transcription of the interview. On the documents with the complete demographic data, the participants name did not appear on the data collection documents for Study I. The participants verbal consent forms were kept separate from the transcripts. The digital video and audio files are password protected and encrypted and my supervisor and myself

have access to the files. The written transcripts and verbal consent forms are stored on the researcher's thesis supervisor's private password protected University of Ottawa server. Only the researcher and her supervisor have access to the de-identified transcribed interviews and the thesis committee had access to portions of the transcripts (exemplar quotations that were de-identified) and all data will be permanently deleted after five years.

For Study II, the participants were also be given a unique PIN to maintain confidentiality of the site. The identity of the hospital was concealed in any publications and to the committee. The characteristics of the type of hospital and documents are presented in aggregate formats so that individual hospitals cannot be recognized.

Ethical Considerations

Ethics approval was obtained from the University of Ottawa Office of Research Ethics and Integrity board (File number: H11-15-20, *Appendix O*) in December 2015. All modifications were submitted and approved by the same research ethics board.

Risks and benefits. There were no direct benefits to the participants for taking part in either study. However, by participating in the study, an understanding of the contextual factors RNs face in providing pediatric pain management in the rural setting may inform strategies to improve pain care in the future. This was considered a minimal risk study. Neither the RN's employer nor the CNO was informed of decisions regarding participation. Confidentiality was assured and the transcriptions of the interviews and demographic questionnaires in Study I did not contain the participant's name or contact information. If any participant in Study I expressed distress during the interview due to the challenges they faced in providing pain care to children there was a plan in place to ask the participant if they would like to take a break from the interview, continue the interview at another time or stop the interview. If the participant wanted

to continue the interview, the researcher would have moved on to a question that the participant felt they would like to respond to. Additionally, if a participant became emotionally distressed there was a plan to be provided with Dr. Forgeron's (supervisor) contact information in case they might want to debrief their distressing situation. Dr. Forgeron is an RN with over 30 years of experience and has advanced nursing expertise in pediatric pain management. No participants became distressed and none asked to stop the interview at anytime.

In Study II, the participant's employer and the CNO were not informed if the participant did or did not participate. The participants were permitted to skip any questions within the survey.

Chapter Four - Study I Manuscript

'Exploration of nurses' pediatric pain management experiences in rural hospitals: A qualitative descriptive study'

This chapter is an unpublished manuscript formatted for submission to *The International Journal of Nursing Studies*

Abstract

Background: Hospitalized children continue to experience inadequate pain management. Children in rural hospital settings may be at risk due to unique challenges experienced by nursing in this context such as access to content experts and lack of educational opportunities. Nurses' attitudes, knowledge and the strength of their organizational context can all influence their pain care practices.

Objectives: To understand the experience of nurses' pain care experiences who work in rural hospitals with inpatient pediatric patients.

Design: Qualitative description that used semi-structured interviews over Skype or telephone to explore rural nurses pediatric pain care experiences in hospital.

Setting/Participants: Registered nurses who: 1) worked directly with in hospital pediatric patients; 2) were able to communicate in English; 3) and who worked in rural Northern Ontario. Rural hospital sites were selected on the basis of the population density, from one province in Canada. To reduce heterogeneity of the eligible sites, only sites in Northern Ontario were eligible that had dedicated pediatric beds or units (n=9).

Methods: This qualitative descriptive study used semi-structured interviews over Skype and the telephone. Data were analyzed using inductive content analysis.

Results: Ten participants successfully recruited from seven eligible sites. There were five main categories identified. The overarching category that influenced all other categories was that rural RNs needed to practice as *generalists* as they were required to care for a variety of patient populations and conditions. *Resource* challenges included a lack of specialist expertise and continuing education opportunities. Pediatric pain was not perceived to be a *priority* within their organization. Most participants perceived there were *no explicit standards* for pain care. *Moving*

forward the adoption of pre-printed orders or built in assessments within documentation were suggested as possible facilitators for use of evidenced-based pain management strategies in pediatric patients within their context.

Conclusions: Opportunity exists to improve pediatric pain management in Northern Ontario.

There is a need for rural context specific strategies to improve pain management that include, but also move beyond, education. Without a systematic approach that considered the rural context pain care for children will continue to be based on individual clinicians beliefs and knowledge.

Pain is a subjective phenomenon that must be prevented and treated, as there are short and long-term negative consequences when left untreated (Schechter, Finley, Bright, Laycock, & Forgeron, 2010). These negative consequences of poorly treated pain in children include such things as suffering and fear, future avoidance of healthcare (Twycross & Williams, 2014) and the potential for changes in central nervous system pain processing that predispose a child to increases in pain sensitization (Dahl & Moiniche, 2004; Taddio, Katz, Ilersich, & Koren, 1997). The need for more attention to children's pain management was marked by the first "Global Year Against Pain in Children" in 2005 (Finely, Franck, Grunau, & von Baeyer, 2005), yet hospitalized children all over the world continue to experience pain regardless if they are in pediatric teaching hospitals in first-world countries (Harrison et al., 2014; Stevens et al., 2011a) or hospitals in low and middle income countries (Forgeron, Finley, & Arnaout, 2006; Linhares et al., 2012). The latter is in despite evidence of effective management strategies being readily available.

Registered nurses (RNs) play a key role in a hospitalized child's pain management given their role in pain assessment, treatment, and communication of findings to other clinicians. Linhares and colleagues (2012) found that although nurses were more likely than physicians to document their pain assessment using a validated pain assessment tool, most children's charts (74%, n=87) had no documentation on pain, meaning that nurses may not have assessed this parameter and certainly failed to communicate their findings effectively. When pain assessment is not conducted, or the findings are not communicated to other clinicians, children may not receive appropriate pain treatment. Furthermore, knowledge and attitudes towards pain management has been repeatedly found to influence nurses' approach to pain management (Habich et al., 2012; Latimer, Ritchie, & Johnston, 2010; Lunsford, 2015). Thus, when nurses

and other clinicians hold inaccurate beliefs about pain, children are at risk for their pain to be ineffectively addressed.

One factor that has been found to influence the use of research into practice is context (Kitson, Harvey, & McCormack, 1998), which is defined as the environment or setting in which nurses' work (Kitson et al., 1998). Evidence suggests that context can positively or negatively influence nurses' practice behaviours, (Cummings, Hutchinson, Scott, Norton, & Estabrooks, 2010; Latimer et al., 2010; Squires et al., 2013) and therefore may play a critical role in nurses' use of evidence in practice. When investigating context and pain, research suggests that interprofessional collaboration is a strong influencing factor for effective pain management practices (Stevens et al., 2011b). For example, when nurses are supported through policies or physician orders to provide pain analgesics around the clock, children receive more analgesia (Simons & Moseley, 2008). However, the types of context resources available within the rural context to support RNs pain care practices have received little attention.

The impact of rural context on Canadian nurses' pediatric pain management practices have only been previously explored in one study that the first author was able to find (Caty, Tourigny, & Koren, 1995). This study highlighted that nurses in rural contexts may hold incorrect knowledge of pediatric pain management. For example, Caty et al. (1995) found that nurses reported children were not in pain if there was an absence of crying or movement and chose intra-muscular injection as the usual route of opioid administration in children. Other studies conducted in rural contexts which focused on low and middle-income countries (i.e. Thailand) also found that clinicians held myths and misconceptions about children's pain management and that continuing educational opportunities are limited (Forgeron et al., 2009). One of these studies in a resource-restricted country suggested that practice change to improve

pain management requires organizational support (e.g., policies, protocols, guidelines) (Forgeron et al., 2009). Although these studies have been conducted in rural settings these results may not be transferable to a rural Canadian context, specifically in rural northern Ontario where resources are known to differ from the studies mentioned above. Understanding of the interplay between rural context and nurses' pediatric pain management practices is limited and is the focus of this study.

Objectives and Aims

The overall aim of this study was to explore rural hospital RNs' experiences in providing pain care to children/adolescents in the rural hospital setting in Canada, as well as to understand the challenges and facilitators of providing evidenced based pediatric pain management within this context. This study had four main objectives:

- (1) To understand the facilitators RNs experience when providing pediatric pain management in the rural setting.
- (2) To understand the barriers RNs experience when providing pediatric pain management in the rural setting.
- (3) To identify and describe RN's perception of the challenges and facilitators that are unique to the rural setting.
- (4) To describe RNs perception of the availability of supportive structures (i.e. policies, procedures, assessment tools, educational opportunities, and pain experts) that may promote successful pain management for children in the rural setting.

Methods

Design

This study was an exploratory descriptive qualitative study (Sandelowski, 2000), based on individual interviews with RNs regarding their pediatric pain care experiences in the rural setting. Descriptive qualitative studies allow the researcher to describe events from the participants' perspective and thus include what the participants' attribute as the meaning of the events as opposed to the researcher choosing to feature certain themes (Sandelowski, 2000). The rationale for choosing a qualitative descriptive design guided by a constructivist paradigm was due to the paucity of research on rural RNs' pain care experiences and practices. This allows for naturalistic worldview (Polit & Beck, 2012), which can lead to problem identification and further research questions (Neergaard et al., 2009). The first author conducted the interviews and had several characteristics in common with participants: being an RN; living and working in the rural setting; and experience working with children. The potential influence of this shared perspective was acknowledged from the beginning and monitored by the inter-disciplinary research team.

Ethics

The University of Ottawa Research Ethics Board approved this study.

Setting

This study took place in 9 rural communities across northern Ontario, Canada. Ontario is Canada's second largest province (more than one million square kilometers) and has a population of approximately 13.5 million people (Queen's Printer for Ontario, 2017). Northern Ontario encompasses almost 90% of the geographic area of Ontario, yet only 6% of the provincial population lives in northern Ontario (Ontario Ministry of Northern Development and Mines, 2010). This generates a very small population density as northern Ontario only has

approximately one person per square kilometer as opposed to 115 persons per square kilometer in Southern Ontario (Ontario Ministry of Northern Development and Mines, 2010). In addition, specialized services are more likely to be at a greater distance from tertiary care centers than rural centers in Southern Ontario (Glazier et al., 2011). This provides a unique context to explore specialized services such as pediatric pain in the rural setting.

Sites

The determination of eligible rural hospital sites was a critical step in the inclusion criteria. The following is a description of the operationalization of the term rural for this study as ‘rural’ does not have a single accepted definition. For the purposes of this study rural was defined as ‘sparsely inhabited’ demonstrating a population density of less than 150 persons per square kilometer (Kaasalainen et al., 2014). First, using the sparsely inhabited definition, the author checked the population density of all communities in Northern Ontario with hospital corporations using the Statistics Canada website (Statistics Canada, 2015). Secondly, if the community met the above definition of rural site, further selection was based on if the hospital had dedicated inpatient pediatric beds/unit as noted by their hospital’s website. Finally, the Forward Sortation Code was used to separate Northern rural hospitals from Southern Ontario. If the postal code of the hospital started with the letter “P” it was considered northern (Wenghofer, Timony, & Pong, 2011). There were 9 sites that met the definition of rural hospital in Northern Ontario for the purposes of this study.

Participants

RNs who worked with infants, children, or adolescents in one of the 9 eligible rural hospital sites were invited to participate. Inclusion criteria were: regularly employed staff RN (full or part-time); employed at one of the eligible sites; worked with inpatient pediatric patients;

and were able to communicate (write, read, speak) in English. Exclusion criteria were: RNs with less than three months experience on a unit with inpatient pediatric patients; and RNs who worked on a casual basis.

Participants working at any of these 9 hospitals were invited using a purposeful sampling method to gain a broad understanding of the research subject by those who experience it (Neergaard et al., 2009; Whiting, 2008). The author also employed snowball sampling by asking participants to refer other RNs, who work with the pediatric population at their site, to the study (Polit & Beck, 2012).

Recruitment

Participants were recruited through a combination of efforts: a mail out strategy; a social media campaign; and community advertisement. The mail out strategy was based on a list of RNs who authorized the provincial regulatory body to release their names and contact information for research purposes. Although the list is drawn from a database based on researcher requested demographics, there are inconsistencies in how each RN self identifies. Some RNs who received the mail out contacted the researcher to report that they could not participate, as they do not work with the pediatric population. Additional recruitment efforts included a social media campaign (using Twitter and Facebook) and a community advertisement was also used for recruitment. The advertisements described the nature of the study, eligibility criteria, and provided contact information. All potential participants who contacted the researcher and were eligible to participate were provided with an introductory cover letter, a study information sheet, and consent form detailing the purpose of the study, study procedures; voluntary status of the study; risks and benefits and contact information for the first and second author and the authorizing university ethics committee.

Although sample size in qualitative research is not predetermined (Morse, 2000), factors such as the scope of the study, nature of the topic, quality of the data obtained, and the study design all influence how many participants are needed to ensure richness of data (Morse, 2000). Sample sizes of eight (Boström et al., 2012) 22 (Goldblatt, 2009) and above have been used for qualitative studies using individual interviews to collect data. A sample size of eight to ten participants was targeted.

Data Collection

The study data were collected using semi-structured interviews (Neergaard et al., 2009; Whiting, 2008) over telephone or Skype. Skype is an internet-based application that allows users to make free video and voice calls globally (Skype, 2015). The participants in this research study were at a large geographical distance from the interviewer. Skype allowed for both parties to remain in their own location thereby ensuring comfort for the participant (Hanna, 2012). Additionally, the researcher was able to record both the audio and video digitally with the consent of the participant thus preserving the interaction for further analysis (Hanna, 2012). The interviewer invited participants to a Skype interview, however, if there was inherent difficulty using Skype, or if the participant verbalized a preference for a telephone interview, the interview was conducted by telephone at no cost to the participant. Telephone interviews are an acceptable narrative option to gain access to individuals who are geographically dispersed when face-to-face interviews are not possible (Holt, 2010). Participants were made aware that the interviews would be recorded. Assurances of privacy were given, and the first author conducted all the interviews (telephone or Skype) alone in a private room with a closed door.

Prior to data collection, the interviewer obtained informed verbal consent. Each interview commenced with a demographic questionnaire and then progressed to the semi-structured

interview using an interview guide. The guide contained specific open-ended questions to focus the interview, (Neergaard et al., 2009; Whiting, 2008) which were informed by the literature. Probes were used as necessary to elicit more details and clarify understanding. The interviews lasted between 30 to 60 minutes and field notes were written immediately after each interview to help the researcher remember her feelings and impression after the interviews. The researcher and a professional transcriptionist transcribed the interviews. All identifying features (names of participant, colleagues, hospital) were removed during the transcriptions and participants were given a unique alias as part of the confidentiality plan.

Data Analysis

Individual interviews were analyzed using iterative inductive content analysis, which is consistent with an exploratory descriptive study (Sandelowski, 2000). Inductive content analysis provided a systematic organization method to code, categorize, and abstract data to produce main categories that described the phenomenon (Elo & Kyngas, 2008). This approach does not impose a coding schema and therefore allowed for novel insights and understanding from the experiences of RNs who provided pain care to children in rural hospitals. Quotes from participants were used to provide readers with exemplars of the richness of the original data and ensure that the findings were grounded in the data (Elo & Kyngas, 2008; Sandelowski, 1993). Furthermore, inductive content analysis within a qualitative description design aids trustworthiness by maintaining a naturalistic inquiry and allowing the data to remain true to the participants' experiences (Sandelowski, 2000).

The following steps guided the iterative inductive content analysis. Step one involved the first author reviewing all transcriptions for accuracy to the recordings, allowing for an initial close reading of the data. Re-reading of the transcripts supported further immersion in the data.

Step two, involved open coding (Elo & Kyngäs, 2008) with the first author creating an inductively developed coding sheet by examining the first three interviews for meaningful passages (Elo & Kyngäs, 2008). The second author reviewed these initial codes and these two authors participated in peer debriefing meetings to ensure that codes and subsequent developing categories were grounded in the data. This coding sheet was used to code the remaining interviews. When new codes emerged, the previously coded interviews were reviewed to determine if the new codes were present as well. Step three commenced after all interviews were coded by grouping data pertaining to each code from across interviews to create a map for each code. Step four involved collapsing of codes into larger categories by comparing the code maps with each other to determine which codes link together and writing a summary of the meaning of the category (Elo & Kyngäs, 2008). Finally, step five involved a further analysis by determining linkages between categories, which allowed for refinement and amalgamation of categories into main categories. The main categories, subcategories, and supporting quotes were reviewed and questioned by all authors to ensure that the participants' voices remained dominant in the analysis (Elo & Kyngäs, 2008). These steps help ensure trustworthiness as they added an element of peer review (Milne & Oberle, 2005).

Results

Participants

A total of 12 RNs from 8 of the sites contacted the research team, and 10 of these consented to participate. The reasons for declining to participate were that they felt they would be unable to contribute to the study findings although the first author did clarify that they had relevant experience. The participants came from eight of the nine eligible hospitals in Northern Ontario. Most of the participants were female, over 40 years of age and their highest level of

nursing education was a RN diploma. The length of career as a nurse varied and all worked with children at least monthly. In addition to working in a rural hospital, most of the RNs had some experience working in urban settings at one point in their career. To maintain confidentiality all participants were assigned an alias; see *Table 1 and 2* for participant aliases and demographic characteristics. Interviews ranged between 30-60 minutes long (median= 48 minutes), and only three of the participants chose to have Skype interviews.

Insert Table 1 approximately here

Insert Table 2 approximately here

Content Analysis

Five main categories were identified in the analysis: *Generalist, Resources, Priority, Inconsistency in Practice, and Moving Forward*. Subcategories were used to describe and discuss the significant components in some of the categories. Although categories were identified through qualitative content analysis to help describe the findings from large amounts of qualitative data, one's experience is difficult to categorize into discrete parts. Thus an overlap between and amongst categories exists. Furthermore, the *Generalists* main category was an overarching major category, and threaded through the other four main categories as it influenced all aspects of the RNs' practice, their context, and their colleagues. The relationship of the main categories and subcategories are depicted in *Figure 1*.

Insert Figure 1 Here

Generalist.

Despite participants identifying themselves as RNs who care for children and youth, most participants describe themselves as “generalists” rather than pediatric nurses. Generalist was the term they chose to describe the need to be competent to provide care to patients and families across the life span with a variety of health conditions including end of life care. Although

pediatric patients were cared for on their units they described their units in terms of being general medical and surgical units caring for the patients across the lifespan. This need to be a generalist is described best by Cindy who stated, “*So we are jack-of-all-trades and masters of none.*”

The need to care for patients from a wide range of ages and health conditions was not isolated solely to nursing staff but was also perceived to extend to the physicians and other clinicians. The nurses reported that they as well as other clinicians (e.g., RNs, physicians, pharmacists) had little to no local access to medical specialists or discipline specific specialists to collaborate with and/or consult for a multitude of knowledge needs including pediatric pain management. In addition to direct patient and family care needs, the concept of generalist spread throughout the hospitals and included the knowledge and skills of educators and types of educational opportunities provided. Most of the hospitals where these participants worked had one RN educator for the entire hospital and therefore learning opportunities were both limited in number and mostly prioritized based on the most commonly seen group of patients (e.g., elderly, maternity) or health conditions. When Cindy was asked about the specifics of her educator’s portfolio she responded, “*she’s responsible for everybody in the hospital in our region*”. This meant that most of the RNs did not receive any continuing education on pediatric issues including pediatric pain management and the education they received at orientation was not specific to pediatric pain management.

Being prepared to care for patients across the life span was not the only factor that contributed to this shared belief of being a generalist. The participants also talked about the decrease in pediatric specialization within the hospitals in which they worked. Previously, many of these sites had pediatric units but over time these units have been integrated into more general units, which was concerning as advancements in specialized pediatric care call for more

specialized pediatric nursing care practices. It is unclear how, or if, nurses who need to be generalists can meet the needs of increasingly complex pediatric health conditions in this context. Jenn voices this concern;

This one floor has pediatrics and geriatrics and rehab and med/surg and maternity and I just feel like they put a lot of minorities [specialities] together and I don't think that they're dismissed but I think that that sometimes, maybe they [children] aren't ...made a priority.

Many participants described their present role as stabilizing more complex and critically ill patients (particularly children) and transferring them to larger tertiary care centers for specialist treatment. Although understandable, this approach means that they had little experience in caring for more acutely ill pediatric patients throughout the trajectory of their illnesses and thus their knowledge and practice is focused on immediate physical needs of these more complex conditions. Therefore, with limited experiences in caring for these critically ill patients, nurses and physicians are more likely to focus on immediate stabilizing interventions within their generalist approach and may be at risk of not identifying the need for pain management as a component of stabilization. They may also be unfamiliar with pediatric pain management interventions appropriate for complex diseases or illnesses. Here, Darla describes her concerns for further erosion of rural nurses' pediatric specialty knowledge and skills as a result of transferring many of the more complex pediatric patients to larger centres. Others echoed her concerns.

I really dislike that they're shipping everything out [complex cases]. You don't get the experience, like these new girls aren't going to get the experience. They are not getting the opportunity to learn and to develop policies [and practice for different pediatric health issues] to feel familiar... and when someone [with complex care needs] is going to come through the door they're not going to recognize it because they never dealt with it, you know.

Resources.

Within interviews, participants voiced supports and challenges in their ability to provide quality care in general and pediatric pain specifically. Resources (supports to provide care) were described by all the participants as limited and thus most of their stories focused on resource challenges within their context. Two sub-categories of challenges were identified from the interviews: financial and continuing education. Participants discussed resource challenges such as the lack of available resources in providing guidance at the point of care, restrictions to furthering education, and increased workload challenges from staffing limitations. These challenges to finding, accessing, and using resources to support care were frustrating to most of the participants. Unfortunately, several participants like Clark, expressed that “*well, I felt there was nowhere to turn*” when confronted with a pediatric pain management problem. None of the participants identified any of the clinicians they worked with as experts in pediatric pain care.

Financial resources.

Financial resource restrictions were described as causing an increase in the number of patients and range of patients and families they were required to care for during their shift. RN’s also attributed financial changes to an altered approach to patient care that moved away from providing their best holistic care to a focus on ensuring patients’ physical safety as described by Darla:

We have very little in the way of diversion programming now, like we used to have a playroom for the kids and it used to be a priority to kind of normalize things, get them up and dressed and down to the playroom and you know, that was considered important.... It's not considered important, not considered worthy of time to sit and read a bedtime story or play with puppets or things that years ago were considered a necessary part of your whole patient care.

Furthermore, by amalgamating wide ranges of patients within one unit, which some participants believed was due to financial resource restrictions, nurses were constantly trying to

manage diverse patient needs. Thus, most of the participants were understandably more comfortable in providing care to adults, who out-numbered pediatric patients at all sites. Participants were concerned about the overall quality of pediatric nursing care as a result of the loss of specialization. For example, Jenn describes how her work environment has changed dramatically due to decreases in pediatric patients, “*I think [our hospital] would rather just not have pediatrics at all... I feel that some people aren't comfortable ... there's only two beds left, it used to be a whole floor.*” Nevertheless, the nurses still did provide care to pediatric patients, which provided them with challenges in maintaining best practices.

Continuing education resources.

Nurse educators provided continuing education opportunities within the hospital. However, participants discussed challenges receiving any education, and in all but one setting there was only one nurse educator for the entire hospital. Given the resource realities of these rural hospitals, educators attempted to provide learning opportunities during nurses' scheduled shifts. However, as the nurses often had no one to cover their patients during education sessions, this well-meaning approach presented challenges as described here by Jenn and echoed by others.

I think its kind of hard because even when our clinical educator comes around to talk to us about something she wants to talk [to] us about, there's never time. Like we're never sitting. Like there's not enough nurses, so that you can cover my patients so that I can feel that they're safe so I can sit down on my twelve-hour shift so I feel like I can listen to my educator. Like when I'm sitting there listening to her cause she's like 'no you have to', I'm like well ...there's a bell going off so if that person fell...like whose that on? You?

Almost all participants described a lack of support for nurses to pursue continuing education opportunities from external experts whether via the Internet such as webinars or by

traveling elsewhere for workshops. It was clear that this inability to take advantage of ongoing education frustrated one participant,

With two nurses or three nurses, for 18 patients, plus whatever is coming through the ER, you know we have lunch on the unit and usually you don't sit for your full half hour, you're running and answering bells, you know between bites of food and you know trying to help other nurses to finish their work so they can get something to eat, so it's not like we ever have time to go to these webinars.

Difficulties in the ability of these participants to access ongoing education was further described by Clark and experienced by all the other participants, “you know we would have to pay for it ourselves and usually take vacation time and all that stuff, if you wanted to take the courses.” The time challenges encountered by participants make it unlikely that rural nurses are able to remain updated on advances in pediatric pain management.

Pediatric pain management as a priority.

Nurses have a multitude of responsibilities in their care of patients and families. Competing responsibilities require nurses to prioritize their care. In the context of rural Northern Ontario the participants talked about approaching their practice with patients’ physical safety as their primary focus and stating that pediatric pain management was not always a priority. As Cheryl describes here, pain management is the least of her worries when caring for patients especially those who are critically ill.

I'm just thinking right now, we had a baby born at home at 25 weeks brought in to us and the poor little guy I mean, we're intubating,..., we're trying to put in an umbilical line,... so I mean, the baby didn't flinch but you're thinking, this poor child, all the invasive stuff that we are doing and you know, we had no choice, we had to but you know, you feel bad for it [him], yeah, at that point you can't worry about giving them anything for pain. I mean pain was sort of lower on the list so that wasn't a priority. For that little guy you know, we are not going to worry about his pain level.

By requiring nurses to be generalists in their practice the need to provide effective pain management for infants, children, and youth is at risk for being reduced to something that can be

dismissed. This is at odds with their focus on safety as nurses may not be aware that poorly managed pain can contribute to a patient's physical deteriorating status including bradycardia or oxygen desaturation in critically ill neonates.

Despite being able to dismiss the importance of pain care to attend to a child's pain care needs in some situations, this was not the experience of all the participants. Most expressed that managing a child's pain was one of their nursing care priorities. For example, Stacey explained that *"I have certainly seen situations where I feel adults' pain management wasn't being managed but not children"*, illustrating that the priority of pediatric pain management in the rural hospital setting may be attributed to individual nurses' approaches to pediatric pain care. Within the rural setting the perceptions of individual nurses on the importance of pediatric pain care may contribute to pain being addressed inconsistently at best and seldom at worst. All RNs were explicitly asked if hospital administrators or their director had ever discussed pain management as a priority with them, and all participants indicated that it had not been addressed in a formal way. The RNs in this study did not perceive their institutions as providing resources to support their pain care practices particularly with respect to the pediatric population.

Inconsistency in practice.

A hallmark of quality care is that best practices are the expected—not the exception. In terms of pediatric pain management, most of the participants described a lack of explicitly stated standards for pain management ranging from the components of a pain assessment to the types of pain treatment provided. One of the most frequently cited inconsistencies in pain treatment was the variation within physician pain treatment orders, suggesting that an approach to pain treatment is based more on a particular physician than evidenced informed guidelines. For example, as described by Andie, even amongst the anaesthetists—those whose speciality is to

treat pain—each physician approached pediatric pain treatment differently, “... *we don't do most of the pain control, it's mostly done by an anaesthetist, but I find some anaesthetists are more generous with their pain control.*” A belief that pain control rests in the domain of physician practice, or is solely treated by medication, may contribute to inconsistencies within nursing pediatric pain care practice, as some nurses may not see that they have an independent role in pain management.

In some but not all of the narratives, participants shared that there are no formalized practices for nurses in terms of pain assessment or documentation despite these nursing practices being within their independent scope of practice. Clark illustrated this best when asked explicitly if there was a standard for an expected frequency for assessing children's pain to which he responded, “*No, there's no standard like that, that would be up to the nurse.*” This was reaffirmed by Lexine who stated, “*there's no guidance from policies you know, they're so out-dated and there are things that seem so ridiculously old and out dated here*” and Darla who shared, “*There are ped specific ones [policies] but there tends to be a lot of holes though*”. Without relevant and current policies RNs find themselves in an environment in which there is no formal guidance. Given the time demands on RNs, it is easy to see why key components of service delivery (e.g., pain management) are not carried through in the absence of supporting policies. One example of pain management in the context of supportive policy was provided.

Stacey acknowledged that pain assessment was consistently practiced in her institution as documentation of pain assessment was embedded into their electronic documentation system and this mandatory charting parameter reminded each nurse to assess pain in all their pediatric patients, “*we do our charting on computer now and so it's there automatically, when you put the care plan in it automatically comes up to cue you to check the pain q.4.h.[every four hours]*”

Although the focus of the study was to understand the experience of RNs providing acute pain care to children and youth in rural northern Ontario, many of the nurses spoke of what they called ‘other types of pain’ and how best to manage these situations. Without prompting, most of the participants spoke of their concerns for adolescents with suspected addictions to opioids. When Stacey was explicitly asked if she felt the teens presenting in the emergency department truly had pain or if they were addicted she responded, *“I think they’re addicted”*, and disagreed with the plan of care taken by some physicians prescribing analgesics. For these nurses they grouped suffering in with pain as they were challenged, concerned, and unsure on how best to provide care to this vulnerable youth population. Jenn describes current challenges in her area, *“it’s just an increasing [proportion of the] population in regards to mental health issues, and depression, and cutting and committing suicide so that’s a whole other factor but that’s a lot of our majority of people that have this different type of pain that we don’t have resources for”*. Experiences like this may further contribute to inconsistent practices, as links between mental health and opioids in the rural context may become intertwined allowing for potential negative consequences of opioids to take precedent in care.

Inconsistency in analgesic administration.

One of the areas of pain management that the participants experienced as being the most inconsistent was the use of analgesia, especially opioids. Myths around the administration of opioids to children have been longstanding and the rural care clinicians are no exception. Most of the participants described situations that suggest an exaggerated fear of over sedation in children from the administration of opioids and that this concern was shared by nurses and physicians. Darla justified potentially inadequate analgesia orders from the physicians, *“Sometimes they are on the low side [of opioids doses] but our physicians are generally approachable for an increase*

in medication. There's a couple who are more resistant than others but you know they're afraid of over-sedating the kids...". Interestingly, none of the participants voiced a concern of the immediate or long-term consequences of inadequately managed pain as a consequence of potential under managed pain.

Further compounding myths and misconceptions in some of the rural settings may be shared stories of previous experiences that become embedded in institutional memory. Although institutional memories are present, and exist in many settings, it may be more prevalent in rural hospitals where most staff have worked in the hospital for long periods of time and there are few learners to challenge these shared memories. Here, Andie shares an immediate post-operative period experience, "*sometimes [the anesthetist] is not available, I will stick with the one [pain medication] that causes the [least] drowsiness I guess.*" Andie noted that opioids were not given in the recovery room as there was an institutional memory of a patient needing intervention from being over sedated, "*... if something happens because we need that anaesthetist to manage the airway, so that's kind of a challenge. Sometimes we [have] run into those kinds of things in the past*". It appears that the nurses may perceive it as safer not to provide more opioids despite this perhaps being the appropriate analgesic.

Inconsistency was not the case with all pharmacological agents. Almost every participant noted that topical anaesthetics for procedural pain management were used consistently and were viewed as part of their standard of care. Nurses discussed how the use of topical analgesics lessened the pain from skin breaking procedures (e.g., intravenous initiation, blood work draws) and this first hand experience resulted in this approach being readily adopted into their daily practice –although not for every age group as stated by Cindy,

...maybe not the 16 year olds, but I know that with the little ones like if they are 5, at least 5 and under, if they are going to have lab test we are asked to put the EMLA© cream [topical agent] on them in the morning before they get picked

Additionally one nurse remarked on how she witnessed a midwife using breastfeeding as a pain management strategy for a blood test and how witnessing the baby's reaction had influenced her future practice, "*I just started getting the mom to breastfeed while I did [the newborn screen test] it. And it was a huge difference I noticed. The baby did not even flinch.*" These situations further suggest that shared institutional memories can contribute to practices, as there was a ready adoption of this practice based on positive experiences. However, when practice is adopted in such a manner, uptake can be selective. For example, topical agents were seen as appropriate mostly for children less than five years of age, yet all children and youth may benefit from this practice.

Moving forward.

The last category describes the experience of the participants in how best to improve pediatric pain care practices in these rural northern Ontario contexts. RNs in rural northern Ontario who are responsible for pediatric pain management are reflective, thoughtful practitioners who want to deliver the best care for their patients. However, some of these participants were unsure about the process to change practice in their organization despite working there for many years. Moreover, many were voiced as being resigned to the present situation due to resource limitations and were sceptical about the reception of their ideas by those in power as expressed here by Cindy, "*it's kind of you throw your hands up in the air and say why bother because we know what's going to happen, they're never going to get back [to you].*"

Those participants who were confident about how to implement change talked about the positive current practices as having structure, which included standards and a clear understanding of what was expected of them in terms of providing nursing care. Organizational resources (i.e., electronic documentation of pain assessment, policies, standardized order sets) were voiced as having potential to support their practice as described here by Stacey when asked what resources they have to help RNs provide pain care to children, “*just having the policies and procedures, having the orders, we have an order set option that they just print off of the computer and they tick off what they want...*”.

Change through education.

It was evident throughout the interviews that the participants perceived knowledge and expertise on pediatric pain management as limited in rural Northern Ontario. To improve the present practice context, continuing education was voiced as necessary despite challenges in obtaining continuing education. All of the participants in this study acknowledged a preference for in person workshops and conferences yet these opportunities were acknowledged as being geographically distant, expensive, and presently undertaken at personal expense. However, the benefits of these educational opportunities were voiced as not only the acquisition of the new knowledge being targeted by the conference or workshop but also the development of networks that support a community of practice amongst RNs from other rural centres with whom they could collaborate. The desire for face-to-face continuing education but with the acknowledgement of the changes and restriction to accessing these opportunities is best described by Darla (and noted by others),

I used to really love going up to [Name of City 1] for a three-day pediatric convention once a year, we used to send, five, six nurses up at a time and you were just totally

immersed with 100 other pediatric specialists nurses, and it was such a sharing of information and problem-solving and ideas of things to try and stuff like that. It was just great and that's all gone with the budget, you know.

The Ontario Telemedicine network (OTN), which is one of the world's largest telemedicine networks that uses videoconferencing between hospital sites, is designed to help bridge the gap in knowledge and skills and is viewed by the government as a mechanism to support rural hospitals with more access to continuing education and specialty knowledge. Thus, the participants experience with this system was explicitly addressed in each interview. All of the participants were aware that OTN was available in their hospital, yet very few had participated in continuing education via OTN as these sessions were offered during work time and, as Lexine stated, *"they do offer OTN webinars but not a lot with ped[iatric]s though."* The other participants agreed with Lexine's impression of the OTN's focus on adult health care issues meaning at present OTN was not perceived as meeting the participants' needs for pediatric content. Despite the existence of this resource, the participants were unsure if they could request specific continuing education sessions. Amanda mentioned that, *"I know they use it for patient care but ...I have a feeling they might use it for education too."*

Discussion

This study explored the experiences of RNs providing pain care to children and adolescents in the rural Canadian hospital setting, specifically rural northern Ontario. Although the number of cases of acute pain management in pediatric patients may be low compared to other conditions in the adult populations, the proportion of children in the population is higher in rural and northern communities (Ostry, 2012). A significant number of children and adolescents in rural communities access care and are in need of various types of pain management including

post-operative and or procedural pain management. Despite a desire to provide quality patient care the nurses participating in this study voiced challenges and their stories provide insights into potential strategies to overcome some of these challenges. All participants discussed organizational challenges in their attempts to provide quality pain care for children and adolescents.

Research suggests organizational (hospital) factors can support or hinder a clinician's ability to provide evidenced based care. In this study participants did not perceive pain care for children as an institutional priority. Yet, creating pain as an institutional priority is advocated as a foundational step to support improvements in pediatric pain care (Schechter et al., 2010). Furthermore, organizational leadership is a key concept within knowledge translation models some of which describe leadership as encompassing the articulation of clear leadership roles (including clear staff roles), the implementation of efficient and known organizational structures, and interdisciplinary teamwork (Kitson et al., 1998). Not only were known organizational structures (e.g., policies and procedures) found to be lacking, but some of the participants were not aware of how to bring about change in their institutions suggesting that perhaps leadership roles were not well developed or communicated. Rural hospitals may need to be more explicit in their organizational structure to enhance the contribution RNs can make to practice change.

The findings suggest that updated pediatric pain management information is often missing from continuing education. This inattention to ongoing pain related education limits the RNs' knowledge and abilities to provide quality pain management to children, adolescents and families and may contribute to why some clinicians in these hospitals continue to hold misconceptions about the use of various analgesics. As described by the guiding report developed by the Ministry Advisory Council on Rural Health back in 2002, low resources, and

limitations in funding for in-services, conferences attendance, and upgrades of education, will further isolate these communities from their urban counterparts (Ministerial Advisory Council on Rural Health, 2002). OTN has an existing education mandate and could be leveraged to connect rural nurses (and physicians and allied health professionals) with pediatric pain specialists. However, it is critical that these specialists partner with nurses who have expertise in the rural context, to assist in tailoring the education to this context. Using the OTN technology platform and collaborative training for case-based problem solving and exchanges may provide a better way to address the myths and misconceptions about pediatric pain management compared to the traditional didactic lectures on offer. Furthermore, OTN used in this manner could allow smaller hospitals to share best practices, tap into specialist pediatric pain knowledge, and bring about a community of practice by providing a milieu through which advances in pediatric pain knowledge could be shared.

Participants discussed limited access to any specialist (nursing, medicine, pharmacists) despite a preference for face-to-face learning. However, highly specialized services are usually located in tertiary hospitals and therefore the mentoring and demonstration of new approaches to pain care that could be provided to generalist practitioners from specialists is challenging. Fostering visiting specialists is suggested as a solution to providing specialist care (Rural Health Services Review Committee, 2015) and it also has the potential to be used to build capacity amongst the local clinicians by offering education and mentorship during the visit. Although there is strength to this strategy, the downside is that if the visiting specialists rotate they offer no continuity of care and mentorship. This can reduce their rapport both with individual patients as well as trust and relationship building in the rural community (Ministerial Advisory Council on Rural Health, 2002). Therefore, the visiting specialists approach (nurse, physician, pharmacist)

needs to be a coordinated effort so that there is ongoing investment in the relationship by both the specialists and the generalists within rural northern Ontario with a focus on building capacity and enabling rural clinicians to develop programs and policies that will work in their context.

Organizational contexts that provide high quality evidence (e.g., evidence-informed institutional pediatric pain care policies, assessment standards of care, guidelines) available to their staff have been found to be stronger predictors of successful integration of effective pain management practice (Latimer et al., 2010; Stevens et al., 2011b). Being an ‘expert’ generalist requires structures (i.e. policies, protocols, order sets) to support quality care of patients requiring specialized knowledge, especially for infrequently encountered clinical situations. Well-developed standardized order sets for common pediatric pain problems, as suggested in the findings, could potentially aide in educating staff (nurses, physicians, and pharmacist) and providing access to current best practices. Standardized orders can provide continuity and guidance in a practice environment where nurses can be caring for patients across the life span in one shift.

Conclusion

Pediatric pain management in rural northern Ontario presents a challenge for RNs. Resource restrictions are perceived to limit their ability to obtain continuing education and provide quality pain care to children. However, there are untapped resources that could be leveraged to support their practice in this context. Understanding nurses’ perceptions of their context may help identify contextual strengths and weaknesses that could inform tailored interventions aimed at influencing the success of new organizational initiatives. Creativity is needed to develop contextually specific pediatric pain management interventions that use

available resources. Research is needed to test the impact of such strategies to address limitations and build on the rural context strengths to enable long-term improvements in care.

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Table 1
Demographics of Participants

	n=10
Sex	
Female	9
Male	1
Age	
20-29	1
30-39	0
40-49	3
50-60	3
60+	3
Education Level	
Diploma	7
Degree	3
Master's Degree	0
PhD	0
Length of Career as an RN (years)	
0-3	3
4-9	2
10-19	1
20-29	1
30+	3
Frequency Working with Children	
Daily	2
Weekly	5
Monthly	3
Adult Care Experience	
Yes	9
No	1
Always Worked in a Rural Setting	
Yes	2
No	8

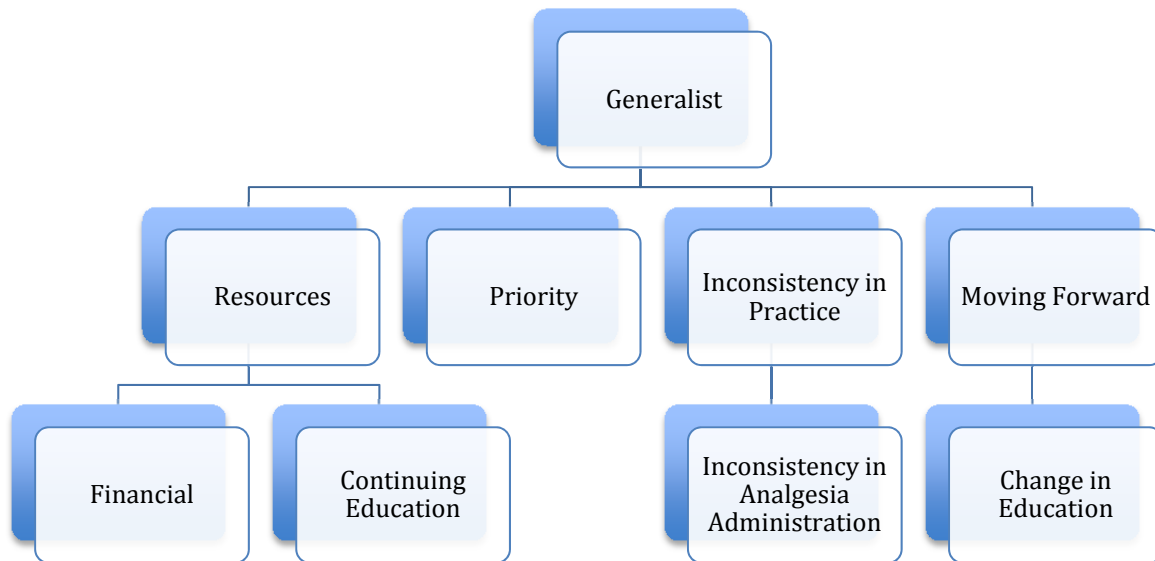
Table 2
Participant Aliases and Demographics

Alias	Method of Interview	Sex	Age	Education level	Length of career as a nurse (years)	Length of career on unit (years)	Length of career in pediatrics (years)	Patients on unit (Medical, surgical, oncology)	Always worked in rural setting (yes/no)
Stacey	Skype	Female	50-60	Diploma	20-29	10-19	28	medical, surgical	yes
Amanda	Skype	Female	40-49	Diploma	10-19	0-3	10	medical, surgical, other	no
Jenn	Phone	Female	20-29	Degree	0-3	0-3	2.5	medical, surgical, other, oncology	no
Cindy	Phone	Female	40-49	Diploma	20-29	4-9	6	medical, surgical, other, oncology	no
Andie	phone	Female	50-60	Diploma	10-19	4-9	5	surgical	yes
Clark	Phone	Male	40-49	Degree	4-9	0-3	7	medical, surgical, other	no
Lexine	Phone	Female	50-60	Diploma	20-29	20-29	27	medical	no
Darla	Phone	Female	60 +	Diploma	30 +	30 +	40 +	medical, surgical, oncology	no
Sophie	Phone	Female	60 +	Degree	30 +	30 +	38	medical, surgical	no

Haley	Skype	Female	60 +	Diploma	30 +	30 +	38	medical	no
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Figure 1

Themes and Categories



Chapter Five Study II Manuscript

‘What are the institutional resources available to registered nurses to support pediatric pain care practices in rural northern Ontario?’

This chapter is an unpublished manuscript formatted for submission to the journal *Rural and Remote Health*

Abstract

Introduction: Institutional resources are essential to support to nurses in delivering evidenced-based pain care to pediatric patients. There is a paucity of research dedicated to pediatric pain management in rural settings. The aim of this study was to explore what institutional resources are available to support nurses in rural areas, from the perspectives of hospital administrative staff.

Methods: An exploratory descriptive online survey that used a study-specific questionnaire delivered on the REDCap platform. To be an eligible site, the hospital needed to fulfil four criteria. 1) They must be a hospital in Ontario; 2) The hospital must be located in a city or town with a population density of less than 150. Census agglomerations and metropolitan influenced zones were included in this study if their population density was $<150/\text{km}^2$; 3) The hospital must be in Northern Ontario as defined by the forward sortation codes; 4) The hospital must have had dedicated inpatient pediatric beds as per their hospital website. There were 9 sites that met these eligibility criteria. Purposeful sampling using a variety of recruitment methods; mail out strategy; social media campaign; community advertisement; and direct telephone and email contact were used. All administrative staff including educators and executives who worked in these hospitals that were responsible for those who work with inpatient pediatric patients were invited to participate. Data were analyzed using descriptive statistics, and a narrative synthesis approach was used for open-ended questions.

Results: Eight (89%) sites successfully completed surveys. All respondents were registered nurses, in various types of leadership positions and half were chief nursing executives. On average the eligible sites admitted 50 (SD=48) pediatric patients every year and averaged 3392 (SD=3625) pediatric visits (i.e. emergency and outpatient clinics) per year. Most sites (n=6,

75%) had some type of policy or procedure to guide nursing practice with pediatric patients, however, there was a lack of policies or procedures dedicated to infant pain related strategies such as swaddling, kangaroo care or sucrose use. Self-identified scarcity of resources was discussed in the open-ended questions including a lack of dedicated resources for education. Lack of content experts who could lead pediatric pain initiatives such as, clinical nurse specialists, anaesthetists, acute pain services, and psychologists (n=0) were noted. Order sets were suggested as a possible facilitator to help guide pediatric pain care in their specific work context.

Conclusions: There is opportunity to systemically improve pediatric pain management in rural Northern Ontario. These sites have low resources including lack of education, and speciality expertise – a common challenge that has been previously identified in rural literature. Context specific strategies are needed to support these rural areas as current evidence based strategies may not all be adopted in these areas due to competing priorities, lack of awareness and low resources to support facilitation of such changes. Context specific strategies such as building a community of practice amongst rural clinicians and allocating funds to facilitate face-to-face experiences with clinical experts are needed to support these rural areas.

Access to effective pain management is a human right[1]. In a recent position paper, *The Declaration of Montreal*, the International Association for the Study of Pain (IASP), affirmed the right of, “all people to have access to pain management without discrimination”[2]. Concerning however, is that pediatric pain management is still a global issue[2] and hospitalized children and adolescents continue to experience pain that would benefit from evidenced-based pain management[3-6]. In a recent study, it was revealed that 33% (n=101) of children in a tertiary care hospital did not receive any pharmacological treatment (one aspect of pain management) for their reports of pain, and 19% (n=7) of these children had a clinically significant level of pain on an ongoing basis during their hospitalization[3]. Furthermore, in a different tertiary care center in Canada, 24% (n=15) of the children reported not receiving any analgesia for their last skin breaking procedure (e.g., needle poke)[5]. Despite children’s rights to effective and recommended pain management, there is clearly more work to be done to improve the uptake and application of effective pain management strategies on behalf of hospitalized children in Canada.

Hospitalized children (newborns to adolescents) experience pain from multiple sources, including procedures (e.g., blood draws, lumbar punctures), disease (e.g., burns, tumour infiltrates, inflammatory diseases), and treatments (e.g., dressing changes, surgery)[7]. A hospitalized child receives on average six skin-breaking procedures per day, providing many opportunities to effectively manage acute pain episodes[8]. Inadequate pain management is not only distressing to children and their families, but puts children at risk of detrimental longer-term effects such as poor wound healing, atelectasis, needle-phobia, and potential changes to an individual’s pain processing (e.g., transduction, transmission, perception and modulation) resulting in negative responses to pain in the future (e.g., lower pain threshold)[9]. In addition,

longer-term effects of inadequately managed acute pain episodes can put children at risk of developing chronic pain[10,11]. A reported one in five children in Canada has weekly or more frequent chronic pains[12]. Therefore, ensuring that children and adolescents receive evidence-based recommended pain management while in hospital is critical to their well being now and in the future.

Evidenced based best practice for the treatment of pain in pediatric patients includes interventions tailored to the patient and may include various strategies to address the biopsychosocial model of pain. Implementing evidenced-based pediatric pain management strategies in organizations is complex and execution of these approaches remains a challenge even with sufficient resources[4]. Organizations have a role in facilitating the implementation of pediatric pain management strategies[14]. Organizational context has been found to influence nurses' use of research in practice and evidence suggests that it can positively or negatively influence nurses' practice behaviours[13-15]. Change in practice requires support at the level of the individual unit as well as senior administration[3] and both these contextual factors influence the success of new organizational initiatives[14-17] such as improvements in children's pain outcomes.

The majority of pediatric pain literature has been developed in the context of urban (primarily metropolitan) cities, and tertiary care centers. There is paucity of evidence specific to rural settings in Western countries. One study conducted over two decades ago explored pediatric pain management in community hospitals in North-Eastern Ontario. This study focused solely on knowledge and attitudes of nurses concerning pain management but did not capture organizational contextual factors (e.g., resources and supports) available to support pain care for children[18]. These authors reported that some nurses held inaccurate beliefs regarding pain

assessment (e.g., children are not in pain if there is an absence of crying or grimacing) and management (e.g., most believed intramuscular injections was the best route for opioid administration). Given that this study took place over twenty years ago, the results may not be representative of current beliefs. There is now much greater access to a wealth of educational options, including on-line asynchronous learning, which may reduce the barriers to education that were observed in the past[19]. Other studies that were conducted in rural settings were in low and middle-income countries, such as in Thailand[20,21], and India[22]. The results may not be transferable to a rural Western context such as Northern Ontario, as Canadian resources differ. Nevertheless, these studies do suggest some barriers to pediatric pain management that could be similar across countries, such as clinician held myths and misconceptions about children's pain management, and challenges in obtaining or maintenance of organizational support (e.g., policies, protocols, guidelines) required for clinical practice change, and that continuing educational opportunities are limited[23].

The rural healthcare setting has unique challenges that are not experienced in the urban setting. Some of the challenges that have been identified in the literature include resource limitations[24] including, access to speciality expertise[25,26], and lack of options for continuing education[27] despite reported higher infant mortality and child injuries in rural settings[28]. Strategies to improve rural care must be designed to address the reality of a specific rural context[29]. Given the various resource limitations in rural healthcare settings, providing pediatric pain management in these settings may be even more challenging than in tertiary settings. Thus, it is important to understand the current challenges and facilitators, beyond access to specialists and continuing education that exist for nurses when providing pain care to children

in Canadian rural hospitals. Therefore, to improve pediatric pain management in the Canadian rural health context, an understanding of the organizational resources is warranted.

The purpose of this study is to explore the organizational resources available to nurses to support their pediatric pain care practices in rural northern Ontario hospitals.

Methods

This study was an exploratory descriptive cross-sectional survey, of rural hospital administrators, that was conducted over the Internet using a study specific questionnaire. The goal was to summarize and describe what organizational supports are available to encourage and support pediatric pain management for nurses in rural Northern Ontario[30].

Identifying Sites for the Study

Northern rural Ontario has a unique culture, demographic, and geography when compared to other rural areas, including Southern rural Ontario[31]. Northern Ontario encompasses almost 90% of the geographic area of Ontario, yet only 6% of the provincial population lives in Northern Ontario[32]. This generates a very small population density with approximately one person per square kilometer as opposed to 115 persons per square kilometer in Southern Ontario[32]. In addition, highly specialized services such as those at tertiary care centers are at the greatest distance from rural communities in Northern Ontario when looking at Ontario as a whole[33]. This provides a unique context to explore specialized services such as pediatric pain.

There is no one definition of rural communities. In this study, rural settings was defined as populations considered to be sparsely inhabited[27]; specifically if there are less than 150 people per square kilometre[34]. All communities can be classified as a census metropolitan area (CMA), a census agglomeration (CA), and any community that does not meet these defining

criteria is considered outside these areas and is further classified by how strongly they are influenced by the CA and CMA zones and is called a Metropolitan Influenced Zone(MIZ) and measured by how strong they are influenced (MIZ; strong, moderate, weak, and none)[35]. To define the sites, first using the sparsely inhabited definition, the first author checked the population density of all cities in Ontario with hospital corporations using the Statistics Canada website[36]. The communities classified as MIZ and CA that had population densities under 150 persons per square kilometer people were considered to be rural for this study. CAs are communities that have been amalgamated around a central urban core of at least 10 000 people but less than 100 000[35]. As the population density is still less than 150 persons per square kilometer they still reflect rural sparsely inhabited areas. Thus, population density informed our operational definition of rural, as a more restrictive definition of rural would have removed some of the communities that represent the majority of the population of Northern Ontario[32]. To finalize our definition of rural Northern Ontario, the Forward Sortation Area from postal codes was used. Postal codes that begin with the letter, 'P' were considered Northern along with sparsely inhabited areas.

Participants/Recruitment

A purposeful sampling method was used to identify participants for the survey from within the target sites, as this approach is more likely to include informants who have experience in this phenomenon[37,38]. Eligible sites were required to meet three inclusion criteria: 1) the hospital had to meet the definition of rural used for this study; 2) The hospital had dedicated pediatric inpatient beds as per the hospital website; and 3) The hospital had to be considered northern as per the Forward Sortation Area by postal code. Out of the 155 hospital corporations

in all of Ontario[39], there were 9 sites that fulfilled the criteria for the study. Of note, studies with samples as small as six institutions have been used for studies using online surveys (40).

The study participants were administrators or their delegates (e.g., nursing directors, unit managers, educators) of the eligible Northern rural sites affiliated with dedicated inpatient pediatric beds. Participants were required to meet three inclusion criteria for the study: 1) nursing administration affiliated with the units responsible for the pediatric inpatient beds; 2) Employed at one of the eligible sites; and 3) Able to communicate (read, write, speak) in English. The exclusion criterion was if the person had less than three months experience in the position.

One participant from each site was invited to participate. Participants were recruited through a combination of efforts: a mail out strategy, a social media campaign, and community advertisement (online notice board, radio talk show). The names and mailing addresses of potential participants were obtained from the College of Nurses of Ontario (CNO) who met the inclusion criteria for the study. Potential participants were sent an invitation letter that included information about the study and the consent form. Two follow up reminder invitations were sent approximately 2-4 weeks apart respectively. The social media campaign and community advertisements were considered important to increase visibility of the project and because not all administrators who may be nurses who are members of the CNO permit the release of their personal contact information for the purposes of research. Due to slow recruitment, a modification to the original protocol was made and chief nursing executives were contacted directly by the first author using publically available information and were invited to participate in the study or suggest a delegate. If a delegate was suggested, the first author ensured with participants that their delegator would not be informed of their decision to participate in the study or not.

Data Collection

An online survey was facilitated using the Research Electronic Data Capture (REDCap) platform[41]. The platform was used to secure, collect, and manage data and was hosted by a university affiliated hospital research institute. This system provides efficient processes for data capture such as branching logic (participants only answer questions based on previous answers) and drop down menus to facilitate ease of completion. The first page of the survey consisted of information about the study and consent form. All interested participants had to click on the 'I accept' icon to indicate their consent and gain access to the survey. If they clicked 'I decline' they were redirected to a thank you page without gaining access to the survey.

The online survey method was chosen in hopes of facilitating higher response rates for the survey[42]. Given the paucity of research in the context of rural health care the *Barriers to Optimal Pain Management Practice's Framework*[9] was used to guide the development of the survey questions. It was chosen to guide this study as it describes organizational factors that can act as potential barriers or facilitators in the provision of pediatric pain care which influence the provision of appropriate pain care. See *Figure 1* for more detail.

Insert Figure 1 Here

In this framework, *Factors relating to the child* includes biological (e.g., age, cognitive development, genetic makeup, temperament), psychological (e.g., fear, previous experiences of pain) and social factors (e.g., culture, family learning, social relationships, gender)[43]. *Factors relating to the parents* includes such barriers as a reliance on behavioural cues to assess child's pain; incorrect beliefs about the consequences of pain and pain medication; fears about the child developing addiction; and fears of the side effects of opioids[9]. *Factors relating to health care professionals* encompasses factors that may prevent appropriate pediatric pain management

relating to clinicians such as personal judgements or beliefs about pain[9]. Lastly, *organizational factors* encompasses factors that may be present in organizations which may include: leadership; culture; evaluation; resource allocation; formal interactions; informal interactions; structural or electronic resources; and organizational slack[44]. All of these factors can contribute to how the child perceives pain[45] and were assessed by our survey.

There are no standardized measures to capture the needed data so a study specific questionnaire was developed. This survey was piloted with two expert clinicians in pediatric pain management for ease of use, content and relevance. Slight grammatical modifications were made based on the pilot results before implementation in the main study. The survey consisted of five sections, and each section was informed by the literature as well as the barriers framework[9]. Section one consisted of 10 questions and captured demographic data of the respondent (e.g., age, highest level of nursing education). Section two consisted of 11 questions and captured descriptive information regarding the hospital the nurses worked at (e.g., number of beds, number of nurses). Section 3 consisted of four main questions using branching logic (maximum of 12 additional questions) and focused on resources to support general pain management in any age group (e.g., adult pain management). Section four consisted of seven questions designed to capture data on the resources available specifically to support pediatric pain management. Section five consisted of 10 questions targeting remaining organizational factors such as continuous quality improvement programs for pain care.

Data Analysis

The data was exported from REDCap into Microsoft Excel Version 14.6.9. Descriptive statistics (frequencies and proportions) were used to summarize the data to quantify the types of policies, protocols, and guidelines available to nurses to support pain care to inpatient pediatric

patients. The responses to open-ended questions, when provided, were grouped together by question to provide further understanding of the descriptive statistics. No specific coding or categorizing was done due to limited number of open-ended questions and most answers were typically a few words or one sentence long.

Ethics approval

Ethical approval was obtained by the University of Ottawa Office of Research Ethics and Integrity Board in December 2015. File number: H11-15-20. Permission (but not formal ethical approval) was also required and obtained from one of the participating sites. All other sites accepted the University of Ottawa Office ethics approval without requirement for further ethical review or permission.

Results

The response rate was eight of the nine possible sites. There were some missing data, which was random in nature, and no question was consistently not completed; therefore not all data reports will equal 100%. One participant stopped answering the survey part way through, however, the participant answers up to that point were used in the analysis. Geographically there was a mix of respondents. Five sites were from the North East and three were from the North West of Ontario. This representation is consistent with the number of respective hospitals in each area of Northern Ontario[46].

All respondents were female, their professional designation was a registered nurse (RN), and all were over 40 years old. The mean length of career as an RN was 31 years ($SD=7$) and most ($n=5$), had completed their bachelor's degree in nursing. Roles of participants within their respective hospitals included chief nursing executives ($n=5$), managers or supervisors ($n=3$) and

an educator (n=1). The mean length of employment at their site was 24 years (SD=9). See *Table 1* for complete respondent characteristics.

Insert Table 1 here

The sites ranged from in number of inpatient beds (mean=65, SD=72) and number of dedicated pediatric beds (mean=3, SD=3) but all provided inpatient and outpatient care to pediatric patients. Please refer to *Table 2* for site-specific demographics.

Insert Table 2 here

All sites indicated that they used pain assessment tools to assess pain intensity in children. However, only one site used a range of evidenced based pain assessment tools recommended to assess pain in infants and children across the developmental age groups. Seven of the eight sites indicated that they used some form of “smiley” faces scale such as the Wong-Baker pain assessment tool[47]. One site indicated they only used a verbal numeric rating scale (0-10) and one site indicated that they used both the Premature Infant Pain Profile (PIPP)[48] and the Neonatal Infant Pain Scale (NIPS)[49] in addition to a faces pain assessment scale.

All sites indicated that they had a formal place to document their pain assessment findings and all sites indicated there was potential to document pain assessments in more than one place in the patients’ charts. Half the sites documented pain on their daily nursing care form, six documented them in their nursing notes, two documented them on their vital signs sheet, and seven also documented pain in the medication administration record.

To capture differences between pediatric and adult pain management supports and resources, respondents were asked several questions on policy and procedures for pain management. Seven of the eight participants responded that their site had policies and/or

procedures to support nursing care for adult pain problems. See *Table 3* for details on policies and procedures for adult pain.

Insert Table 3 here

Most respondents (n=6) indicated that they had some policies or procedures specifically designed to support pediatric pain management. See *Table 4* for specific types of policies, procedures, or guidelines.

Insert Table 4 here

Respondents were asked about medications or strategies used to treat pain in children at their respective sites regardless if there was a formal policy or procedure. Results in *Table 5* indicate that two evidenced-based infant pain management strategies (sucrose and kangaroo care) were not commonly used despite low cost and ease of use however topical anaesthetic for needle pokes (e.g. EMLA©) were used at all sites.

Insert Table 5 here

Several questions were designed to capture data on education for staff nurses. Given that all of the sites indicated that they did not conduct pain related quality assurance audits or programs it is difficult to determine if education met learning and practice improvement needs. Only five of the participants indicated that staff received specific education about pain and or related policies and procedures and this was mostly provided during orientation. Only one site indicated that ongoing education in the form of in-services was also provided on pain policies and procedures. Therefore, several of the hospitals' nurses did not receive pain related education on orientation nor were there any continuing education opportunities that were pain specific. Reasons for not providing specific education regarding the pain related policy and procedures included statements such as, "*competing priorities*", and, "*no dedicated resources for*

education". Participants were also asked if their staff used technology mediums such as online learning modules for continuing education. Most sites (n=6), indicated their staff accessed education via technology (videoconferencing or web based lectures), however, the regularity of which the nurses caring for children accessed education via technology was not offered in the responses to the survey nor was the content of the sessions identified.

To understand the types of resources available to support pediatric pain care in the rural setting, participants were asked about internal and external resources. Access to internal resources, specifically different types of expertise (professionals) included pharmacists (7 sites); anaesthesia expertise (4 sites); clinical nurse specialist with pediatric expertise (1 site) and one site had a child life specialist. In response to a specific question asking if their site officially accessed material or expertise from the closest tertiary children's hospital as an external resource, all but one participant responded that they did. All the discipline experts listed above (pharmacists, anaesthesia, clinical nurse specialists with pediatric expertise and a child life specialist) would be available at these tertiary centres. The one site that did not identify a tertiary center as a resource indicated they used outreach educational sessions from the provincial telehealth network.

At the end of the survey participants were asked to indicate in an open text format if there were any challenges or resources to support pediatric pain management that were not already captured. Four of the eight provided further information. Challenges that were identified included a recent large turnover over in nursing staff at one site and three others indicated scarcity of resources for staff based on their rural context. Two participants indicated that guidelines or order sets on specific concerns are currently used at their respective institutions and they find them helpful in their types of facilities but these were not specific to pain care. One

participant indicated that completing the study questions triggered an awareness of the need to explore the use of pediatric specific order sets for pain management.

Discussion

There has been well over 30 years of pain management research[50], and yet rural area hospitals in Northern Ontario, where nurses and other health care clinicians care for a combined average of 3300 pediatric patients per year, appear to have a lack of organizational resources to support evidenced informed pain care. Rural communities are known for having difficulty in attracting and retaining clinicians, for a number of reasons. They often have little to no funding for education, or infrastructure[51], despite reports strongly recommending maximizing continuing educational opportunities, and building rural community capacity[29]. Therefore, in order to improve pain related outcomes amongst pediatric patients who access care in rural settings specific strategies that consider the unique rural challenges are needed.

Context matters, and urban policies, publications, and urban organizational structure are not reflective of rural realities – which include a community of generalists[29]. It has been stated that “rural communities [will] likely struggle” [51, p.779] if clinicians are not supported by the health system as a whole, and larger communities are not involved. However, involvement provincial health care system needs to be cognisant that urban policies and structure are not readily transferable into rural hospitals. As noted in this study, despite most of the hospitals formally accessing a tertiary pediatric care centre for expertise, where policies and guidelines for pediatric pain care exist, most of the sites in this study did not have many formal policies or guidelines to support pediatric pain care. Guidelines are a resource for facilities that should be developed systematically, with the overall purpose of providing guidance on improving care backed by current evidence for practitioner use[52] but these guidelines must be compatible

within the organizational context. Therefore tailoring pediatric pain care policies to account for the context as well as best evidence are needed.

The context in rural settings necessitates that clinicians be an expert generalist, meaning that population specific knowledge is challenging to both obtain and maintain[53]. The findings of this study support this challenge since specialists such as pediatricians, pain medicine specialists, or advanced practice nurses in pediatrics or pain were not present in these hospitals. Although all of the sites had a nurse educator, most of these educators were responsible for the continuing education of the entire nursing staff and thus they were generalists as well. However, maximizing expertise that does exist is needed. Pharmacists were available in 88% (n=8) of the hospitals and may be an untapped resource for helping support nurses and physicians in pharmacological management of pain care for children, especially since most of the hospitals had few, if any, pharmacological pediatric pain management policies or guidelines.

Strategies to help increase capacity need to include education. However even providing traditionally delivered didactic education is a challenge. One strategy that respondents of this study reported as available to the rural hospitals for education is the use of Telehealth provided by Ontario Telemedicine Network (OTN). Most of the sites (77%) (n=7) report the use of OTN for continuing nursing education, however there are presently no listed pediatric pain sessions on offer. Leveraging the use of OTN beyond the routine didactic presentations that are transmitted across all sites simultaneously is needed. It was suggested in the Ministerial Advisory Council on Rural Health Report (2002) that telehealth could connect rural communities to each other and thus could be used to build a community of practice for pediatric pain care across rural sites. Communities of practice have grown from the sharing of information and knowledge to improving clinical practice through implementation of evidenced based practice[54]. Using OTN

to share knowledge, experiences, and approaches to implementing improvements in pediatric pain care would be novel but available, accessible and potentially feasible to organize. Further research is needed to determine the best ways to support pediatric pain communities of practice in rural settings.

Organizational resources to help improve pediatric pain care include supporting the adoption of evidenced based pain care toolkits. Toolkits are a more recent approach to knowledge translation and moving evidence into practice[55]. Toolkits are evidenced based written materials and summaries for various components for pediatric pain care that are housed in one ‘box’. There are eight pediatric pain care toolkits developed by the Canadian Association of Pediatric Health Centers[56], including topical anaesthetics, oral sucrose, pain assessment, non-nutritive sucking, breastfeeding, positioning and distraction. It is unclear if these toolkits are easily adaptable into the rural setting. Given that passive diffusion of evidence may be less effective than more active dissemination methods such as interactive workshops, or unit based quality improvement activities[55], there may be an inherent challenge to implementation of pediatric pain toolkits in these rural hospitals due to capacity, time, and resources to implement such projects. Although a promising strategy, an understanding of the processes (including resources) to implement ‘toolkits’ for practice change in rural areas is warranted.

Lastly, in the *Promoting Action on Research Implementation in Health Sciences* (PARiHS) model, context is described as one of the three elements that can increase research into practice[57]. There are three elements that can contribute to high context; culture, leadership, and evaluation[57]. There seems to be a lack of priority given to pediatric pain management in the rural northern Ontario hospital context given the limited supports (e.g. education, audits, policies) devoted to pediatric pain care. However, formal organizational

commitment to improving pediatric pain related outcomes is a possible solution to set a standard of expected care that can change current practice[58]. Formal interactions such as organizational commitments offer both a standard of expected care and a type of information exchange, which can increase nurses' knowledge to reduce pain in children while they are in hospital[14,15,58]. The International ChildKind initiative offers a potential implementation strategy to improve pediatric pain outcomes in hospital by, "creating a system wide approach to pain management [58, p.27]" along with a formal, internationally sanctioned award representing an organization's commitment to pediatric pain management. ChildKind is based on five principles that were developed with the intention that any hospital could implement them with a reasonable amount of commitment. These five core principles include: written hospital wide commitment to pain prevention, assessment, and treatment which is endorsed by senior executives; pain assessment policy (pain is assessed using an evidenced-based tool and documented); evidenced-informed policies and protocols for pain prevention and management; on-going education for staff, patients, families; and regular auditing and feedback with continuous quality improvement[58]. Such principles could potentially be integrated into rural hospitals in northern Ontario as the principles were created with some flexibility in mind as long as efforts remained evidenced based[58]. Given the limitations of rural settings as previously mentioned in this text, there is opportunity for the ChildKind initiative to offer an overarching approach to improving pediatric pain outcomes in rural northern Ontario hospital settings.

Conclusion

Some rural northern Ontario hospitals that are currently providing pediatric care are upwards of 850km away from a pediatric tertiary center. Based on the findings of the study, rural northern Ontario hospitals need more support and guidance in developing resources that reflect

evidenced based pain management, as evidenced by their lack of development and advancements in pediatric pain management. Although building capacity within the rural communities has been advocated for in Ministerial Advisory Council on Rural Health Report[29], tailored strategies for improving pediatric pain care in the rural setting have not been designed and tested. Children in rural Canada, like children everywhere, need and deserve evidenced based pain care to improve outcomes.

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Table 1

Characteristic	<i>n</i> (%)
Sex	
Female	8 (100)
Age	
40-49	3 (38)
50-60	4 (50)
60+	1 (13)
Highest completed education level	
Diploma	3 (38)
Degree	5 (63)
Registered nurse	
Yes	8 (100)
Position Title	
Chief nurse executive	4 (50)
Manager/Supervisor	3 (38)
Educator	1 (13)

Table 2

Site Demographics				
	Mean (Standard Deviation)	Median	Min	Max
Number of inpatient beds at hospital (n=7)	65 (72)	41	<32 beds	>71 beds
Number of dedicated inpatient pediatric beds	3	2	<2 beds	>6 beds
Number of pediatric patients admitted in a year (n=6)	50 (48)	21	< 20 admissions	>39 admissions
Number of pediatric visits in one year (including emergency, outpatient clinics) (n=5)	3392 (3625)	3960	<500 visits	>4500 visits

Table 3

Pain policies or Procedures for Adults	
Type of Policy/Procedure	<i>n</i> (%)
Cognitive therapies (distraction, guided imagery)	2 (25)
Physical therapies	6 (75)
Topical analgesic strategies	5 (63)
Patient controlled analgesia	5 (63)
Nurse controlled analgesia	2 (25)
Oral opioids <i>prn</i> †	6 (75)
Oral opioids ATC¶	6 (75)
Analgesics <i>prn</i> †	6 (75)
Analgesics ATC ¶	6 (75)
Complimentary therapies (e.g. music therapy, therapeutic touch)	5 (63)
None	0

†As needed; ¶ around the clock

Table 4

Policies, Procedures, Guidelines for Pediatric Patients	
Type of Policy, Procedure or Guideline	<i>n</i> (%)
Pain assessment and documentation	6 (75)
Opioid infusion	1 (13)
Topical analgesia	4 (50)
Oral opioid	2 (25)
Post operative	2 (25)
Procedural	2 (25)
Sucrose	3 (38)
Patient controlled analgesia	1 (13)
Nurse controlled analgesia	2 (25)
Nerve block	1 (13)
Epidural	0
None	1 (13)

Table 5

Treatment Medications and Strategies for Pain Management in Children	
Type of Medication or Strategy	<i>n</i> , %
Sucrose	3 (38)
Breast feeding	5 (63)
Kangaroo care	3 (38)
Swaddling	5 (63)
Cognitive strategies	5 (63)
Physical strategies	7 (88)
Topical strategies	8 (100)
Patient controlled analgesia	1 (13)
Nurse controlled analgesia	2 (25)
PRN† oral opioids	7 (88)
ATC¶ oral opioid	5 (63)
PRN† analgesics	8 (100)
ATC¶ analgesics	4 (50)
Complimentary therapies	4 (50)
None	0

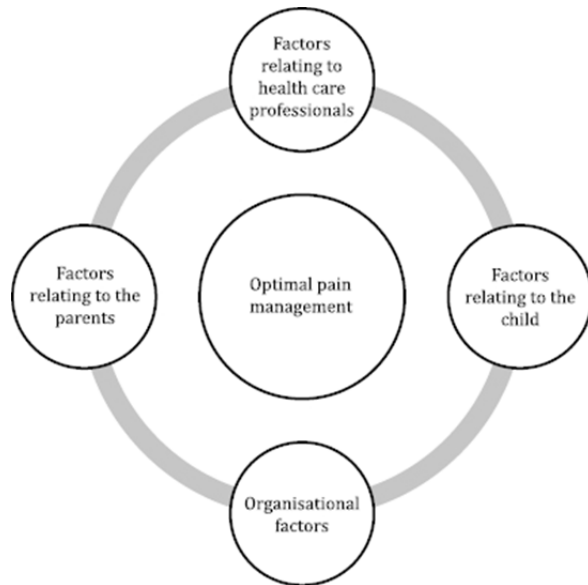
† as needed; ¶ around the clock

Table 6

Internal Professional Resources	
Type of Resource	<i>n, %</i>
Pharmacists	7 (88)
Clinical nurse specialist with pain expertise	0
Clinical nurse specialist with pediatric expertise	1 (13)
Acute pain service	0
Chronic pain service	0
Anaesthesia	4 (50)
Child life specialist	1 (13)
Psychologist	0
None	0
Other	0

Figure 1

Reprinted with permission from 'Barriers to Optimal Pain Management Practice's Framework' in Why Managing Pain in Children Matters, from Managing Pain in Children: A clinical guide for nurses and healthcare professionals (2nd Ed), (p.8), by Alison Twycross and Anna Williams, 2014, West Sussex, United Kingdom: John Wiley & Sons Ltd. Copyright 2014 by John Wiley & Sons, Ltd.



Chapter Six Integrated Discussion

The overall goal of this thesis was to understand how the rural Northern Ontario context impacts registered nurses' (RNs) pediatric pain management. Two separate studies were conducted to provide an understanding of this phenomenon. Study I was a qualitative descriptive study using individual interviews to explore nurses' experiences in providing pain care to hospitalized children and adolescents. Study II was a descriptive online survey designed to capture what institutional resources are available to support nurses' pediatric pain care practices. Although the two studies were conducted as independent studies and have specific research questions and individual findings, when taken as a whole, they provide additional understanding of the overall phenomenon of pediatric nurses' pain care practice in rural Northern Ontario. The discussion that follows provides a brief overview of each studies findings, and then addresses the similarities and differences from the two studies, including implications for nursing practice, nursing education, nursing research, and nursing policy.

Five categories were identified from the qualitative descriptive study (Study I). RNs needed to practice as 1) *Generalists*, which threaded across all categories as RNs need to take care of a variety of patients and populations. 2) *Resource challenges* included a lack of available specialist expertise and a lack of educational opportunities was perceived as negatively effecting RNs' pain care practice. Distance education in its present form was not perceived as taking the context challenges or preference of learning of the nurses into account. Pediatric pain was 3) *not formally identified as a priority* within their institutions and although the nurses believe managing a child's pain to be important, it competed for prioritization within their practice. Furthermore, most participants stated there were 4) *no explicit standards* for pain, meaning that pain management was variable and clinician dependent. 5) *Moving forward*, the adoption of pre-printed orders was suggested as a possible facilitator for use of evidenced-based pain

management, however, most of the participants were unsure about the process to initiate practice change in their hospital.

The main results of Study II were that most respondents reported that nurses had pain assessment tools available to them, but not all sites had a range of tools to meet the developmental differences across the pediatric population. Most sites (n=6, 75%) had several policies or procedures to support pediatric pain care. Sucrose and kangaroo care were not commonly used for infants, despite their effectiveness, low cost, and ease of use. All sites identified consistent use of topical anaesthetic for skin breaking procedures (e.g. needle pokes) as a strategy for procedural pain management, although not all had a specific policy/procedure or guideline to support the use of topical analgesia. When discussing formal education only one site indicated that they provided specific pediatric pain management education to their staff. Self-identified scarcity of resources (i.e., no dedicated funding for education) was reported as a challenge. Guidelines or order sets were suggested as potential strategies to improve pain care in the rural context.

Five main areas of overlap are apparent when examining the results of both studies as a whole. These five areas will be discussed below and include: continuing education and competency; institutional policy; relationships with content experts; leadership; and prioritization of pediatric pain.

Continuing Education and Competency

In Study I, the nurses expressed many challenges in their work environment related to their perception of providing evidenced based pediatric pain care, ranging from accessing continuing education to a scarcity of opportunities to practice pediatric skills. Although in the interviews the nurses expressed a lack of opportunity to care for pediatric patients, the results of

the survey indicated that on average these 8 hospitals admitted 50 pediatric patients a year, and an average of 3392 patients per year had some kind of pediatric visit (i.e., outpatient including the emergency department). There seems to be a disconnect between RNs feeling they do not have adequate opportunities to maintain competency in their pediatric pain management skills and the number of pediatric patients seen yearly who would benefit from evidenced based pain care. Pain assessment is the first step in evidenced based pain management (Stinson & Jibb, 2014) of which there is ample opportunity for nurses to maintain competency. Additionally, many children are exposed to procedural (i.e., needle pain) when they are brought to hospitals for healthcare. Approaches to decreasing needle related pain are well established (Taddio et al., 2010), yet the nurses did not voice having continuing education on either of these topics (pediatric pain assessment or managing needle related pain), which was also reflected in the survey findings. It may be that challenges for accessing continuing education and/or limited institutional resources (i.e. pediatric pain treatment policies) negatively affects the RNs confidence in their skill and knowledge in this area including identifying the children who may need pain care.

Despite practicing in rural settings, distance education strategies were not perceived as useful since the content of these educational opportunities did not consider the local contextual challenges. Troubling is that distance education strategies were the most prevalent form of continuing education on offer and furthermore this educational method did not meet the study RNs' stated preference for learning. Funding support was voiced by the RNs in the interviews (Study I) as contributing to the reason why distance education was the main source of continuing education and echoed in the survey (Study II) in which participants stated that there were no dedicated educational resources including funding. This lack of funding meant that if a RN

wanted to attend a continuing education event, such as workshop or conference in person (their voiced preferred form of learning), they had to personally fund their attendance. Furthermore, travel from rural communities is far more time consuming and expensive than travel between urban centres. Moreover, even when the continuing education was face to face as in the form of an in-service, these sessions were offered during their work hours, creating challenges for RNs to balance attendance around patient care. Continuing education is a professional responsibility of any registered nurse (Witt, 2011), yet it was evident that there were limitations in how this was being provided and accessed.

The findings from these two studies suggest that rural hospitals in northern Ontario, where the participants in both studies were recruited from, have a scarcity of resources that may affect the ability for the hospitals to provide continuing education on speciality topics, especially those that may be perceived to have low impact due to low patient population volume. Therefore it may be challenging for nurses who work in rural settings to maintain their regulatory body's professional standards of continuing competence (College of Nurses of Ontario, 2013) as set out by the provincial licensing board for nursing without more support from their organization.

Capacity building in rural communities is purportedly facilitated through supporting continuing education opportunities, yet challenges to accessing continuing education were evident. One of the areas of concern expressed by the nurses was that even when they attended distant education opportunities the presentations did not allow for discussion of how to tailor the strategies to their individual community needs. Knowledge translation theories, such as the Promoting Action on Research Implementation in Health Services PARiHS model (Rycroft Malone, 2004), clearly identify the need for context to be considered when moving evidence into practice. Thus, leveraging the expertise of rural nurses through a more collaborative learning

environment may improve RNs engagement in distance education sessions and facilitate both gaining of knowledge on a topic and the adoption of new care practices. Given that participants in both studies identified a lack of pediatric pain management presented at distance education sessions, future research is needed to determine the most effective way to provide continuing education to rural nurses in northern Ontario to develop and maintain pediatric pain management skills.

Lastly, one potential recommendation for developing rural Northern Ontario nurses and hospitals in providing pediatric pain care is the optimization of the Ontario Telemedicine Network (OTN). OTN is a multi-way telemedicine videoconference application that allows hospitals across the province to improve patient care and educate staff. Given that almost all nurses in the interview study did not attend any educational sessions via OTN and some explicitly stated that they did not even realize that OTN was used for education, OTN should be optimized. For example, OTN could be used to bring nurses together in rural settings to strategize and share their approaches to solving pediatric pain management challenges in their hospitals. In Study II, one respondent specifically responded that OTN is a helpful in providing continuing education. It is difficult to conclude that all distance education strategies are not effective as findings suggest that resources such as OTN may be under utilized. Research is needed to explore how rural communities could leverage the availability of OTN to support building a community of practice and share approaches and experiences instead of solely relying on tertiary or urban centers to provide education or training via the telemedicine network. As proposed by the Ministry Advisory Council on Rural Health in their 2002 report, rural communities need to develop programs and policies specific to northern communities and make them accessible in a virtual library. The idea of a virtual library is loosely discussed in the 2002

report as having two strategic purposes. One purpose would be to offer information both to the public and healthcare providers, and second would be to disseminate health community resources specific to rural communities that included best practice and recent literature (Ministerial Advisory Council on Rural Health, 2002). If the virtual library and OTN were used to educate and develop capacity for rural communities *by* rural communities as recommended, it is hypothesized that these communities would be able to improve health by improving their community capacity in relation to pediatric pain care. Another recommendation is that rural hospitals need a dedicated funding model to support the development of knowledge, skills, and competencies of their clinicians. For example, dedicated funding to support site visits by pediatric pain care content experts to rural hospitals and vice versa. This would facilitate not only didactic learning, but also provide mentorship and coaching by content experts in the acquisition of new skills. Additionally, site visits by content experts in the realities of the rural context would expose them to the realities of the rural context so that care practices tailored to the rural context. Furthermore, site visits by rural clinicians to specialties centers and vice versa would enhance the development of ongoing relationships, and add to communities of practice.

Institutional Policy

Institutional policies are a form of institutional resources that support clinician practice (College of Nurses of Ontario, 2017). Yet, the findings from these two studies suggest that there may be a disconnection between what administrators report as existing policies and what RNs perceive as supportive policies. In Study I, the nurses clearly described a lack of explicit standards outlined by the institution policies about pediatric pain management ranging from frequency of pain assessment to the types of medications administered. In Study II almost all (n=6) respondents indicated there was some type of policy or procedure available to nurses

specific to pediatric pain management. However, even when policies were available, such as on pediatric pain assessment, the RNs in Study I stated that the content of the policies was not specific (e.g., frequency of assessment not indicated, developmentally appropriate pain intensity scales not available for all age groups) or that they were out-dated and therefore no longer relevant to support their pediatric pain practice (e.g., no policies to support Kangaroo care or sucrose administration to infants for skin breaking procedures). Explicit standards and evidenced based procedures/policies/guidelines to guide nurses in providing evidenced based pain care to pediatric patients are well recognized as forms of institutional support (Twycross & Williams, 2014). Although there are some institutional supports available to the nurses to help guide their pediatric pain management practices these were perceived as fewer than needed to support current evidenced based pediatric pain care recommendations.

One limitation in Study II was that we did not request details of exact policies or procedures that existed so it is difficult to know what areas (e.g. opioid administration, pain documentation) of pediatric pain care policies or procedures were viewed as helpful or not helpful. Nevertheless, if there are pediatric pain management related policies or procedures that do provide support to nurses' practices, these documents existence needs to be communicated by the institution to ensure that nurses have access and that there are clearly defined roles within the organization regarding responsibility and credibility of the use and maintenance of the documents (Kitson et al., 1998). Future research is needed to determine how best to involve and educate nursing staff in rural areas of policies and procedures that may be available in their area, especially those that may be accessed infrequently.

Speciality Expertise

Although both studies discussed specific current evidenced based strategies for pediatric patients such as sucrose and topical analgesia administration (not always supported with policies or procedures), there was some unexpected data in regards to the adoption of such strategies in rural northern Ontario for pediatric pain management. In Study I, nurses openly discussed their prominent use of topical analgesia for skin breaking procedures amongst a limited age range (infants to about age 5 years). This was further supported in Study II as five of the 8 participants said they had explicit policies or procedures on the use of topical analgesia for pediatric patients. Topical anaesthesia is an easy to use preventative pharmacological intervention appropriate for procedural pain management and has been available for years (Wilson-Smith, 2011). However, it is unclear which patient age group was covered by the policies. Although the policies were described as pediatric, the nurses' practice supported the use of topical anaesthetics for children 5 years of age and under. This is in contrast to the evidence of effectiveness, with topical anaesthetics being effective on older children and adults (Czarnecki et al., 2011).

In contrast, almost all of the nurses in Study I reported not being familiar with the use of sucrose for neonates and infants undergoing skin breaking procedures and the data in Study II corroborated with this finding. Only three of the 8 hospitals stated they had a sucrose policy or procedure. Sucrose administration in neonates and infants is an effective evidence-based pharmacological analgesic for the reduction of pain in procedural pain management (Harrison, Beggs, & Stevens, 2012). Findings suggest that current practice is as much, if not more, clinician based as it is policy supported. It is striking, however, that an evidence supported cost effective strategy, such as sucrose administration (Harrison et al., 2017) or Kangaroo care (Johnston et al., 2017), that has virtually no side effects but can have a significant effect on the reduction of infant

pain for skin breaking procedures has not been implemented in rural centers. Random adoption of pain related interventions for pediatric patients suggests that a more cohesive and consistent evidenced informed approach would improve pain care for children and adolescents in Northern Ontario.

Leadership

Successful implementation of research into practice involves three elements as defined in the seminal papers by Kitson, Harvey and McCormack (1998) and Rycroft Malone (2004). Leadership was one of the core elements and high leadership was considered to improve context. Therefore in combination with the other elements, high leadership influences successful implementation of research into practice. This is vital in regards to the findings of this study as many leadership qualities were discussed by nursing staff. Leadership can be measured as high, or good, when there are clear roles, effective teamwork, effective organizational structure and clear leadership (Kitson et al., 1998a). As 'Stacey' in Study I described her manager, she highlighted that, *"I think she's really doing a good job. She always asks for input. She has meetings, if you go in on your day off, she'll pay you to come to the [staff] meetings...and asks for feedback..."*. Many of the Study I participants described communication with their managers. It was clear that communication influenced their perception of their manager, which was positive when the communication was perceived as good and negative if the communication was perceived as poor, making the nurse feel unheard.

Nurses look to their administration and their organization for support when choosing interventions to provide care for their patients. It was noted that almost all of the nursing staff (n=8) in Study I had worked outside of a rural area. In contrast, five of the eight respondents for Study II answered that they had always worked in a rural setting. Although it was beyond the

scope of these studies to explore this further, it suggests that the nurses in Study I have been exposed to different procedures or standards outside of their rural work context and therefore carry some knowledge of pediatric pain interventions from previous employment or clinical practice. In contrast, administration or educators may not have been exposed to the same experiences and given the challenges in continuing education in rural contexts these individuals may not be aware of their own knowledge gaps which in turn may contribute to why some pediatric pain practices have explicit policies and procedures but others do not. Formal mechanisms to bring staff nurses and administrators together may help in exchanges of knowledge on practice gaps and engage staff in bringing about practice change.

Priority

Due to competing priorities, pediatric pain management was not an explicitly documented institutional priority in terms of comprehensive policies and procedures to support pediatric pain care. This was further evidenced by only one hospital reporting that they provide formal pediatric pain management education to nursing staff. Study I findings support this finding as the participants expressed that pediatric pain was not explicitly stated as a priority in the organization, nor was it always reflected in practice by all clinicians working with children and adolescents. The number of admitted pediatric patients, coupled with the number of visits of pediatric patients to the rural northern Ontario hospital, demonstrates that there are pediatric patients who require care at these rural hospitals. In the pediatric pain literature, there is evidence that the prevalence of skin breaking procedures in pediatric patients is as high as six potential procedures per day (Stevens et al., 2011a). However, that study captured data in Canadian pediatric hospitals (where more complex care is provided), and this number of skin breaking procedures therefore may not apply to the rural northern Ontario community hospitals' context.

Further research is needed to determine the average number of skin-breaking procedures in pediatric populations who access their care at community hospitals in order to document the extent of the burden of pain these patients experience, so that supports and initiatives for the rural northern Ontario context can be developed. Findings from such future research could help provide justification for the need for rural centres to prioritizing pediatric pain management in their context.

An additional finding that crossed both studies was the notion of pre-made order sets. Standardized pre-made order sets, include built in best practice interventions that can be customized according to requirements or constraints of an organization (Healthcare Human & University, 2009). One way these order sets have been used is within the Computer Physician Order Entry Systems (CPOE) (Rawn & Wilson, 2011). If these electronic charting and CPOE are already in place in these organizations, adding evidenced based pre-made order sets that include standard pain management interventions could provide support to physicians and nurses in their practice when providing care to pediatric patients and pain care (Healthcare Human & University, 2009). As both studies' results illustrated, nurses in rural northern Ontario hospitals have found order sets to be helpful in providing care for other populations as they trigger reminders of care practices to consider in this generalist setting. Administrators and/or educators may also want to support the creation and implementation pre made order sets to standardize patient care with a view of patient safety, as rural hospitals are more likely to care for patient populations who represent low volume of their total patients or require specialist knowledge in their hospital settings.

Although there is potential to implement pre-made order sets as a strategy to support pediatric pain care practices in rural northern Ontario hospitals, such a strategy requires content

knowledge, which begs the question of who and how are these order sets to be developed.

Leadership is needed to support the development and adoption of such an institutional approach.

For example, if they are developed by an external organization where pediatric pain expertise exists, they still need to be applicable in a rural setting. Therefore, in order for pre-made order sets for pediatric pain to be used in a rural setting, they must first be reviewed and tailored to the context (Healthcare Human & University, 2009). Leadership can support these initiatives by advocating for the review of the order sets by their content experts, and by auditing the use of such order sets to provide data on the usefulness and compliance of the order sets.

Although administrators are the most common source of leadership there are others that may be helpful to leverage. For example, the Canadian Association for Pediatric Health Centers is an association of administrators, researchers, and leaders from pediatric health centres across Canada. Partnering with this association could provide relevant resources to support nurses' pediatric pain care practices. For example, there is a pediatric pain toolkit available on their website that offers various sections that can help provide other centers with examples of policies and education for pediatric pain management. This was previously discussed in Chapter 5. As both nurses and administrators explicitly discussed how order sets could be a potential way to address pediatric pain support concerns, working with this group to help develop and distribute such order sets is an option that needs to be further researched. However, blanket adoption of pre-made order sets needs to be cautioned as any recommendations that are provided by non-rural centers may suggest interventions that are unavailable to rural northern Ontario hospitals or nurses (Ministerial Advisory Council on Rural Health, 2002). This highlights that partnerships between rural centres and pediatric centres are essential. The housing of electronic evidenced based resources as an intervention was discussed in the Ministerial Advisory Council on Rural

Health report (2002), where it was recommended that a virtual library of resources should be available nationwide. However, understanding of the intended audience context in which the toolkits or standard order sets will be implemented is needed if these types of resources are going to be pertinent to the rural northern Ontario context (Ministerial Advisory Council on Rural Health, 2002).

Implications for Nursing Practice

This thesis was developed to enhance understanding on current RN pediatric pain care practices in rural northern Ontario and identify the resources available to support their practice in this context. The findings in Study I illustrate that nurses' attitudes towards pain management for pediatric patients are positive in terms of wanting to provide quality care to children and adolescents. There also appears to be willingness on behalf of RN participants to learn and apply current best practice. For example, after observing another health care professionals' use of breastfeeding as a strategy for pain management in a newborn during blood sampling, this RN adopted the strategy in her own practice. However, as previously mentioned, inconsistent adoption of evidenced informed pediatric pain care practices appears to prevail in Northern Ontario. Perhaps by leveraging the OTN, it may be possible for these nurses to work with experts who could demonstrate evidenced based nurse initiated pediatric pain care strategies which may facilitate rural nurses ability to implement these strategies in their own practice.

One reason for inconsistent pediatric pain care practices may be related to pain care not being an organizational priority. Thus, to improve nurses practices (which requires the allocation of some form of resources) it is imperative that administrators understand the benefits of properly treated pain and harms of poorly treated pain for children and adolescents. How best to

target hospital and nursing leaders in the rural setting to appreciate the importance of pediatric pain care warrants further study.

Implications for Nursing Education

The College of Nurses of Ontario (CNO) has a practice standard entitled, “Professional Standards” where continuing competence states that nurses demonstrate the Standard by “engaging in a learning process to enhance her/his practice” (College of Nurses of Ontario, 2013, p.5). It was identified in Study I that nurses’ educational needs in relation to pediatric pain management were not assessed and there was little to no continuing education on pediatric pain management on offer. In fact the nurses perceived that there was minimal continuing education offered and when it was offered their preferences for learning were not accommodated. Although the nurses in Study I discussed the change in financial resources over time and that they were no longer supported to attend conferences, these participants did not voice engaging in some form of continuing education as their responsibility. This perception is at odds with the CNO practice standard as it also specifically states that nurses “need to assume responsibility for their own professional development” and “invest[ing] time, effort and other resources to improve knowledge, skill[s], and judgement” (College of Nurses of Ontario, 2013, p.5). So although the nurses felt as though they were not supported by their organization to improve their nursing practice, the ultimate responsibility and accountability still lies with them as a regulated licensed healthcare professional. It was beyond the scope of this study to determine why the nurses’ felt as if their education needed to be supplied and funded by their organization. However, we do know that when continuing education is supported in organizations, staff are more likely to implement research into practice (Kitson et al., 1998) suggesting a role for both the employer and the nurses in engaging in continuing education. Further research is needed to determine how

best to help nurses as well as their organizations develop sustainable and realistic continuing education programs that are tailored to the needs of the nursing staff in the context of rural northern Ontario who care for pediatric patients who require pain management.

Implications for Nursing Policy

The findings from this thesis illustrate that the current status for pediatric pain management policies and procedures may not be meeting the needs of their intended audience, or their purpose – which is to support nurses in their practice. Policies that are developed by urban centres, or tertiary care centres may not be applicable to organizations that have lower resources, fewer context experts, and designated staff to champion their implementation. Although recommendations were made 15 years ago to develop a virtual library for rural hospitals to encourage collaboration, networking, and sharing of relevant resources (such as policies, procedures, and guidelines) (Ministerial Advisory Council on Rural Health, 2002), this has yet to materialize. The results of Study II indicate that procedures and policies for pediatric pain in the rural context may not adequately cover the range of care children and adolescents. The results of Study I indicated that even when the policies or procedures do exist, the nurses are not confident in their content. These findings suggest that rural organizations may require a different allocation of resources in order to develop procedures and policies for rural nurses for pediatric pain management. As the nurses practice as generalists, they require a range of resource supports to inform their practice as they may only practice certain skills or need specialty knowledge infrequently. These resource supports may include written documents like policies but these could also be embedded in electronic medical records making them easier to find in a timely manner based on patient needs. Future research is needed to enhance researchers and

administrators' understanding of how best to maintain policies or procedures that are evidenced informed and useful to nurses in rural settings.

Conclusion

The pediatric pain care practices of rural pediatric nurses have rarely been examined. The results of this across methods thesis provides valuable insights into the current challenges of rural northern Ontario hospitals and pediatric RNs in providing pain care for children in this setting. Challenges include providing relevant education; availability of content experts; existence of updated policies, pain care not being an organizational priority, and financial constraints. Facilitators include RNs desire to provide quality care for children and adolescents; desire for continued education; an acceptance of evidenced based care when effectively facilitated; and an understanding of both RNs and administrators of their context and what works in that context. Approaches to pediatric pain care that are effective in urban tertiary care settings may not be appropriate within the rural context. Innovative continuing education and practice strategies that incorporate the context expertise of clinicians who practice in these setting are needed to support the implementation of evidenced informed pain care practices for children and adolescents. Research is needed to determine best approaches and practices that fit within the rural context in order to meet the needs of children, adolescents, and their families who deserve high quality pain management.

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Appendix A - Eligible Sites

<u>Eligible Sites</u>					
City	Hospital Name	Postal Code	Population Density	CA	MIZ (Classification)
Hearst	Hopital Notre Dame Hospital (Hearst)	P0L 1N0	51.6	No	Yes-Weak
Little Current	Manitoulin Health Centre	POP 1K0	5.5 *considered to be included in the census subdivision North-eastern Manitoulin and the Islands	No	Yes- Weak
Moosonee	Weeneebayko Area Health Authority	P0L 1W0	3.1	No	Yes-Weak
North Bay	North Bay Regional Health Centre	P1B 5A4	81.2	Yes- CA of North Bay	No

Sault Ste. Marie	Sault Area Hospital	P6B 0A8	99.1	Yes- CA of Sault Ste. Marie	No
Timmins	Timmins and District General Hospital	P4N 8P2	14.5	Yes- CA of Timmins	No
Dryden	Dryden Regional Health Centre	P8N 2Z6	115.7	No	Yes- Weak
Kenora	Lake-of-the-Woods District Hospital	P9N 3W7	72.5	Yes- CA of Kenora	No
Manitouwadge	Manitouwadge General Hospital	P0T 2C0	6.0	NO	Yes-Weak

Appendix B – Study I Recruitment Poster

Are you a pediatric nurse?



Do you work in a rural community?

If you answered 'yes' to both of these questions, you may be able to take part in a research study about pediatric pain in rural hospitals. We want to understand more about providing pain care to pediatric patients in rural hospitals in Northern Ontario. We need your help to make this study a reality!

If you choose to participate in this study you will be asked to take part in a one time interview with the principal investigator over Skype or the telephone. This interview will take approximately 30-60 minutes or less. Participants will be included in the study on a first-come first-serve basis, but we will take your information in case we need you later in the study.

*Please note that we are only looking at individuals who have at least three months experience in their current role.

You will be helping add to a growing body of literature about children and pain. This research is intended to help us understand what makes providing pain care to children in the rural hospital setting challenging and what makes it easy.

If you're interested in more information and taking part in this exciting new nursing study, you can contact:

Carolyn Truskoski,
 RN BScN MScN student
 Email: [REDACTED]
 Phone: [REDACTED]



Research Supervisor: Dr. Paula Forgeron RN PhD email: [REDACTED]

Appendix C- Study II Recruitment Poster

Do you supervise, educate or manage staff
who work with inpatient pediatric patients?



Do you work in a rural community?

If you answered 'yes' to both of these questions, you may be able to take part in a research study about pediatric pain in rural hospitals. We want to understand more about providing pain care to pediatric patients in rural hospitals in Northern Ontario. We need your help to make this study a reality!

If you choose to participate in this study you will be asked to take part in a one time online survey investigating institutional supports that are available in your rural hospital. The survey will take approximately 15-20 minutes to complete.

*Please note that we are only looking at individuals who have at least three months experience in their current role.

If you choose to participate you will be helping add to a growing body of literature about children and pain. This research is intended to help us understand what makes providing pain care to children in the rural hospital setting challenging and what makes it easy. By identifying the institutional supports available in rural settings, it will help inform strategies to support nurses in providing quality care.

If you're interested in more information and taking part in this exciting new nursing study, you can contact:

Carolyn Truskoski,
RN BScN MScN student
Email: [REDACTED]
Phone: [REDACTED]



Research Supervisor: Dr. Paula Forgeron RN PhD email: [REDACTED]

**Appendix D - Cover Letter for Study I**

Dear _____,

My name is Carolyn Truskoski. I am a Registered Nurse and a Master's of Science in Nursing student at the University of Ottawa. I have written to you today to invite you to participate in a research project about nurses who work in rural settings. The study is titled, "**Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario**" I have provided an information sheet outlining the research study for you to look over. This study is completely voluntary. You do not have to participate if you do not want to. If you decide you want to participate, my name and contact information are provided at the end of the information sheet. Please give me a call or an email and we can set up a time to have an interview on the telephone or over Skype, whichever is most convenient for you.

*You have received this invitation because you have consented to the release of your mailing address with the College of Nurses of Ontario for the purposes of nursing research. This study is not connected with the College of Nurses of Ontario. This is an independent study designed by me and my Master's of nursing thesis committee through the University of Ottawa. The CNO will not be informed if you participate or do not participate. If you wish to change this consent of release of information please contact the College of Nurses of Ontario.

Thank you so much for your time,

Sincerely

Carolyn Truskoski, RN BScN, Masters of Science in Nursing student

**Appendix E - Cover Letter for Study II**

Dear _____,

My name is Carolyn Truskoski. I am a Registered Nurse and a Master's of Science in Nursing student at the University of Ottawa. I have written to you today to invite you to participate in a research project about nurses who work in rural settings. The study is titled, "**Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario**" I have provided an information sheet outlining the research study for you to look over. This study is completely voluntary. You do not have to participate if you do not want to. If you decide you want to participate, my name and contact information are provided at the end of the information sheet.

*You have received this invitation because you have consented to the release of your mailing address with the College of Nurses of Ontario for the purposes of nursing research. This study is not connected with the College of Nurses of Ontario. This is an independent study designed by me and my Master's of Nursing thesis committee through the University of Ottawa. The CNO will not be informed if you participate or do not participate. If you wish to change this consent of release of information please contact the College of Nurses of Ontario.

Thank you so much for your time,

Sincerely

Carolyn Truskoski, RN BScN, Masters of Science in Nursing student

Appendix F - Information Sheet for Study I

This information sheet is a guide explaining a research project for a Master's Thesis. The research study is seeking registered nurses working in rural hospitals in Northern Ontario that have dedicated inpatient pediatric beds or units. If you are a registered nurse working in a rural hospital we are inviting you to participate in the research study titled:

“Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario”

Principal Investigator: Carolyn Truskoski RN, BScN, MScN Student

Thesis Supervisor: Paula Forgeron RN, PhD Assistant Professor, University of Ottawa, Faculty of Health Sciences, School of Nursing

University Affiliation: University of Ottawa

Introduction

I am a registered nurse currently enrolled in the University of Ottawa's Master's of Science in Nursing Program. As part of my degree requirements I am carrying out a thesis research project. There has been very little research looking into what the facilitators and challenges are in pediatric pain management in Canadian rural settings. I am going to give you information about the study in this form and invite you to participate in the research. Please read this form over carefully, and ask me any questions you might have about anything that is unclear or you are not familiar with. You do not have to decide today if you want to participate, you may talk about it with someone you trust. If you have any questions you can ask me at any time, even during the research process. You may leave the study at any time (this means that if you take part you do not have to answer all the questions or you can decide you do not want your interview used in

the research). If you have questions after the study is over I will provide you with my contact information and I will answer any questions you have.

Purpose of the Research

Pediatric pain management is complex. Factors such as the child's age, cognitive or developmental ability, parental factors such as fear of opioids, communication between with the health care team members and even organizational factors can influence how pain in children is managed. Although there has been a lot of research in the last decade on strategies on how to improve pediatric pain management, research is still finding that children are in unnecessary pain while in hospital. However, there are almost no studies that explore the experience of registered nurses involved in pain management for hospitalized children in rural hospitals. Rural hospital settings may have different facilitators and challenges and therefore much of the research that has been done might not be easily transferable to the rural hospital setting.

Type of Research Intervention

This research will involve your participation in an individual interview (one on one interview) with me (the principal investigator). I will have some questions to guide the interview, but this interview is guided completely about what you think is important for me to know about providing pain care for children in the rural hospital setting. It will take approximately thirty to sixty minutes. It will take place over the telephone or Skype, whichever is most convenient to you. After the interview is over you will have the option of completing a short evaluative survey that will take approximately 2-5 minutes to complete. This survey is evaluating the recruitment methods for the study and the usefulness of Skype in nursing research. This evaluative survey is completely anonymous and a link will be emailed to you if you choose to participate. You do not have to participate in the evaluative survey to be included in the study.

Participant Selection

You are being invited to participate in this research project because you are a nurse who works with children in a rural hospital setting. I have sent out letters to all RNs who work in rural Northern Ontario that have hospitals with pediatric inpatient units/beds. Nurses spend the most amount of time with patients compared to other members of the healthcare team which is why I am interested in exploring their experiences. In order to obtain the most accurate experiences of pediatric nurses, we will only be including participants that have at least three months of experience in your current position with inpatient pediatric patients. If you are unsure of why I am asking you to participate in this study please ask me to it explain to you.

Voluntary Participation

Your participation in this study is voluntary. If you choose to participate and then change your mind during the study you can be taken out of the study, and you can choose to have any information already collected, destroyed. There are no repercussions for not participating or choosing to leave the study early. This study is not linked to your place of employment; it is an independent study that was created by thesis committee and I as part of my master's degree.

Procedures

If you choose to participate in this research study you will be asked to contact me to set up a time for the interview. During the interview you will be asked some background questions (example: age, how long you've been working as a nurse, how long you have been working at your place of employment), and about your experience in providing pain care to hospitalized children. You will also be asked about things that have gone well and things that have not gone well when delivering pain management to children. You do not have to share any knowledge that you are not comfortable sharing. If you do not wish to answer a specific question in the

interview, I will move on to the next question. No one else but myself will be present during the interview. The interview will be video and audio-recorded so that I can be attentive to what you say during the interviews and accurately analyze all the interview data. You will be given a participant identification number that will be used to identify your particular interview after it is transcribed, this will ensure your transcripts do not have any identifying information. The tape recordings will be digital and will be encrypted and password protected. The information on the recordings is confidential; only my thesis supervisor Paula Forgeron, and myself will have access to the recordings. The recordings will be destroyed 5 years after the study is complete. These word documents will not contain your identifying features (e.g. they will not contain your name or the name of the hospital where you work). The only people that will have access to the transcripts that will only have your participant identification number on it will be persons in my thesis committee and only to help me complete the research.

Duration

If you choose to participate you will only be asked to take part in one interview. The interview will last approximately 30-60 minutes. The evaluative survey component, which is completely optional, will take approximately 2-5 minutes to complete.

Risks

There are very few risks to participating in this kind of research study. However, some people may be upset when describing previously upsetting situations. If you do not wish to share these anecdotes or feelings you do not have to. The intent of the research is to learn from your experiences what is helpful and what is not helpful when trying to give the best care to hospitalized children who may be having pain. If you feel uncomfortable answering any of the

questions posed by the researcher, this is not the intent of the interview and you do not have to answer these questions. I will not ask you why do you not want to answer any questions.

Benefits

There is no direct benefit to you for participating in this study. The study results will add to the limited knowledge about facilitators and challenges for RNs working in rural hospital providing pain care to hospitalized children. The study results may be used to improve pediatric pain management practices in rural settings like the one you work in.

Reimbursements

You will not be provided with any incentives to take part in this research.

Confidentiality

The information collected in your interview will be kept private. As discussed in the above sections the interview: will be recorded; the recording will be transcribed and your name will be removed from the transcripts; a participant identification number will be used instead of your name; the recording is digital and will be encrypted and password protected; the recording will be transcribed into a document that will also be encrypted and password protected; the digital recordings will be destroyed five years after the study is over.

Anonymity

You will be given a participant identification number. Only myself (the primary researcher) and my thesis supervisor (Dr. P. Forgeron) will have access to your name and contact information and that will be encrypted and password protected. If you have any questions about confidentiality regarding the interview please ask. The evaluative survey results will post to the protected sever anonymously.

Sharing the results

The knowledge we get from this research project will be written into a master's thesis. I will also publish the results in a nursing journal for others to read so that children's pain management can be better understood. These journals are open to the public for a nominal fee to access the articles, however your hospital may have access to the journals in the hospital's library. The results from this study may also be presented in conferences. If you request a summary of the results I will email you an anonymized, summary of the results. The summary, like all presentations of the findings will not contain your identifying information but rather present the data as a whole.

Right to Refuse and Withdraw

You do not have to participate in this research project if you do not want to. If you do not participate it will not affect your job or your standing with the College of Nurses. You are allowed to change your mind and withdraw during the study, without any consequences. I will go over my notes with you at the end of the interview to make sure I have understood you correctly and you can ask for me to modify or remove any sections you do not want or you are uncomfortable with.

Who to Contact

If you have any questions after reading this form please contact the principal investigator (Carolyn). You can ask questions at any point during the research study. If you have questions after the study is over you can still contact the principal investigator.

You may contact **Carolyn Truskoski** by

Email at [REDACTED] any time OR

call her at [REDACTED] with any questions or concerns you might have.

You may contact **Dr. P. Forgeron** (Assistant Professor, School of Nursing, University of Ottawa) by email at anytime: [REDACTED] or by telephone at [REDACTED]

The **University of Ottawa Health Sciences and Sciences Research Ethics Board** has reviewed this proposal. The ethics board is a committee whose role is to make sure research participants are protected from harm. If you wish to contact someone on the research ethics board their contact information is:

The University of Ottawa Health Sciences and Sciences Research Ethics Board

Telephone number: 613-562-5387

Email: ethics@uottawa.ca

If you decide that you want to participate in this study please call or email Carolyn with the number above to arrange an interview. Before the interview starts we will go over the study information again. You will also be asked to verbally consent so that it may be video and audiotaped.

Thank you for taking the time to read my invitation to participate in the research study.

Appendix G - Information Sheet for Study II

This information sheet is a guide explaining a research project for a Master's Thesis. We invite administrators (i.e. managers, senior management, clinical educators) working in rural hospitals in Northern Ontario that have inpatient pediatric beds to participate in the research study titled: **“Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario”**

Principal Investigator: Carolyn Truskoski RN, BScN MScN student

Thesis Supervisor: Paula Forgeron RN, PhD Assistant Professor, University of Ottawa, Faculty of Health Sciences, School of Nursing

University Affiliation: University of Ottawa

Introduction

I am a registered nurse currently enrolled in the University of Ottawa's Master's of Science in Nursing Program. As part of my degree requirements I am carrying out a thesis research project. There has been very little research looking into what the facilitators and challenges are in pediatric pain management in Canadian rural settings. I am going to give you information about the study in this form and invite you to participate in the research. Please read this form over carefully, and ask me any questions you might have about anything that is unclear or you are not familiar with. You do not have to decide today if you want to participate, you may talk about it with someone you trust. If you have any questions you can ask me at any time, even during the research process. You may leave the study at any time (this means that if you take part you do not have to answer all the questions or you can decide you do not want your survey used in the research). If you have questions after the study is over I will provide you with my contact information and I will answer any questions you have.

Purpose of the Research

Pediatric pain management is complex. Factors such as the child's age, cognitive or developmental ability, parental factors such as fear of opioids, communication between with the health care team members and even organizational factors can influence how pain in children is managed. Although there has been a lot of research in the last decade on strategies on how to improve pediatric pain management, research is still finding that children are in unnecessary pain while in hospital. However, there are almost no studies that explore the experience of registered nurses involved in pain management for hospitalized children in rural hospitals. Rural hospital settings may have different facilitators and challenges and therefore much of the research that has been done might not be easily transferable to the rural hospital setting.

Type of Research Intervention

This research will involve your participation one time in an online survey that is about institutional structural supports that are available to assist RNs to deliver pediatric pain management. It will take approximately 15-20 minutes to fill out. You may fill it out when is most convenient to you. After the survey is over you will have the option of completing a short evaluative survey that will take approximately 2-5 minutes to complete. This survey is evaluating the recruitment methods for the study and the usefulness of online surveys in nursing research. You do not have to participate in the evaluative survey to be included in the study. This evaluative survey is completely anonymous and separate from the original survey.

Participant Selection

You are being invited to participate in this research project because you are an administrator (i.e. manager, director, clinical educator) associated with a rural site that has inpatient pediatric beds. I have sent out letters to all managers and senior management who work in rural Northern

Ontario that have hospitals with pediatric inpatient units/beds. Organizational context has recently been shown as a significant factor in research utilization and I feel that rural settings are unique in the challenges they face and I would like to explore those facilitators and challenges in regards to pediatric pain care. In order to obtain the most accurate information, we will only be including participants that have at least three months of experience in your current position with inpatient pediatric patients. If you are unsure of why I am asking you to participate in this study please ask me to it explain to you. Permission from your organization has not been sought.

Voluntary Participation

Your participation in this study is voluntary. If you choose to participate and then change your mind during the study you can be taken out of the study, and you can choose to have any information already collected, destroyed. There are no repercussions for not participating or choosing to leave the study early. This study is not linked to your place of employment; it is an independent study that was created by thesis committee and I as part of my master's degree.

Procedures

I am asking you to participate in an exploratory research study for my thesis. The information that is discovered in this study will help us understand more about institutional supports that are available to nurses who work in rural areas in regards to pain management and children. If you choose to participate in this research study you will be asked to complete an online survey. You do not have to share any knowledge that you are not comfortable sharing. If you do not wish to answer a specific question in the survey, you may skip it. The only people that will see the survey results will be my thesis supervisor and myself. The survey results posted will be anonymous and confidential. The survey results will be encrypted and password protected.

Duration

The survey is the only time commitment you will have to make, if you choose to participate. The survey will take approximately 15-20 minutes to fill out. The evaluative survey component, which is completely optional, will take approximately 2-5 minutes to complete.

Risks

This is a minimal risk study. We do not anticipate any risks from your participation. All identifying features (e.g. your name, hospital name) will be kept confidential and not used in any publications, presentations or write-ups of this research.

Benefits

There is no direct benefit to you for participating in this study. The study results will add to a limited body of knowledge about the structural supports and resources to support pediatric pain management in rural settings. You may find that after completing the survey that you will know more about ways to improve pain care for children at your hospital.

Reimbursements

You will not be provided with any incentives to take part in this research.

Confidentiality and Anonymity

If you share with others that you have participated in a research project, those in your community may ask you questions. The information you answer on the survey will be kept private. As discussed in the above sections the survey results that are posted are confidential and will be encrypted and password protected.

The evaluative survey results will post to the protected sever anonymously. If you have any questions about confidentiality regarding the interview please ask.

Sharing the results

The knowledge we get from this research project will be written into a master's thesis. I will also publish the results in a nursing journal for others to read so that children's pain management can be better understood. These journals are open to the public for a nominal fee to access the articles, however your hospital may have access to the journals in the hospital's library. The results from this study may also be presented in conferences. If you request a summary of the results I will email you an anonymized, summary of the results. The summary, like all presentations of the findings will not contain your identifying information but rather present the data as a whole.

Right to Refuse and Withdraw

You do not have to participate in this research project if you do not want to. If you do not participate it will not affect your job or your standing with the College of Nurses. You are allowed to change your mind and withdraw during the study, without any consequences.

Who to Contact

If you have any questions after reading this form please contact the principal investigator (Carolyn). You can ask questions at any point during the research study. If you have questions after the study is over you can still contact the principal investigator.

You may contact **Carolyn Truskoski** by

Email at [REDACTED] at any time OR

call her at [REDACTED] with any questions or concerns you might have.

You may contact **Dr. P. Forgeron** (Assistant Professor, School of Nursing, University of Ottawa) by email at anytime: [REDACTED] or by telephone at [REDACTED]

[REDACTED]

The University of Ottawa Health Sciences and Sciences Research Ethics Board

has reviewed this proposal. The ethics board is a committee whose role is to make sure research participants are protected from harm. If you wish to contact someone on the research ethics board their contact information is:

The University of Ottawa Health Sciences and Sciences Research Ethics Board

Telephone number: 613-562-5387

Email: ethics@uottawa.ca

If you decide that you want to participate in this study please contact Carolyn to confirm your eligibility and she will provide you with the survey link. If you would like to discuss the study with the researcher, please call or email her and she can also email you the link to the online survey.

Before the survey begins you will be prompted to read a consent form in order to participate in the study. If you do not wish to participate you may click “I decline” and you will not gain access to the survey.

Thank you for taking the time to read my invitation to participate in the research study.

Appendix G - Consent Form Study I**Title of the study: Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario**

Name of Researcher: Carolyn Truskoski, RN BScN MScN student
University of Ottawa, Health Sciences Department, School of Nursing

[REDACTED]
T: [REDACTED]

Name of Supervisor: Dr. Paula Forgeron, RN PhD
University of Ottawa, Health Sciences Department, School of Nursing

[REDACTED]

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Carolyn Truskoski RN BScN under the supervision of Dr. Paula Forgeron, RN PhD.

Purpose of the Study: Pediatric pain management is complex. Factors such as the age, child's cognitive or developmental ability, parental factors such as fear of opioids, communication between with the health care team members and even organizational factors can influence how pain in children is managed. Although there has been a lot of research in the last decade on strategies on how to improve pediatric pain management, studies still find that hospitalized children may experience unnecessary pain. Facilitators and challenges for successful pain management have started to be researched but most of this work has been done in tertiary pediatric centers. This study is going to explore what nurses who work in rural settings perceive as facilitators and challenges when they provide pain care to hospitalized children.

Participation: This research will involve my participation in a one on one interview with the researcher on the telephone or on Skype. There will be some questions to guide the interview, but this interview is guided completely about what I think is important. It will take approximately thirty to sixty minutes. After the interview is complete I will be asked if I want to participate in a short evaluative survey that will take approximately 2-5 minutes to complete. The link for the online survey will be emailed to me if I choose to participate. I do not have to participate in the evaluative component if I do not want to. I do not have to participate in the evaluative component in order to be included in the study.

Risks: There are very few risks to participating in this kind of research study. However, some people may find it upsetting to recall previously upsetting experiences, which may or may not happen to me. If I do not wish to share these anecdotes or feelings I do not have to. If I feel uncomfortable answered any of the questions posed by the researcher, this is not the intent of the interview. I do not have to share a reason why you uncomfortable answering any questions. I

have received assurance from the researcher that every effort will be made to minimize these risks.

Benefits: There is no direct benefit for me to participate in this study. The study results will add to the limited research on the facilitator and challenges faced by registered nurses in rural settings when providing pain care to hospitalized children.

Confidentiality and anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for this research study and dissemination of the research findings. I understand the steps that will be taken to protect my confidentiality. I know that the interview will be audio recorded and if Skype is used, video recorded for transcription. My name will not be used in the transcription and only the participant identification number will be used as an identifier.

Anonymity will be protected in the following manner. I will be given a participant identification number (PIN) and my name will not be written in the transcription or documents with my demographic information. All documents pertaining to the interview will be encrypted and password protected. My identify will not be revealed in any publications that result from this interview. All other data will have the participant identification number (PIN) only. The audio or video recordings will be destroyed 5 years after the publication of the thesis. The transcripts will be kept on the protected University of Ottawa secure sever for five years as per the University of Ottawa ethics policy. The evaluative survey will post separately from the original survey and will be completely anonymous.

Conservation of data: The data collected, both the audio recordings and the transcribed interview word documents will be encrypted and password protected. The only persons who will have access to the audiotapes will be the primary researcher Carolyn, and her supervisor Dr. Paula Forgeron. Carolyn, her supervisor and her thesis committee, will access the censored transcriptions for the purposes of peer review for the research.

Compensation: I will not be provided with any incentives to take part in this research.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be removed from the study if I request to do so. If I do not request for the data to be removed from the study it may be used in the study.

*Accepting consent to participate in this study does not mean you have consented to a loss of any of your rights as a participant. It only signifies you have read and understood the study and that you are voluntarily choosing to participate.

If I have any questions about the study, I may contact the researcher or his supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

This is my copy of the consent form. The researcher has a video and audio recording of my consent.

Appendix H - Consent Form Study II**Title of the study: Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario**

Name of Researcher: Carolyn Truskoski, RN BScN MScN Student
University of Ottawa, Health Sciences Department, School of Nursing

Name of Supervisor: Dr. Paula Forgeron, RN PhD
University of Ottawa, Health Sciences Department, School of Nursing

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Carolyn Truskoski RN BScN MScN student, and Dr. Paula Forgeron, RN PhD.

Purpose of the Study: Pediatric pain management is complex. Factors such as the age, child's cognitive or developmental ability, parental factors such as fear of opioids, communication between with the health care team members and even organizational factors can influence how pain in children is managed. Although there has been a lot of research in the last decade on strategies on how to improve pediatric pain management, studies still find that hospitalized children may experience unnecessary pain. Facilitators and challenges for successful pain management have started to be researched but most of this work has been done in tertiary pediatric centers. This study is going to explore what nurses who work in rural settings perceive as facilitators and challenges when they provide pain care to hospitalized children.

Participation: This research will involve my participation in a one time online questionnaire. It will take approximately 15-20 minutes to complete. After the survey is complete I will be asked if I want to participate in a short evaluative survey that will take approximately 2-5 minutes to complete. This survey is completely separate from the original and will be anonymous. I do not have to participate in the evaluative component if I do not want to. I do not have to participate in the evaluative component in order to be included in the study.

Risks: There are no risks in participating in this study.

Benefits: There is no direct benefit for me to participate in this study. The study results will add to a limited body of knowledge about how institutional supports available to support pediatric pain management in rural settings.

Confidentiality and anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for this research study and that my confidentiality will be protected. My name or my institution name will not be published. In order to minimize the risk of security breaches and to help ensure your confidentiality we recommend that you use standard safety measures such as using a secure connection when completing the study and signing out of your account, closing your browser and locking your screen or device when no longer using it/when you have completed the study.

Anonymity will be protected in the following manner. I will be given a participant identification number (PIN) and neither my name nor my institutions name will be identifiable on any of the analysis documents. All documents pertaining to the survey will be encrypted and password protected. My identify nor my institutions identity will not be revealed in any publications that result from this interview. All other data will have the participant identification number (PIN) only. The evaluative survey will post separately from the original survey and will be completely anonymous.

Conservation of data: The data collected will be encrypted and password protected. The only persons who will have access to the analysis documents will be the primary researcher Carolyn, and her supervisor Dr. Paula Forgeron. Carolyn, her supervisor and her thesis committee, will access the anonymous documents.

Compensation: I will not be provided with any incentives to take part in this research.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be removed from the study if I request to do so. If I do not request for the data to be removed from the study it may be used in the study. Permission from your organization has not been sought.

If I have any questions about the study, I may contact the researcher or his supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

Appendix I - Postcard Reminder

Date:

Dear _____,


This is just a reminder that the research study titled, **“Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario”** is waiting for you to respond. You will be helping us understand more about pediatric pain management in the rural setting, an understudied topic. Please contact the researcher if you would like to participate.

Thank you so much.

Sincerely,

Carolyn Truskoski RN BScN MScN Student


Supervised by:

Dr. Paula Forgeron RN PhD


Appendix J - Verbal Consent Script

This consent is for the research study titled, '**Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario**'. The purpose of this study is to explore barriers and facilitators that nurses experience in delivering pain management to the pediatric population in rural settings. Your participation in this study is limited to a one-time interview with me on the telephone or over Skype. After the interview is over you will have the option of participating in a one time evaluative survey that will take approximately 2-5 minutes to complete. You do not have to participate in the evaluative survey to be included in the study. The interview will be video and audio recorded if on Skype, and audio recorded if on the telephone in order to transcribe and analyze at a later date. The online survey will post your information anonymously. There are no risks to participating in this study, however if you suffer any emotional distress from the anecdotes you discuss with me you can contact my research supervisor Dr. Paula Forgeron to debrief. If you do not wish to answer any questions we can skip them. You do not have to share any information you do not want to. There are no direct benefits to you participating in the study, but the results will be added to a limited body of literature aimed at improving pain care management for children in rural hospital settings. All information you share with me during this interview will be confidential. Your name will not be used in the transcription and you will be assigned a participant identification number that will be used to identify your interview and demographic information. All documents and files relating to this project will be stored on the University of Ottawa's secure sever, and be password protected and encrypted. You will not be compensated for your participation in this study. You are under no obligation to participate in this study. You may choose to leave the study at any time and any information already collected may be removed form the study at any time. If you do no request

for the data to be removed from the study it may be used. If you choose to withdraw from the study there are no consequences. Do you have any questions?

Can you state and spell your name for the recording for the purposes of the consent.

This serves as documentation of verbal consent for _____(participant's name) on this date (DD/MM/YYYY) at (24:00). Do you _____(participant's name) understand the study, and give voluntary and free consent to participate in the above-mentioned study?

I, Carolyn Truskoski have to the best of my ability made sure the participant understands the above study. I confirm that the participant had opportunity to ask questions about the study, that all questions thus far have been answered, and they voluntarily verbally consented to this study.

A copy of this consent has been mailed to the participant. If you have any questions about ethical conduct of this study you may contact the ethics board, the information is listed on the consent form provided.

Appendix K - Démographique Questionnaire

PIN _____

Date _____

Time _____

DD/MMM/YYYY

Demographic Questionnaire					
Sex					
Age	20-29	30-39	40-49	50-60	60+
Education Level	Diploma	Degree	Master's	PhD	Other (please specify)
How long have you been a nurse? (in years)	0-3	4-9	10-19	20-29	30+
How long have you worked on your unit? (in years)?	0-3	4-9	10-19	20-29	30+
How long have you worked in pediatrics?					
Approximately how often do you work with children? (Daily, weekly, monthly)					
What kinds of patients do you see on your unit? (Check all that apply)	Medical	Surgical		Oncology	
What age demographics do you primarily work with on your unit (i.e. 0-18 years, mainly adults etc.)	ALL	0-1	0-3	4-12	13+
Have you always lived in a rural setting?	Yes			No	
Do you have adult care experience? (This does not include clinical training)	Yes			No	
Do RN students complete nursing clinical practice placements on your unit?	Yes			No	

Appendix L - Semi-Structured Interview Guide

1. Can you tell me about your work setting?
 - a. Probes: How many patients do you generally care for on a typical shift?
 - b. Are they all children and babies or what is the mix?
 - c. Probes: What are the most common sorts of health conditions that the children on your unit experience?
 - d. How many RNs, MDs, other staff generally work on your unit per shift? Total?
2. How often do you encounter children or teens in need of pain care on your unit?
3. How have you found pain practices have changed since you started working with children?
4. Would you say that a child's pain management is a priority on your unit?
 - a. Probes: What makes you think that?
 - b. How do you ensure that?
 - c. Do you ask parents and children about their previous pain experiences and how they deal with them?
 - d. Does your unit have a standard of care for pain practices at your hospital?
 - e. Does your unit's culture reflect this policy if it exists?
 - f. Has your manager or clinical educator or director ever discussed the priority of pain management with you or your unit?
5. If you do not know what to do to at work, where do you get your information? What are your resources? (i.e. Policies, procedures, manager, senior staff, physician, the internet, colleagues)
6. Can you tell me about a situation you had or witnessed with a child or adolescent in pain that you felt was managed well?

- a. Probes: Who was involved? How were you involved? Where did it take place? How was the child in pain? (Procedural, acute, injury, chronic) When did you know the child was in pain? When did you deliver the pain management for the child? How did you know it was effective? What made you feel like it went well? How did you know how to act? How did you feel after the event?
 - b. Was there anything about the child or parents that made this positive experience?
 - c. Was there anything your colleagues that made this a positive experience?
 - d. Was there anything about your work environment that made this a positive experience?
 - e. Was there anything about the child's ability to communicate; was it something to do with their condition, were their parents helpful?
7. Can you tell me about a situation you or witnessed with a child or adolescent in pain that did not go well, or was challenging to manage.
- a. Prompts: Who was involved? Where their child factors (age, disease, cognitive level, behaviour) that made this situation difficult? Did you have the proper tools (e.g. assessment tools, IV pumps, medications) to manage this situation? Did you have the right support (e.g. policies, protocols, administrative support)? Did you have the right expertise (e.g. your own knowledge, pain expertise, pharmacist expertise, psychology expertise)? Were the parents involved, was this helpful? Why or why not. Was it a policy or procedure issue? Did it involve resources? How did you feel during this situation?
8. What do you think are the biggest challenges for nurses in terms of providing pain care to children and teens on your unit?

9. Do you think these challenges are different for nurses who work in rural settings?
 - i. If yes, how so.
 - ii. If not, why not.
10. What do you believe are the biggest supports (facilitators) in helping nurses to provide pain care to children, teens and their families on your unit?
 - a. Do you think these supports are different for nurses who work in rural settings?
 - i. If yes, how so?
 - ii. If not, why not?
 - b. Can you tell me what you think are the specific things (resources, relationships with others, knowing the child and parents) about working in a rural hospital setting that helps when you are managing a child's pain?
11. Can you tell me what you think are the specific things (resources, relationships with others, knowing the child and parents) about working in a rural hospital setting that are barriers to managing a child's pain?
12. How do you currently receive new information about new standards of practice?
 - a. Webinars, policies, staff meetings, journal clubs, online modules, workshops, OTN?
13. How do you like to receive new information about new standards of practice?
 - a. Probes: webinars, online modules (completed at your leisure), staff meetings, journal clubs, workshops, OTN?
14. If we were going to improve pain management at your institution, what can we do differently? Or how could we go about doing that?
15. Is there anything that we have not discussed that you feel would be important for me to know about your experiences in providing pain care to children, teens and their families?

Appendix M - Confidentiality Agreement

Université d'Ottawa **University of Ottawa**
 Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

**CONFIDENTIALITY OF INFORMATION AND CONFLICT OF INTEREST AGREEMENT
THE UNIVERSITY OF OTTAWA RESEARCH ETHICS BOARD**

As a member of the research study: *Facilitators and challenges in providing pain management to pediatric population in rural Northern Ontario*, I understand that all discussions, deliberations, records, and other information generated in connection with this study is privileged information. I agree to respect and maintain the confidentiality of and to make no disclosures of such information, except to persons authorized to receive it such as Carolyn Truskoski (Primary Investigator) or Paula Forgeron (thesis supervisor).

This includes, but is not limited to the following examples:

- I will not disclose information I have transcribed to any other individual otherwise indicated.
- I will not use any information gained during the transcription process to support purposes or initiatives outside of the above study.
- I will not alter or copy any information provided to me, unless during the transcription process.
- Following transcription sessions, I agree to dispose of any paper documents in a secure manner (e.g. 'confidential waste').

I will notify Carolyn Truskoski (PI) or Paula Forgeron (thesis supervisor) of any conflicts of interest or potential conflicts of interest that may exist with the study, and will excuse myself from the study if determined necessary.

By signing below, I agree to comply with the requirements as noted above.

 Name (please print)

 Signature

 Date

Witness (please print)

Signature

Date

Appendix N - Study II Questionnaire*Confidential*

Page 1 of 13

Pediatric Pain in Rural Northern Ontario

The following questions are to confirm your eligibility for participating in the survey.

Once your eligibility has been confirmed, you will proceed to the next page which will contain the consent form. You will be able to download a print a copy for your own records. If you choose to consent to the study you will proceed to the questionnaire.

Thank you for taking the time to consider participating.

Sincerely,

Carolyn Truskoski RN BScN MScN Student

Supervisor: Dr. Paula Forgeron

Are you in an administrative position (i.e. senior management, clinical educator, clinical manager etc.) affiliated with the pediatric inpatient beds? Yes
 No
(Choose one)

WARNING: It appears you have selected "no". This is a mandatory requirement to be included in the study. You may not proceed with the study. Thank you for taking the time to confirm your eligibility.

Please click 'Okay' to terminate the survey.

Okay

Are you able to communicate (write, read, speak) in English? Yes
 No
(Choose one)

WARNING: It appears you have selected "no". This is a mandatory requirement to be included in the study. You may not proceed with the study. Thank you for taking the time to confirm your eligibility.

Please click 'Okay' to terminate the survey.

Okay

Have you been in your position for three months or more? Yes
 No
(Choose one)

WARNING: It appears you have selected "no". This is a mandatory requirement to be included in the study. You may not proceed with the study. Thank you for taking the time to confirm your eligibility.

Please click 'Okay' to terminate the survey.

Okay

Confidential

Page 2 of 13

Do you work at one of the following hospitals in Northern Ontario?

- Yes
 No
(Choose one)

- Hopital Notre Dame Hospital
- Manitoulin Health Centre
- Weeneebayko Area Health Authority
- North Bay Regional Health Centre
- Sault Area Hospital
- Timmins and District General Hospital
- Dryden Regional Health Centre
- Lake-of-the-Woods District Hospital
- Manitouwadge General Hospital

WARNING: It appears you have selected "no". This is a mandatory requirement to be included in the study. You may not proceed with the study. Thank you for taking the time to confirm your eligibility.

Please click 'Okay' to terminate the survey.

- Okay

Confidential

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Consent Form

Please read over this form carefully. There is a copy available for you to download at the end of this page.

Title of the study: Facilitators and Challenges in Providing Pain Management to the Pediatric Population in Rural Northern Ontario

Name of Researcher: Carolyn Truskoski, RN BScN MScN Student
University of Ottawa, Health Sciences Department, School of Nursing

Name of Supervisor: Dr. Paula Forgeron, RN PhD
University of Ottawa, Health Sciences Department, School of Nursing

Invitation to Participate: I am invited to participate in the above mentioned research study conducted by Carolyn Truskoski RN BScN MScN student, and Dr. Paula Forgeron, RN PhD.

Purpose of the Study: Pediatric pain management is complex. Factors such as the age, child's cognitive or developmental ability, parental factors such as fear of opioids, communication between with the health care team members and even organizational factors can influence how pain in children is managed. Although there has been a lot of research in the last decade on strategies on how to improve pediatric pain management, studies still find that hospitalized children may experience unnecessary pain. Facilitators and challenges for successful pain management have started to be researched but most of this work has been done in tertiary pediatric centers. This study is going to explore what nurses who work in rural settings perceive as facilitators and challenges when they provide pain care to hospitalized children.

Participation: This research will involve my participation in a one time online questionnaire. It will take approximately 15-20 minutes to complete. After the survey is complete I will be asked if I want to participate in a short evaluative survey that will take approximately 2-5 minutes to complete. This survey is completely separate from the original and will be anonymous. I do not have to participate in the evaluative component if I do not want to. I do not have to participate in the evaluative component in order to be included in the study.

Risks: There are no risks in participating in this study.

Benefits: There is no direct benefit for me to participate in this study. The study results will add to a limited body of knowledge about how institutional supports available to support pediatric pain management in rural settings.

Confidentiality and anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for this research study and that my confidentiality will be protected. My name or my institution name will not be published. In order to minimize the risk of security breaches and to help ensure your confidentiality we recommend that you use standard safety measures such as using a secure connection when completing the study and signing out of your account, closing your browser and locking your screen or device when no longer using it/when you have completed the study.

Anonymity will be protected in the following manner. I will be given a participant identification number (PIN) and my name nor my institutions name will be identifiable on any of the analysis documents. All documents pertaining to the survey will be encrypted and password protected. My identify nor my institutions identity will not be revealed in any publications that result from this survey. All other data will have the participant identification number (PIN) only. The evaluative survey will post separately from the original survey and will be completely anonymous.

Conservation of data: The data collected will be encrypted and password protected. The only persons who will have access to the analysis documents will be the primary researcher Carolyn Truskoski, and her supervisor Dr. Paula Forgeron. Carolyn Truskoski, her supervisor and her thesis committee, will access the anonymous documents.

Compensation: I will not be provided with any incentives to take part in this research.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be removed from the study if I request to do so. If I do not request for the data to be removed from the study it may be used in the study. Permission from your organization has not been sought.

09-03-2016 1:49pm

www.projectredcap.org



If I have any questions about the study, I may contact the researcher or her supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
Email: ethics@uottawa.ca

[Attachment: "Consent for Pediatric Pain Northern Ontario Rural Study.pdf"]

Do you consent to participating in the study?
(Choose one)

I consent I decline

It appears you have selected "I decline". This is a mandatory requirement to be included in the study. You may not proceed with the study. Thank you for taking the time to confirm your eligibility.

Please click 'Okay' to terminate the survey.

Okay

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Demographics

1. What hospital do you work at?

 (Please specify)
2. What is your sex?

 (Please specify)
3. What is your age?
 20-29
 30-39
 40-49
 50-60
 60+
 (Choose one)
4. What is your highest completed education level?
 Diploma
 Degree
 Master's Degree
 Other
 (Choose one)
4. i Other (please explain):

 (Please specify)
5. What is your position title?

 (Please specify)
6. Do you work on a pediatric unit?
 Yes
 No
 (Choose one)
6. i If no, please explain your responsibility for inpatient pediatric patients (i.e. manage pediatric beds, educating staff on current pediatric evidence etc).

 (Please specify)
7. How long have you worked at your hospital (in years)?

 (Please specify in numerics)
8. Are you an RN?
 Yes
 No
 (Choose one)
8. i If yes, how long have you been a nurse (in years)?

 (Please specify in numerics)
8. ii If no, what is your background?

 (Please specify)
9. Do you have adult care experience (this does not include clinical training)?
 Yes
 No
 (Choose one)
10. Have you always worked in a rural setting?
 Yes
 No
 (Choose one)

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Organizational Setting

1. Do RN students complete nursing clinical practice placements on your pediatric unit or take care of pediatric patients?
 - Yes
 - No
 - (Choose one)

2. Approximately how often do your staff work with pediatric patients?
 - Daily
 - Weekly
 - Monthly
 - (Choose one)

3. What types of patients do you see at your hospital where children are admitted?
 - Medical
 - Surgical
 - Oncology
 - (check all that apply)

4. What age demographics do you primarily work with on your unit?
 - All (adults and pediatrics)
 - 0-1 years
 - 0-3 years
 - 4-12 years
 - 13+ years
 - All ages of pediatrics (0-18)
 - (Choose one)

5. How many inpatient beds are there in your hospital?

(Please specify in numerics)

6. How many inpatient pediatric beds do you have allocated at your hospital?

(Please specify in numerics)

7. Approximately how many pediatric patients do you admit in a year?

(Please specify in numerics)

8. Approximately how many pediatric patients visit your hospital (including admission, day surgery, clinical and emergency department visits) per year?

(Please specify in numerics)

9. How many pediatric RNs do you have at your hospital (full and part time only)?

(Please specify in numerics)

10. How many pediatric RPNs do you have at your hospital (full and part time only)?

(Please specify in numerics)

11. Do you have designated staff to draw blood on pediatric patients?
 - Yes
 - No

11. i Who draws blood for blood tests on the pediatric patients?
 - RNs
 - Phlebotomist
 - Physicians
 - Other
 - (check all that apply)

11. i.If.RNs draw blood from patients, which ones?
 - Designated RNs
 - All RNs on the unit
 - (Choose one)

11. i.If other, please specify.

(Please specify)

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Adult Pain

1. Do you have policies or procedures governing pain management for adults at your institution?

- Yes
- No
- (Choose one)

1. i If no, please explain.

(Please specify)

2. Do you use any assessment tools to asses pain in adults at your hospital?

- Yes
- No
- (Choose one)

2. i If yes, which ones.

(Please specify)

3. Which of the following policy(s)/protocol(s)/guideline(s) do you have for nurses when they are providing pain care for adults?

- Cognitive behavioral therapies (i.e. Distraction, guided imagery)
- Physical Strategies (i.e. heat/cold therapy, comfort holding)
- Topical analgesia (EMLA, ametop)
- Patient controlled analgesia (PCA)
- Nurse controlled analgesia (NCA)
- Morphine infusions
- Dilaudid/hydromorphone infusions
- Fentanyl infusions
- As needed (prn) oral opioids
- Around the clock oral opioids
- As needed (prn) antipyretics/analgesics (i.e. Tylenol, ibuprofen)
- Around the clock antipyretics/analgesics (i.e. Tylenol, ibuprofen)
- Complimentary therapies (i.e. music therapy, therapeutic touch, pet therapy)
- None
- (Check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

3. i If yes to morphine, how is it administered?

- Continuous infusions
- Intermittent (prn)
- Intermittent (around the clock)
- None of the above
- Other
- (Check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

3. i. iOther for morphine administration, please explain.

(Please specify)

3. ii If yes to dilaudid/hydromorphone, how is it administered?

- Continuous infusions
- Intermittent (prn)
- Intermittent (around the clock)
- None of the above
- Other
- (Check all that apply)

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WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

- 3. ii. Other for dilaudid/hydromorphone administration, please explain.

(Please specify)

- 3. iii If yes to fentanyl, how is it administered?

- Continuous infusions
 - Intermittent (prn)
 - Intermittent (around the clock)
 - None of the above
 - Other
- (Check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

- 3. iii. Other for fentanyl administration, please explain.

(Please specify)

- 4. Does your institution offer formal education on adult pain management?

- Yes
 - No
- (Choose one)

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Pediatric Pain

1. Do you have policies or procedures governing pain management for pediatric patients at your institution?

- Yes
 - No
- (Choose one)

1. i. If no, please explain.

(Please specify)

2. Do you use any assessment tools to assess pain in pediatric patients at your hospital?

- Yes
 - No
- (Choose one)

2. i. If yes, which ones?

(Please specify)

3. Which of the following policy(s)/protocol(s)/guideline(s) do you have for nurses when they are providing pain care for children?

- Pain assessment and documentation policy and procedure
 - Opioid infusion policy and procedure
 - Topical analgesia policy and procedure
 - Oral opioid policy and procedure
 - Post-operative policy and procedure
 - Procedural pain care policy and procedure
 - Sucrose policy and procedure
 - PCA (patient controlled analgesia) policy and procedure
 - NCA (nurse controlled analgesia) policy and procedure
 - nerve block policy and procedure
 - epidural policy and procedure
 - None
- (check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

3. i. If yes to opioid policies, which medications have specific policies?

- Dilaudid
 - Morphine
 - Fentanyl
- (Check all that apply)

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4. What kind of treatment medication/strategies do you use to treat pain in children at your hospital?

- Oral sucrose
 - Breastfeeding
 - Kangaroo Care
 - Swaddling
 - Cognitive behavioral therapies (i.e. Distraction, guided imagery)
 - Physical Strategies (i.e. heat/cold therapy, comfort holding)
 - Topical analgesia (EMLA, ametop)
 - Patient controlled analgesia (PCA)
 - Nurse controlled analgesia (NCA)
 - Morphine infusions
 - Dilaudid/hydromorphone infusions
 - Fentanyl infusions
 - As needed (prn) oral opioids
 - Around the clock oral opioids
 - As needed (prn) antipyretics/analgesics (i.e. Tylenol, ibuprofen)
 - Around the clock antipyretics/analgesics (i.e. Tylenol, ibuprofen)
 - Complimentary therapies (i.e. music therapy, therapeutic touch, pet therapy)
 - None
- (Check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

4. i If yes to morphine, how is it administered?

- Continuous infusions
 - Intermittent (prn)
 - Intermittent (around the clock)
 - None of the above
 - Other
- (Check all that apply)

4. i. iOther for morphine administration, please explain.

(Please specify)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

4. ii If yes to dilaudid/hydromorphone, how is it administered?

- Continuous infusions
 - Intermittent (prn)
 - Intermittent (around the clock)
 - None of the above
 - Other
- (Check all that apply)

4. ii. iOther for dilaudid/hydromorphone administration, please explain.

(Please specify)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

4. iii If yes to fentanyl, how is it administered?

- Continuous infusions
 - Intermittent (prn)
 - Intermittent (around the clock)
 - None of the above
 - Other
- (Check all that apply)

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WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

4. iii. Other for fentanyl administration, please explain.

(Please specify)

5. What external resources are available to support pediatric pain care practices in your institution?

- The Hospital for Sick Children (Sick Kids)
 - Children's Hospital for Eastern Ontario (CHEO)
 - Other
 - None
- (Check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

5. i. If none, please explain.

(Please specify)

5. ii. If other, please explain.

(Please specify)

6. What internal resources are available to support pediatric pain care practices in your institution?

- Pharmacists
 - Clinical Nurse Specialists with pain expertise
 - Clinical Nurse Specialists with pediatric expertise
 - Acute Pain Service
 - Chronic Pain Service
 - Anesthesiologists
 - Implementation of the Registered Nurses Association of Ontario (RNAO) pain management best practice guidelines
 - Child Life Specialist
 - Psychologist
 - None
 - Other
- (check all that apply)

WARNING: It appears you have selected "none" and another answer. If you select "none" please do not select another choice.

6. i. If other please explain.

(Please specify)

7. Does your institution offer formal education on pediatric pain management?

- Yes
 - No
- (Choose one)

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Pain, General

1. What type of documentation do you use at your institution?
- Paper charts
 - Online charting, electronic medical record (EMR)
 - Other
- (Check all that apply)

1. i. If other, please explain.

(Please specify)

2. How does your staff document pain management at your institution?
- Flow sheet
 - Nursing notes
 - Medication administration sheet (MAR)
 - Vital sign sheet
 - Other
 - We do not document pain
- (Check all that apply)

WARNING: It appears you have selected "we do not document pain" and another answer. If you select "we do not document pain" please do not select another choice.

2. i. If you do not document pain, please explain.

(Please specify)

2. ii. If other, please explain.

(Please specify)

3. Do you educate RNs on the policies and procedures for pain assessment and treatment at your hospital? (i.e. general orientation, in-services, self-learning packages).
- Yes
 - No
- (Choose one)

3. i. If yes, how (please explain).

(Please specify)

3. ii. If no, why not (please explain)?

(Please specify)

4. Do you audit pain practices to determine adherence to pain care policies?
- Yes
 - No
- (Choose one)

4. i. If yes, how often?

(Please specify)

5. Do you have an acute pain service at your hospital?
- Yes
 - No
- (Choose one)

6. Do you have a chronic pain service/clinic at your hospital?
- Yes
 - No
- (Choose one)

7. Do you have either an acute or chronic pain service(s) dedicated to children at your hospital?
- Yes
 - No
- (Choose one)

7. i. If yes, which one(s)?
- Acute
 - Chronic
- (Check all that apply)

7. ii. If no, why not?

(Please specify)

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8. Do you have a policy about complimentary therapies for use in pain management (i.e. music therapy, pet therapy, yoga etc.)?

- Yes
 - No
- (Choose one)

8. i. If yes, which complimentary therapies are discussed?

(Please specify)

9. Does your hospital use telehealth or webinar presentations for continuing education for RNs?

- Yes
 - No
- (Choose one)

9. i. If yes, for what is it used?

(Please specify)

9. ii. If yes, how often? (approximately per month)

(Please specify in numerics)

10. Is there anything that we have not asked that you think would be helpful for us to know in terms of the types of institutional resources available to support nurses providing evidence-based pain care to children, adolescents and their families at your hospital?

Appendix O –Ethics Approval

File Number: H11-15-20

Date (mm/dd/yyyy): 12/14/2015



Université d'Ottawa **University of Ottawa**
 Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

Ethics Approval Notice Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Paula	Forgeron	Health Sciences / Nursingy	Supervisor
Carolyn	Truskoski	Health Sciences / Nursingy	Student Researcher

File Number: H11-15-20

Type of Project: Master's Thesis

Title: Facilitators and challenges in providing pain management to pediatric population in rural Northern Ontario

<u>Approval Date (mm/dd/yyyy)</u>	<u>Expiry Date (mm/dd/yyyy)</u>	<u>Approval Type</u>
12/14/2015	12/13/2016	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

N/A

File Number: H11-15-20

Date (mm/dd/yyyy): 12/14/2015



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement (2010) and other applicable laws and regulations in Ontario, has examined and approved the ethics application for the above named research project. Ethics approval is valid for the period indicated above and subject to the conditions listed in the section entitled "Special Conditions / Comments".

During the course of the project, the protocol may not be modified without prior written approval from the REB except when necessary to remove participants from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the project (e.g., change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, including consent and recruitment documentation, should be submitted to the Ethics Office for approval using the "Modification to research project" form available at: <http://research.uottawa.ca/ethics/submissions-and-reviews>.

Please submit an annual report to the Ethics Office four weeks before the above-referenced expiry date to request a renewal of this ethics approval. To close the file, a final report must be submitted. These documents can be found at: <http://research.uottawa.ca/ethics/submissions-and-reviews>.

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at: ethics@uOttawa.ca.

Signature:

Riana Marcotte
Protocol Officer for Ethics in Research
For Daniel Lagarec, Chair of the Health Sciences and Sciences REB