



UNIVERSITY of  
RWANDA

**NURSES' BARRIERS AND FACILITATORS TO MANAGEMENT OF PAIN IN  
CHILDREN IN TWO SELECTED REFERRAL HOSPITALS IN RWANDA.**

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Master's degree in nursing science (pediatrics)

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CHILDREN IN TWO SELECTED REFERRAL HOSPITALS IN RWANDA.**

**By**

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**MASTER OF SCIENCE IN NURSING (PEDIATRICS)**

In the College of Medicine and Health Science

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**CO-SUPERVISOR: Mr. Dieudonne KAYIRANGA**

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## Declaration

I, UWERA Noëlla, do hereby declare that this research dissertation entitled “*nurses barriers and facilitators to management of pain in children in 2 selected referral hospitals in Rwanda.*” submitted for the partial fulfillment of the requirements for the degree of Master in Nursing Science (Pediatrics) at the University of Rwanda/College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere. I declare that a full list of references is provided indicating all the sources of information quoted or cited.

UWERA Noëlla: 

Date: 06<sup>th</sup>/10/2022

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## Dedication

To my husband Rutagengwa Alexis and my children Rutangengwa Iganje Tovah and Rutagengwa Mico Alvah, your family warmth has been an inexhaustible source of inspiration for me, you have always surrounded me with an inexpressible and unequalled love, without your consent this work would not have been possible.

To my beloved parents for your care during my education

To my beloved immediate boss at my workplace, for your support

To all my classmates for the moments shared together

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Finally, my thanks go to all the people who supported me to carry out this research work, directly or indirectly.

## Abstract

**Background:** Pain in children is a major health concern since this causes negative impacts on the life of children and adolescents worldwide today. Nurse's barriers and facilitators to management of pain in children are rarely documented in Rwanda, despite its multiple consequences on children and their parents. However, previous studies have shown that nurses are key players, and they continue to rely on their own experiences. And yet, adequate pain management or pain relief is a basic fundamental right to everyone.

**The purpose of the study:** To assess the barriers and facilitators of pain management in children amongst nurses working at two selected referral hospitals in Rwanda.

**Methods:** This was a descriptive cross-sectional study design conducted in two referral hospitals in Kigali. The data were provided by the nurses, using a convenient sampling technique with total population. The data was analyzed using SPSS version 16.

**Results:** The majority of participants 74 (91, 4%) were female. The main facilitators of pain management were using pain assessment tool 77 (95.1%), doctors writing the correct prescriptions for pain 72 (88.9 %) and reassessment of pain after administration of pain medication 71 (87.7%). Results regarding knowledge barriers showed that 51 (63%) of respondents were concerned about lethal side effects, while 46 (56.8%) were afraid of opioid overdose (opiophobia). In practice, 35 (43.2%) of respondents indicated that patients were reluctant to report pain and 25 (30.8%) of the respondents reported that there was no clear cut of care escalation. Respondents identified that the most institutional barriers were no clear cut of care escalation 27 (33.4%) and lack of in service training 24 (29.6%).

**Conclusion:** The participants of this study identified facilitators which would allow for better pain management in children if they were put in place, but also showed barriers in different aspects, those related to knowledge, practice and institution. This study also revealed that nurses, like other hospital staff, have gaps in the management of pain in children. Based on the results of our research, it is important and urgent to provide nurses advanced training in pain management in children and to provide training sessions for parents in this area. It is also necessary to make facilitators available to overcome the obstacles encountered in the management of pain.

**Key words:** Nurse, barriers, facilitators, pain, children.

## **LIST OF SYMBOLS, AND ABBREVIATIONS/ACRONYMS**

1. CHUK: University Teaching Hospital of Kigali
2. CI: Confidence Interval
3. CMHS: College of Medicine and Health Science
4. CNS: Central Nervous System
5. IASP: International Association for the study of Pain
6. KFH: King Faisal Hospital
7. NCNM: National Council of Nurses and Midwives
8. NSAID's: Non-Steroidal Anti-inflammatory Drugs
9. PICU: Pediatric Intensive Care Unit
10. RN: Registered Nurse
11. SPSS: Statistical Package for the Social Sciences
12. UR: University of Rwanda
13. WHO: World Health Organization

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## **CHAPTER ONE: INTRODUCTION**

### **1.1. INTRODUCTION**

This chapter covers the background to pediatric pain management, problem statement, aim of the study, specific objectives, and research questions significance of the study and limitation of the study.

### **1.2. BACKGROUND**

According to World Health Organization (WHO) pain in children is a major public health problem in most parts of the world; for many children, this pain is chronic, about a quarter to a third of children suffer from acute to chronic pain and acute chronic pain in children is a major health problem since this causes negative impacts on the life of children and adolescents worldwide today [1]. Pain in pediatric population has shown to be a complex phenomenon that is experienced by most hospitalized patients therefore causing more suffering, slower recovery, higher complication rates, anxiety, sleep disturbances and a lower quality of life [2].

There is enormous evidence that shows a significant proportion of children undergoing painful nursing procedure and experience moderate to severe pain as well as high levels of pre-procedural and procedural distress[3]. The relief of pain is recognized as an important quality of pediatric medical care. For example, a study conducted in Iran to explore the experience of nurses on the facilitators and barriers to adequate pain management showed that 60% to 80% of pediatric patients have unrelieved pain [4].

Inadequate pain assessment and management results in ineffective care and prolonged hospitalization. Untreated pain can lead to significant disability and increase the risk of death in pediatric patients [5]. Nurses are often the only ones who may recognize pain endured by the hospitalized children and who carry out the advice of the physicians on pain management thus, they are well positioned to directly and indirectly affect all aspects of children's pain management. There are several impediments that prevent nurses from optimally managing children's pain but also potential facilitators include nurses' motivation to improve pain management, leveraging local resources, and an increase context specific standard[6].

A study conducted in Iran to explore the experiences of Iranian nurses on the facilitators of Pain management in children recommended that context specific strategies need to be designed and implemented to support nurses' practices in delivering recommended pediatric pain management to their patients [7]. There are numerous strategies that Rwanda has instituted to relieve pain in the pediatric population such as strengthening the nurses' education forming multidisciplinary team guidelines, development for pain assessment and management[8].

A study done in Uganda at Mulago National Referral and Teaching Hospital, showed a number of barriers faced by healthcare providers such that fewer health care provider used some evidence based comforting strategies for pediatric pain management during different nursing procedures and distraction and other evidence based strategies for pain and distress relieve are less often used by the majority of the health care providers[9]. A study done in Rwanda that looked at nurse's knowledge, attitudes, practices and challenges in one big referral hospital showed that barriers regarding pain management despite countless training courses, application strategies, and multidisciplinary pain teams were still prevalent in different forms[8].

Thus this study will highlight the gap of information about different facilitators and barriers faced by nurses working in pediatric wards in the area of pediatric pain management. Therefore, assessing different facilitators and barriers faced by nurses working in pediatric wards in the area of pain management will eventually help reduce morbidity, mortality and unnecessary cost associated with pain management. Hence, this study aims to assess barriers and facilitators to management of pain in children among nurses working at two selected referral hospitals.

### **1.3. PROBLEM STATEMENT**

Worldwide a third of patients referred to the emergency room and 70% of hospitalized patients suffer from pain within the first 24 hours of hospitalization[10]. The burden of untreated or improperly managed pain on children cannot be overstated and it spans across the short-term biopsychosocial-development. Its impacts on the suffering child, impaired pain sensitivity and chronic pain that usually cost a fortune to treat and burdens families, health systems, and nations and all of these undesirable consequences suggest the need for careful pain management in children[11].

In Rwanda, despite some strategies that have been put in place to address pain management in children; children or their parents still report some level of pain[12]. In the researcher's experience, this has been reflected by a quite number of complaints registered by the parents stipulating that their children still experience some level of pain during the continuum of hospital care. However, the barriers and facilitators amongst nurses to optimal pain management are not well documented. Therefore, the current study is aiming at assessing the barriers and facilitators faced by the nurses towards management of pain in children at two selected referral hospital in Rwanda.

### **1.4. THE AIM OF THIS STUDY**

The aim of the study is to assess the barriers and facilitators of pain management in children amongst nurses working at two selected referral hospitals in Rwanda.

#### **1.4.1. Specific objectives**

1. To assess the nurses' facilitators of pain management in children at two referral hospital in Rwanda
2. To determine nurses' barriers to pain management in children at two referral hospital in Rwanda
3. To determine the association between nurses' barriers and training on management of pain in children at two referral Hospitals in Rwanda.

## 1.5. RESEARCH QUESTIONS

1. What are the facilitators of pain management in children among nurses working at two referral hospital in Rwanda?
2. What are the barriers of pediatric pain management among nurses working at two referral hospital in Rwanda?
3. What is the association between nurses' barriers and training on pain management in children at two selected referral hospitals?

## 1.6. SIGNIFICANCE OF THE STUDY

### 1.6.1. Research

The research findings will play a role in laying out the background information for further improvement in children's pain management.

### 1.6.2. Nursing Practice

This research finding will contribute in adding to the body of knowledge to improve nursing profession through evidence-based practice nursing.

### 1.6.3. Education

The recommendation will guide the current nursing curriculum related to pain management in order to concentrate much more on facilitators and focus to alleviate barriers.

### 1.6.4. Leadership and management

The research findings serve as a reference guide to set new policies in children's pain management.

## 1.7. DEFINITIONS OF KEY TERMS

**Nurses:** According to Merriam Webster (2018) dictionary, nurses are people who look after the sick or people with infirmity, in this study nurses are defined as specifically licensed healthcare professional who practices independently or collaboratively by providing pediatric nursing care to children and working in pediatric ward at those 2 referral hospital of interest.

**Children:** According to WHO (world health organization) a child is defined in terms of developmental period between the age of 28 days of live to 5years irrespective of a disease



presence or not. According to this study, children were referred to as all patient admitted in pediatric ward from age 0 to 15 years old.

**Facilitator:** someone or something that facilitates something; especially someone who helps to bring about an outcome; however, in this study facilitators means all the factors that enable nurses to carry out optimal pain management in children.

**Barrier:** is something such as a rule, law, policy or circumstance that makes it difficult or impossible for something to happen or to be achieved; in this study the barriers meant are the factors item that hindered the nurses from performing effective proper procedure leading to optimal pain management in children.

**Pain:** According to WHO, pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage; in this study pain is referred to as an unpleasant physical experience rated by the current pain assessment tool used in the research settings.

## **1.8. STRUCTURE/ORGANIZATION OF THE STUDY**

This project divided into six following chapters; chapter one introduction which consist of definition of key terms, background, problem statement, objectives (main and specific objectives), and research questions, significance of the study and subdivision of the structure of the study, chapter two is the review of literature both theoretical and empirical, the third chapter is the research methodology, chapter four is the results presentation, the fifth chapter is the discussion of results, and chapter six is the conclusion and recommendations.

## **1.9. CONCLUSION**

The first chapter highlighted the importance of having a better pediatric pain management protocol that alleviate some outstanding barriers faced by nurses, and the need to maximize facilitators to the management of pain in children among nurses working in pediatric wards with. Nevertheless, it also highlighted the background to the barriers and facilitators faced by nurses.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. INTRODUCTION**

This literature is covered into two main parts which include theoretical and empirical literature. Moreover, all information was obtained from studies published in English since 2014. The publications were identified through literature searches using Google, Google Scholar, PubMed, HINARI, CINAHL, Cochrane Library and reference lists of published articles. Database search terms include keywords such as: pain in children, pain management, nurses' barriers and facilitators to pain management and children.

### **2.2. THEORETICAL LITERATURE**

This part covers and discusses the definition of pain and its assessment in children, children's pain management and nurse's role in children's pain management, theories on barriers to pain management in children and theories on facilitators to pain management in children.

#### **2.2.1. Definition of pain and its assessment in children**

##### **2.2.1.1. Theoretical definition of pain**

Pain in children is a public health concern of major significance worldwide. Pain is referred to as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage[1].

The very fundamental theories behind the origin of pain is found to be the "gate theory" that describes nociceptors and touch receptors. When painful stimuli reach a specific intensity, a gate opens and activates pathways leading to pain being experienced, this was later intensified with sensory-discriminative, affective-motivational and cognitive-evaluative components in a biomedical model of pain[13]. Moreover, the biomedical model explained pain as a dichotomy of physiological or psychological origin, whereby any pain response that did not correlate with the degree of tissue damage was considered psychological. Similarly, the biopsychosocial model of pain was introduced to try to explain the complexities of chronic pain[2]. Illness results from a complex interaction between various biological, psychological and social factors. Another theory named "neuromatrix" model of pain extended this further by introducing the stress component into the pain equation[3].

### **2.2.1.2. Pain assessment in children**

Standards and recommendations for pain assessment have been developed in an effort to improve pain management in Children[12].

According WHO (World Health Organization) recommendations for optimal management of pediatric pain management, the pain must be detected, located, quantified, and reassessed; its acute or chronic nature should be defined; and its cause determined; the WHO continues to emphasize that the age and cognitive development of the child arbitrarily influences the pain assessment pattern henceforth self-reported pain intensity is the gold standard for children older than age 6 years and for younger children, the use of behavioral pain scales is paramount [6].

Beltramini and colleagues reported that depending on the clinical context and the quality of the validity and reliability criteria of the tool, the caregiver choose the correct tools. Their recommendations stood out after validating numerous pain scales that existed, where each one has been verified using a particular methodology in children under 8 years whereby each pain rating scale had specific psychometric characteristics[14]. Similarly, the American Academy of Pediatrics (AAP) recommended that each pain rating scale should be validated in a specific context. However, the AAP recognizes that some scales are polyvalent and have been validated by several studies in different contexts whereby those scales have also been used to measure the discomfort of the newborn or infant[15].

### **2.2.1.3 Pediatric pain management**

It is evident that adequate pediatric pain assessment has been shown to improve the wellbeing and comfort level in ill children and inhibits pain under treatment in several instances.

A study in the United States at two regional hospitals found that the average score of nurses on the Pediatric Nurses Knowledge and Attitudes Survey was 66%[16]. In another study, conducted in a rural tertiary hospital in India, only 39% (n=350) of nurses who had regular contact with children answered all the basic questions about pain management and children correctly[16]. A study in two Canadian neonatal intensive care units (NICUs) showed that nurses' practice does not accurately reflect their knowledge of pain management. Nurses in this study scored high on pain knowledge, but only 8% provided evidence-based pain care for venipuncture in newborns[16].

for instance Canbulat and colleagues, evaluated pain management and nursing approaches in pediatric oncology found that after considering the difficulties in pediatric pain assessment and management, pediatric management consists of two approaches namely pharmacological and non-pharmacological interventions to control the patient's identified pain[17].

In pediatric context, non-pharmacological interventions are usually being favored as base line for children pain. However, the combination of non-pharmacological with pharmacological approach assists far better in lowering levels of anxiety, pain and distress and this psychological comfort measures such as relaxation techniques and distraction as well as physical interventions including the use of massage repositioning or heat and/or cold compresses are useful strategies[18].

### **Non-Pharmacological Interventions**

Currently, there are various non-pharmacological strategies being used to alleviate pain in children [9].For the purpose of this literature review, we are going to review the following techniques that are commonly used in pediatric population, sucrose, distraction, breastfeeding and skin to skin.

#### **Sucrose**

As a pain reliever, concentrated sucrose solutions (2 ml of 24% solution) may be used in small infants of 1month to 5 months of age as its analgesic effect lasts approximately 3 to 5 minutes. This technique has been shown to promote natural pain relief by activating endogenous opioids in contact with the oral mucosa. The effectiveness of sucrose solution is enhanced by allowing the infant to continue sucking on a pacifier or breastfeed[20].

#### **Distraction**

Distraction is the process of involving a child in a wide range of enjoyable activities that assist divert attention away from discomfort and anxiety. Examples of distraction activities are doing things like listening to music, singing, playing games, blowing bubbles, watching television or videos, or concentrating on an image while counting; school-age children and adolescents may find distraction through guided imagery and breathing exercises; virtual reality games were reportedly proven to be a helpful and effective distraction for children with acute burn injuries in one randomized control trial [21].

### **Breast Feeding**

Apart from being an important source for providing a range of nutrients to the breastfeeding child, breastmilk has been also found to be one of the best alternative to “no intervention” or “the use of sucrose” in patient suffering with a single painful procedure. Evidence shows that during venipunctures and heel stick procedures, breastfeeding children who were breastfed showed a substantial decrease in the variability of physiologic response as compared to other non-pharmacological interventions as opposed to those whom the intervention were done without breastfeeding [22].

### **Skin-to-Skin Contact**

A psychology and neuroscience study demonstrated that skin-to-skin contact principally Kangaroo care plays its own role in reducing pain, as the care giver and the baby have a direct physical contact and skin to skin contact was demonstrated as an effective non-pharmacological intervention in reduction of pain especially when used as adjunct therapy to breastfeeding or other sweet solutions[23].

## **Pharmacological Management of Pain**

The current pharmacologic treatment protocol of pain for children was initially adapted from adult intervention with no good empirical foundation concerning pediatric value.

Non-opioids and opioids are the most common analgesics used with the help of a "step-wise" approach to manage pain in both children and adults, depending on the degree of the pain. For the purpose of guiding subsequent interventions and ensuring the success of pain relief, it is crucial and imperative that pain be reassessed as soon as possible following any pharmacological intervention [1].

WHO demonstrated three-step analgesic ladder for treatment of pain, whereby acetaminophen (Paracetamol) was one of the non-opioids used for management of pain in children and this is the most frequently used pain-relieving agent in pediatric patients simply because it has no significant side effects and has an excellent safety profile with benefit in all levels of pain in children[24].

## **Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)**

An observational study on the use of non-steroidal anti-inflammatory drugs (NSAIDs) done in a sample of 51 patients in Italy showed that ibuprofen was the most (68.6%) used NSAID followed by ketoprofen 9.8% and acetylsalicylic acid 7.8% for pain management in children. NSAIDs usage in clinical pain treatment is now well-established [24].

## **Opioids**

Opioids are also used to treat acute pain in children, much like in the adult population. The mu-opioid receptor, which is widely distributed in sites of peripheral inflammation and throughout the CNS (central nervous system) is what causes the analgesic effect.

The variation in pharmacological response of opioids in pediatrics leads to adjustment based on clinical response, age and presence of side effects[25].

#### **2.2.1.4. Nurses roles in pediatric pain management**

Many nurses are still unaware of their importance in pain management, despite the fact that they are the ones who can differentiate between how pain affects one child from another and are able to advocate for patients and educate patients and families about the potential adverse effects of medications.

Nurses can encourage the parent of the child to report any discomfort and provide necessary intervention to the child by ensuring the child gets the pain medication they need. In contrast, although it has been studied for 20 years, pain management is still not adequately handled. Some of the attributed factors in nurses' practice, for example, nurses believe it is not the irresponsibility as prescribing pain medication is a doctor's job, whereas it is the nurses' responsibility as healthcare professionals; nurses also lack knowledge of pain management[6].

As a critical role in pain management, nurses should improve their education in understanding pain and provide themselves with the latest technique in pain management. Reassessing the pain after administration of pain interventions is important. In reassessment, nurses not only ask about the pain intensity but also evaluate the adverse effect of each intervention; It is recommended that pain is reassessed 1 hour after parenteral medication and 30 minutes after intravenous medication. Nurses should learn the best way in a clinical setting to reassess pain, as each has a different medical condition. Nurses are expected to master the WHO analgesic ladder especially for pain management in the adult. Whereas pain management in an infant or pediatric patient is quite complex, nurses are needed to assess pain when they suspect the infants or the children are in pain and report to the attending physician immediately[5].

#### **2.2.2. Theories on barriers to pain management in children**

Barriers to pain management related to nursing practice have been identified during the assessment and treatment stages; several factors have been reported to contribute to inadequate pain management practices, these concern health professionals, patients (children and parents) and the organization[26].

Staff shortages, insufficient knowledge and training on pediatric pain assessment and management, lack of pain assessment tools, inappropriate attitudes, demanding workloads, shortages of analgesics and nurses' inability to prescribe analgesics, ineffective communication with children

who have nonfunctional speech, and low prioritization of pain management have been identified in previous studies as the barriers related to nurses to adequate pain management in children[6].

According to certain studies, nurses usually avoid discussing pain issues with doctors due to their inappropriate reactions, cooperation and nurses' indifference, lack of trust in the nursing assessment of pain, inappropriate pain relief prescription by the physician, lack of time for patient education as essential barriers to pain management. Considering the widespread prevalence of pain and the difficulty of its management, it is very important to identify the barriers associated with pain management in children[10].

### **2.2.3. Theories on facilitators to pain management in children**

studies are inconsistent regarding the facilitators of pain management. It is suggested that a greater number of nurses could be the most significant facilitating factor in pain management. However, the knowledge of pain physiology and having sufficient pain management skills, using appropriate pain assessment instruments, the availability of a special pain management guideline, and receiving professional feedback on pain management were among the main facilitators of pain management [7].

Children's pain management was also seen as being significantly facilitated by a strong nurse-physician interaction; previous studies had identified this relationship between physicians, nurses and patients as a major factor in determining the quality of healthcare practices, including pain management [7].

Establishing trainings in pain management, having sufficient pain management skills, nurses' motivation for relieving the patient's pain, effective nurse-physician relationship, the proper organizational supervision on a timely patient visit by the physicians, and patient's cooperation in pain management were identified to be the most significant facilitators of pain management [10]. Nurses should be educated, empowered, and supported with the requisite material resources to effectively manage children's pain.



### **2.3. EMPIRICAL LITERATURE**

This part will enlighten on the evidence-based finding with regards to the following study variables, the facilitators to pain management in children, the nurses' barriers to pain management in children and the association between nurses' barriers and training on the management of pain in children.

#### **2.3.1. Facilitators towards management of pain in children amongst nurses**

In a study conducted in Iran whereby Iranian nurses perceived the attendance of in-service courses of pain management ( $3.39\pm 0.63$ ), having sufficient pain management skills ( $3.24\pm 0.76$ ), motivation for relieving the patient's pain ( $3.24\pm 0.81$ ), effective nurse-physician relationship ( $3.26\pm 0.68$ ), proper supervision of the organization on a timely patient visit by the physician ( $3.12\pm 0.92$ ), and patient cooperation in pain management ( $3.21\pm 0.75$ ), as the main facilitators of pain management, respectively [7].

In another cross-sectional study which was conducted on clinical nurses working in Shahid-Beheshti Hospital of Kashan City by Berben and colleagues found that the knowledge of pain physiology, using appropriate pain assessment instruments, the availability of a special pain management guideline, and receiving professional feedback on pain management were among the main facilitators of pain management [27].

Another study by Green and Palpant showed that nurses' motivation for relieving the patient's pain" was considered to be the key facilitator of pain management in the domain of attitude. Nurses have an ethical responsibility to relieve patients' pain and suffering and relieve them with great compassion [28]. Similarly, a study by and Blondal and Halldorsdottir noted that in places where nurses who had strong motivation to reduce pain, complaints about pain reduced[29].

#### **2.3.2. The nurses' barriers towards pain management in children**

In an exploratory study done in Indonesia about nurse's perceptions on barriers to pediatric pain management, showed that children remain undertreated for some reasons, such as lack of physicians' prescription and nurses' knowledge in pain assessment and management. Sometimes patient did not receive sufficient treatment for their pain, even after medication for pain relief, they still experience moderate pain simply because the nurses are not aware of this pattern [30].

Educational strategies have been implemented to increase the knowledge among healthcare professionals. However, Kholowa and colleagues have reported that nurses still face knowledge

barriers in different aspects, such as non-facilitative attitude, lack of interprofessional skills, poor teamwork, inadequate leadership, and lack of resources[31].

One of the attributed factors in nurses' practice barriers to pediatric pain management stand out to be the fact that nurses are the one who are supposed to implement WHO analgesic ladder especially for pain management in children therefore when they are not adequately trained this poses as a special barrier to their daily practice. Since pain management in an infant or pediatric patient is quite complex, nursing team should utilize all the non-pharmacological approaches available, but if the parents are not cooperative, this also stands out as a barrier[32].

In a study done by Michelle and colleagues that aimed at describing barriers to pediatric management of pain with a nursing perspective, 272 nurses reported lack of consistency in practice, insufficient pain medication orders by medical doctors, parental fear regarding opioids, time constraints whereby they mentioned for instances lack of time to prepare a child for a procedure and working with children in general for instances "a toddler can't understand that the pain medication will make them feel better". Therefore interfering with their ability to provide pain management for their patients [21]. In addition, another study done in Sweden ventured into highlighting some of the barriers whereby 21 Registered Nurses working in a pediatric unit in a moderately sized hospital were interviewed regarding factors that influence their pain management practices with children. Nurses reported a lack of cooperation with parents and physicians as negatively affecting pain management. Inability of RNs to interpret children's pain behavior, RNs' attitudes, and a lack of medication orders, time, routine, and knowledge about pain management were also highlighted as potential barriers[33].

There are also a set of barriers that includes variables that may be present in specific organizations or institutions. There is considerable evidence that shows that some of the institutional barriers are due to 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 [34]. The following examples have been identified to be other institutional barriers namely unit patterns of pain care; high workload; lack of time; insufficient supply of medication; and inadequate or insufficient medication orders and in addition, institutions have a role in facilitating the implementation of pediatric pain management strategies[35].

### 2.3.3. The sociodemographic factors associated with the nurses' practice barriers towards pediatric pain management.

#### **Age and Gender**

A study done in Italy to determine how Italian nurses manage patients suffering from pain in daily practice comparing 2 areas, it was found that there were no age differences among the areas (the Northwest, the Northeast, Central Italy, and South Italy) ( $p$  0.41) and surprisingly their practice towards pediatric pain management differed significantly. Moreover, a significant gender difference was noted ( $p$  0.004): Of the 665 people who were interviewed (95.5%), 503 were females (72.3%), as expected in the Italian gender distribution of nurses. the following finding suggest that age and gender may influence the nurses practice barriers towards pediatric pain management[24].

#### **Education and training**

In a study done at a Children's Hospital of Wisconsin which is a pediatric teaching hospital in southeastern Wisconsin that aimed at describing strategies used by the Joint Clinical Practice Council of Children's Hospital of Wisconsin to identify barriers perceived as interfering with nurses' (RNs) ability to provide optimal pain management showed that the majority of RNs (73.9%) rated themselves as 4 or 5 out of 5 (5 ¼ not at all conservative) in terms of their level of conservativeness regarding personal pain management practices, with 4.1% reporting a 1 or 2 out of 5 (1 ¼ very conservative) [22]. The same findings were noted in another study that showed that healthcare clinicians can deliver higher quality care when they have high-quality education level evidence guiding them. Thus the evidence suggests that in order to alleviate practice barriers that there is a need for clinicians to be knowledgeable in regards to the specific needs[21].

A study done in Iran on a total of 321 nurses working in a large general teaching hospital recruited by the census method with the aim to describe nurses' perspectives on the barriers and facilitators of pain management in hospitalized patients showed that the attendance of in-service courses of pain management ( $3.39\pm 0.63$ ) was associated to having less practice barriers in terms of assessment and management of pediatric pain[36].

Another study revealed that approximately half of the pediatric nurses (40.2%) ranging from 20 to 29 of age, 51% were married and 80.4% were bachelor's degree holders showed that 56.9% of the nurses who did not receive any education about pain equally demonstrated practice barriers and had insufficient knowledge about the evaluation of pain[37].

#### **2.4. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION**

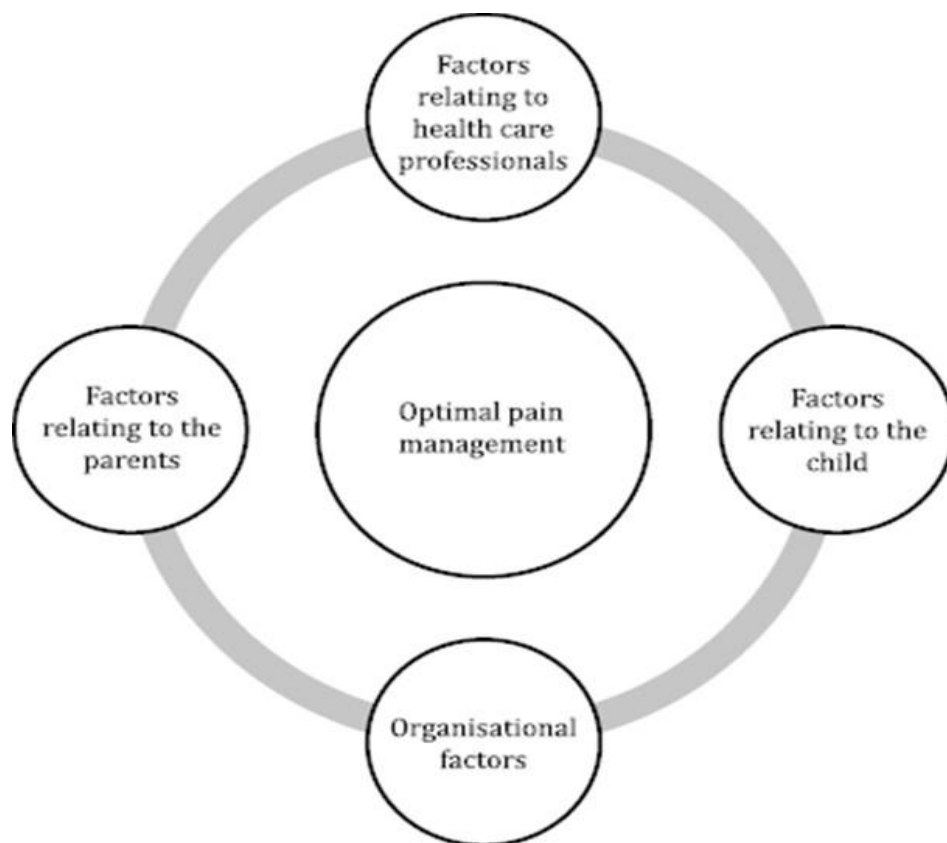
Although nurses barriers to pediatric pain management were found included in the narrative sections of studies addressing other topics, such as content for nursing education or factors influencing emergency medicine[38], relatively few studies were found that purposefully addressed barriers to pain management from pediatric nurse's perspectives and even fewer were found identifying plans to improve or ultimately eliminate the identified barriers however Educational strategies have been implemented to increase the knowledge among healthcare professionals, but some other barriers stay in lines, such as non-facilitative attitude, lack of interprofessional skills, poor teamwork, inadequate leadership, and lack of resources[36].

The study conducted in Rwanda amongst health care providers working in two tertiary hospitals on nurses' facilitators and barriers towards pain management has revealed gaps in system supporting structure and failure to maximize on the facilitators in order to mitigate the barriers which may reflect the predominance of barriers to facilitators[8].

#### **2.5. CONCEPTUAL FRAMEWORK**

This study will be guided by the conceptual framework namely Barriers to Optimal Pain Management Practices Framework published by Twycross and Williams[34]. This model was grounded on variables that linked to nurse's barriers towards pediatric pain management whereby it was grounded on 4 assumptions namely: Factors relating to the health care professionals, Factors relating to the child, Factors relating to the parents and Organizational factors.

Thus nurses working in clinical setting need to be able to be aware of the existence of this factors affecting optimal pediatric pain management.



*Figure 1. The conceptual framework by TWYXCROSS and WILLIAMS[34]*

### 2.5.1. Definitions of concepts or constructs into research variables

**Factors relating to the health care professionals:** This set of factors encompasses variables that affect appropriate pediatric pain 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. In this study noticing was equated to nurses' knowledge barriers and nurses practice barriers to pediatric pain management.

**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. 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.

**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 behavioral 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

**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. In this study this concept referred to institutional barriers to pediatric pain management.

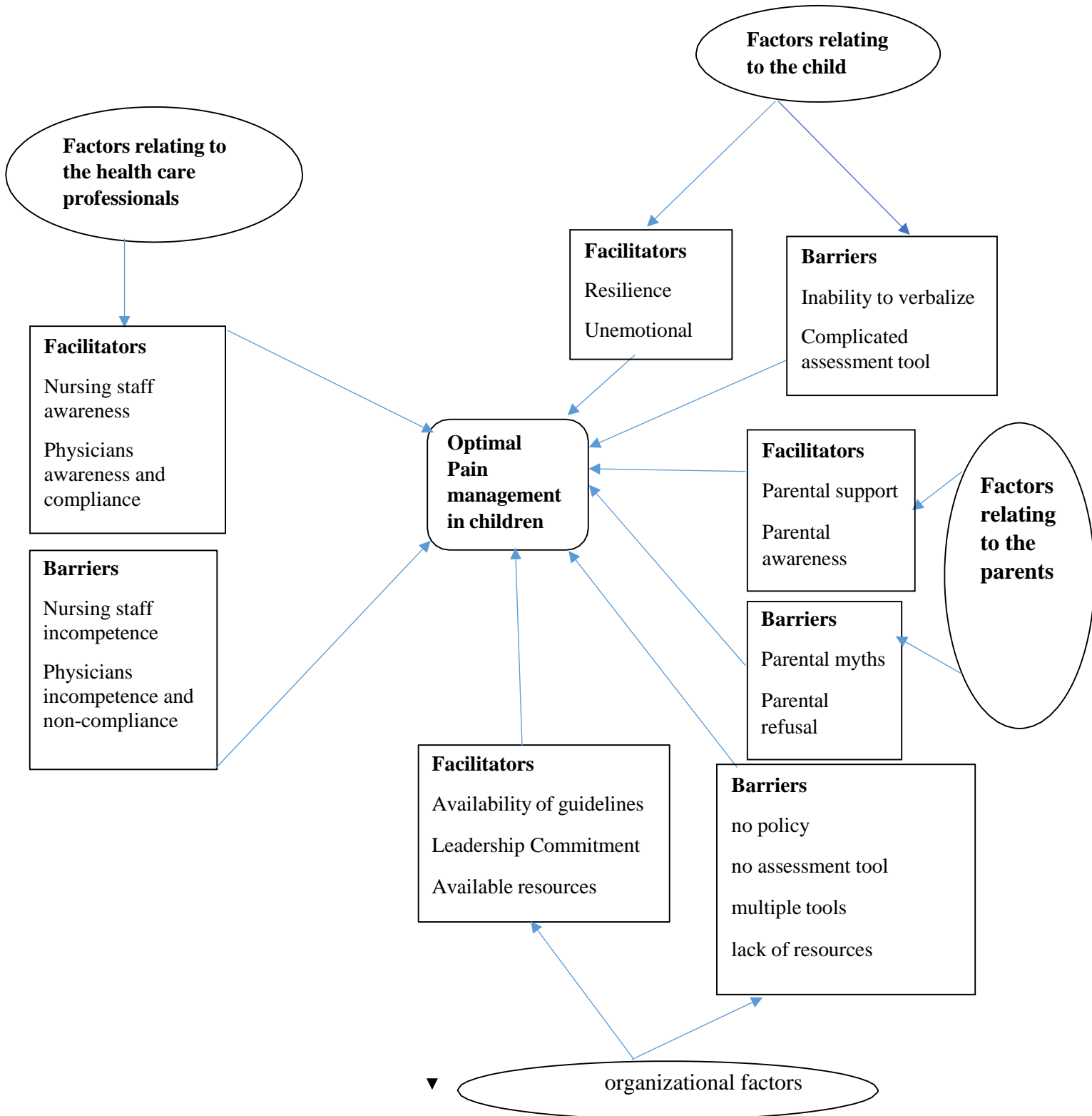


Figure 2. The conceptual framework adapted from TWYLCROSS and WILLIAMS

### 2.5.2. The conceptual framework adapted from Twycross and Williams

The complexity in understanding the challenges in providing evidence based pediatric pain management is described by the Barriers to Optimal Pain Management Practices Framework published by Twycross and Williams. The framework proposes four factors, or types of facilitators and barriers, which influence the provision of appropriate pain management.

**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 Figure 1. Barriers and facilitators to Optimal Pain Management Practices in the care of the child, including nurses, physicians, pharmacists, and allied health professionals.

**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[39]. 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 influence the provision of pain management to the child[34].

**Factors relating to the parents:** This set of facilitators and barriers encompasses those related to parent(s) or the responsible caregiver(s) (e.g. biological or adoptive parents; foster parents; or legal guardians). The barrier factors include reliance on behavioral 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, and facilitator factors include parental support and parental awareness

**Organizational factors:** This set of facilitators and barriers 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[34].

## 2.6. CONCLUSION

In chapter two, the theoretical literature highlighted that nurses working in pediatric wards play a fundamental stake in assessment and management of pediatric pain by use of various available tools, through searching evidence in empirical literature it was noted that nurses sometimes would face various barriers in achieving optimal pediatric pain management. Moreover, critical review of the literature highlighted that despite education strategies put in place nurses working in pediatric wards still face different barriers to management of pain in children.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1. INTRODUCTION**

This chapter describes the research methodology that was used in this study and it tackled the research design, research approach, research setting, population, sampling, sampling strategy, sample size, data collection instruments, data collection procedure, data analysis, ethics considerations and limitations of the study addressed.

### **3.2. RESEARCH APPROACH**

In this study, the researcher used quantitative approach where a survey questionnaire was used and questions were structured and pertained to research variable.

### **3.3. RESEARCH DESIGN**

This study used descriptive cross-sectional study design to assess nurses' barriers and facilitators of pain management in children at two selected referral hospitals in Rwanda.

### **3.4. RESEARCH SETTING**

This study was conducted in two selected referral hospitals in Rwanda, the University Teaching Hospital of Kigali (CHUK) and King Faisal Hospital, Kigali (KFH).

CHUK is the largest and biggest referral hospital of the country located in Nyarugenge district, Kigali city with 519 beds. It was constructed in 1918, used as a health center in 1928 and as a hospital in 1965. CHUK served as a health center, district hospital, and referral hospital from April 1994 to 1996. The University Teaching Hospital of Kigali was established as a public institution with legal personality in 2000 known as University Teaching Hospital of Kigali (CHUK) [40].

The primary mission of CHUK is to provide quality healthcare that meets international standards, train health professionals, contribute in the development of human resources, conduct outstanding research and provide technical support to the health system. This hospital offers a wide range of medical services, such as general pediatrics, which oversees 67 beds and includes pediatric high dependency unit, pediatric surgical ward, pediatric intensive care unit (PICU), cardiology ward, general ward, oncology ward, chronic ward, and neurosurgery ward [40].

KFH is a specialty referral and teaching hospital located in Kigali city, Gasabo district with a capacity of 160 beds. King Faisal Hospital was constructed between 1987 and 1991 with the help of the Saudi Fund for Development. It has most medical and surgical specialties and has some examination and testing infrastructure which can only be found at this hospital in Rwanda[41].

The hospital provides a different health services via various disciplines, for instance, Pediatric services that includes general pediatric and pediatric surgical with a capacity of 35 beds, and pediatric critical care with 3 bed capacity, as well as other specialized departments. The pediatric ward of this hospital receives patients aged from one month to 15 years with medical/surgical conditions that warrant hospital admission and the average number of admission is 90-95 per month[41].

### **3.5. POPULATION**

In this study, the target population consisted of registered nurses working in pediatric ward at University Teaching Hospital of Kigali (CHUK), and King Faisal Hospital meeting the inclusion criteria.

#### **3.5.1. Inclusion Criteria**

To participate in the study, the nurses were:

1. A registered nurse by the Rwanda National Council of Nurses and Midwives(NCNM) working in pediatric ward. Those registered nurses not working in pediatric department would lack the relevant experience in the management of pain in children.
2. Nurses with working experience of more than 6 months because they had experience.
3. Available during the time of data collection
4. Willing to participate

#### **3.5.2. Exclusion Criteria**

1. Nurses who were on leave during data collection.
2. Nurses below 6 months of working experience in pediatric ward because they were lacking enough experience.
3. Non consenting nurses.

### 3.6. Sample Size

To calculate the sample size, a researcher used a formula of krejcie and Morgan

$$N = \frac{X^2 NP (1-P)}{d^2(N-1) + X^2 P (1-P)}$$

Where:

**n** = required sample size.

**X<sup>2</sup>** = the critical value for the corresponding 95% confidence interval.

**N** = the population size.

**P** = the estimated proportion of the outcome (assumed to be 0.50 since we don't have any previous conducted study in Rwanda to estimate the proportion of nurses in relation to recognition and response to clinical deterioration.

**D** = is the level of significance for the study results which is set at 5%

The target population size is 95 nurses for all hospitals.

The specific sample size was calculated as follows:

$$N = (0.95)^2 \times 0.50 \times 95 (1-0.5) / (0.05)^2(95-1) + (0.95)^2 0.5(1-0.5) = 47$$

However, since this was not enough, the researcher opted to take the total population of 95 to increase the power of the statistical test, the researcher took all 95 nurses to increase the power of the statistical test.

### 3.7. SAMPLING STRATEGY

The researcher used a convenience sampling strategy to select the participants from nurses working in pediatric ward of King Faisal Hospital and University Teaching Hospital of Kigali.

The convenience sampling strategy (sometimes called an available sample, Haphazard Sampling or Accidental Sampling) is a nonprobability sample that happens to be available at the time of the data collection; elements are selected by nonrandom methods and that does not necessitate an underlying theories or a set number of participants[42]. The researcher decides what needs to be known

and aims to find people who are willing to provide the information based on their experience or knowledge.

The researcher used this sampling strategy to reach the desired sample size in each hospital depending on the representative sample for each hospital.

### **3.8. Data collection instrument**

A pretested and standardized self-administered questionnaire was used as tools for data collection. The questionnaire comprised of closed ended questions which consisted of 3 sections. The first section focused on demographic characteristics of the respondents. The second section focused on questions regarding facilitators to management of pain in children in a form of closed ended questions. The third section focused on barriers to management of pain in children in a form of closed ended questions and were categorized in the assessment of knowledge barriers, practice barriers and institutional barriers.

### **3.9. VALIDITY AND RELIABILITY OF THE INSTRUMENT**

The questionnaire that was used for this study was developed by Rosemary A. Wilson and colleagues. This questionnaire was used in their article entitled **“Barriers and facilitators to postoperative pain management in Rwanda from the perspective of health care providers.”**

The researcher had the permission to use the questionnaire from the original authors. It was adapted from the original author and was made of 16 questions regarding the first objective of assessing the facilitators to pain management in children among nurses; 31 questions regarding the second objective of assessing the barriers to pain management in children among nurses in terms of knowledge, practice and institutional barriers.

Another tool developed by Katende and Mugabi in 2015, that was used in their article entitled **“Comforting strategies and perceived barriers to pediatric pain management during IV line insertion procedure in Uganda’s national referral hospital”** was adapted by the researcher with the author’s permission in the interest of assessing the barriers to pain management in children among nurses.

This tool was tailored to pediatric patients and adapted according to context of the study, however some other questions were adopted as they were. Validation to ensure face validity of the already

modified questionnaire was done by 2 pediatric nurses' experts and 1 senior pediatrician in order to check if the tool was accurate and well adapted to clinical practice reality.

The reliability of this questionnaire was tested using test retest approach by distribution the same questionnaire two 2 times among the 5 participants; the target Cronbach alpha was not less than 0.7.

*Table 1. Content validity relating objectives, conceptual framework and questionnaire*

| Objectives  | Variables on the conceptual framework                   | variables on the questionnaire   |
|---|---|--|
| <b>Objective 1: identify facilitators to pain management in children among nurses</b> |   |  |
| <b>To identify facilitators to pain management in children among nurses</b>           | facilitators factors leading to optimal painmanagement  | Questions from section 2.<br>Item 1 to 16  |
| <b>Objective 2: To assess nurses' barriers regarding Pain management in children</b>  |   |  |
| <b>To assess nurses' barriers regarding Pain management in children</b>               | Barriers factors leading to ineffective pain management | Questions from section 3.<br>Item 1 to 12 (barriers in terms of knowledge)<br>Item 1 to 11 (barriers in terms of practice barriers)<br>Item 1 to 8 (barriers in terms of institutional barriers) |

### **3.10. DATA COLLECTION PROCEDURE**

The researcher requested for ethical clearance from IRB/CMHS and after obtaining the ethical clearance, the researcher proceeded to look for the ethical clearance from the 2 respective referral hospital namely King Faisal Hospital, Kigali and Kigali teaching university hospital, thereafter the ethical clearance was presented to the unit managers of both pediatric wards in order to get access to staff nurses. The purpose of the study was clarified to them and then the staff nurses were given all necessary information, and those who were willing to take part in the research were asked to sign a consent form.

The data was collected during 77 days, only on working days (from Monday to Friday) by answering structured and pretested self-administered closed questionnaire english version after receiving a training session. They were guaranteed about the use of the code numbers on behalf of their names. The researcher collected the envelopes that were gathered by the unit manager instead of the researcher herself collecting the questionnaire. Moreover, the nurses were informed of the duration of the data collection procedure as it was stated in ethical clearance issued by the study site authorities.

### **3.11. DATA ANALYSIS**

Data were checked daily for completeness and were cleaned, edited, counter-checked for accuracy. The SPSS version 16 was used in order to process, compile and analyze the data from questionnaires conducted during data collection using both descriptive and inferential statistical analysis.

#### **3.11.1. Descriptive statistics**

The collected data was computed in a form of frequencies, percentages, distributions, standard deviations and analyzed using SPSS version 16 to describe the socio demographic factors, nurses' barriers and facilitators to management of pain in children.

#### **3.11.2. Inferential statistics**

The association between nurses' barriers and training on management of pain in children at two referral Hospitals in Rwanda was statistically computed using Pearson chi square whereby correlation was useful, a P.Value  $\leq 0.05$  and confidence interval (CI) at 95% were considered as statistically significant.

### **3.12. ETHICAL CONSIDERATIONS**

Ethical clearance was sought from UR CMHS Institutional Review Board afterwards the review approval was sought from King Faisal Hospital and University Teaching Hospital of Kigali ethics committee.

Principle of beneficence and right to self-determination was observed by explaining the nature of the study, participants were reassured that there will be no risk involved, the academic purpose of the research was explained, the right to withdraw from the study anytime was explained and contact, it was made clear that no monetary compensation will be given out, the contact number of the researcher and UR/CMH /IRB Chairperson was given to the participants. Principle of

consent, anonymity and confidentiality was observed by obtaining a consent form from the participants, codes were used for each participants instead of their names and the responses were kept in a locked cupboard and soft copy of the data were kept in separate well protected with password folder.

### **3.13. DATA MANAGEMENT**

All data in two selected referral hospitals were collected by the researcher using a pretested questionnaire. The questionnaire was checked for completeness and data were entered in an excel sheet then imported to statistical package for the social sciences software (SPSS) version 16 in order to create a codebook for data analysis. Before analysis data cleaning was done in SPSS. The soft copies of data were kept in a password controlled personal computer only accessed by the researcher. The filled questionnaires are being kept in locked cupboard, after five years they will be discarded.

### **3.14. DATA DISSEMINATION**

After analyzing the data, the researcher will present the findings to the school of nursing and midwifery. The results will also be presented to the selected hospitals and passed across to various stakeholders that will have had positive impact to this study. The research findings will also be published in a peer reviewed journals.

### **3.15. CHALLENGES AND LIMITATIONS**

They were three challenges to this study:

1. This study was conducted among two referral hospitals in Rwanda which may limit the generalization of the findings to other referral hospitals in Rwanda.
2. Getting ethical clearance approval from the hospitals was a challenge to this study. The research ethics committee from the referral hospitals meets once in the month, so to get the ethical clearance approval from those referral hospitals delayed the scheduled time for data collection for a period of four weeks.
3. As the nurses were busy and accessing them was challenge, however this was mitigated by allowing them to respond to the questionnaire in their free time.



## **CHAPTER FOUR: RESULTS PRESENTATION**

### **4.1. Introduction to results**

The results of the data collection and analysis are reported in this chapter 4. A total of 95 nurses were expected but owing to dropouts, only 81 (85.2%) nurses working in pediatric departments were recruited and completed questionnaires about the nurses' barriers and facilitators to management of pain in children in two selected referral hospitals in Rwanda.

The data was analyzed using the Statistical Package for the Social Sciences research (SPSS version 16). Descriptive statistics were used to represent the study variables, means, standard deviations, medians, and frequencies, and inferential statistics were used to identify study variables, with Pearson chi square being used to find the association between nurses' barriers and training to management of pain in children. The information is provided in accordance with the study's objectives, and tables are used to present the study's findings, which are discussed, examined, analyzed, and summarized.

## 4.2. Socio-demographic characteristics of the research participants

Table 2. . Socio-demographic characteristics of participants

| <b>Sex</b>               | <b>Frequency</b> | <b>percentage</b> |
|--------------------------|------------------|-------------------|
| Male                     | 7                | 8.6%              |
| Female                   | 74               | 91.4%             |
| <b>Age</b>               |                  |                   |
| 25-34 years              | 37               | 45.7%             |
| 35-44 years              | 38               | 46.9%             |
| >=45 years               | 6                | 7.4%              |
| <b>Level of study</b>    |                  |                   |
| Associated nurse         | 2                | 2.5%              |
| Registered nurse A1      | 44               | 55.7%             |
| Bachelor's degree nurses | 33               | 39.3%             |
| Master's degree nurses   | 2                | 2.5%              |
| <b>Experience years</b>  |                  |                   |
| 0-5 years                | 36               | 44.4%             |
| 6-11 years               | 29               | 35.8%             |
| 12-17 years              | 16               | 19,80%            |

The table above shows that the large number 74(91.4 %) of the participants were female, the modal age group was 35-44years with 38( 46.9%). In 81 participants, more than a half 44 (55.7%) were registered nurse A1. The majority of the respondents 36 (44.4 %) had an experience of more than 6 months and less than 5 years.

### 4.3. NURSES' FACILITATORS AND BARRIERS TO MANAGEMENT OF PAIN IN CHILDREN

In this subchapter, nurses' facilitators to pain management in children and nurses' barriers to pain management in children were all interpreted using descriptive analysis. All of the variables listed above were given in tables with frequencies and percentages.

#### 4.3.1 NURSES' FACILITATORS TO MANAGEMENT OF PAIN IN CHILDREN

*Table 3. identification of facilitators to management of pain in children*

| <b>Pain Management responses by Facilitators</b>                    | <b>N</b> | <b>%</b> |
|---|----------|----------|
| <b>Using pain assessment tool</b>                                   |          |          |
| Strongly agree  | 46       | 56.8     |
| Agree   | 31       | 38.3     |
| Unsure  | 0        | 0        |
| Disagree  | 2        | 2.5      |
| Strongly disagree   | 2        | 2.5      |
| <b>Reassessment of Pain after administration of pain medication</b> |          |          |
| Strongly agree  | 45       | 55.6     |
| Agree   | 26       | 32.1     |
| Unsure  | 4        | 4.9      |
| Disagree  | 3        | 3.7      |
| Strongly disagree   | 3        | 3.7      |
| <b>Taking a patient History</b>                                     |          |          |
| Strongly agree  | 35       | 43.2     |
| Agree   | 33       | 40.7     |
| Unsure  | 5        | 6.2      |
| Disagree  | 7        | 8.6      |
| Strongly disagree   | 1        | 1.2      |
| <b>Having more time</b>   |          |          |
| Strongly agree  | 29       | 35.8     |
| Agree   | 27       | 33.3     |
| Unsure  | 12       | 14.8     |
| Disagree  | 9        | 11.1     |
| Strongly disagree   | 4        | 4.9      |
| <b>Teaching for nurses</b>  |          |          |
| Strongly agree  | 31       | 38.3     |
| Agree   | 34       | 42       |
| Unsure  | 3        | 3.7      |

|  |    |      |
|--|----|------|
| Disagree   | 8  | 9.9  |
| Strongly disagree  | 5  | 6.2  |
| <b>Doctors write the correct prescriptions for pain medication</b> |    |      |
| Strongly agree   | 40 | 49.4 |
| Agree  | 32 | 39.5 |
| Unsure   | 3  | 3.7  |
| Disagree   | 2  | 2.5  |
| Strongly disagree  | 4  | 4.9  |
| <b>Children and parents verbalizing their concerns about pain</b>  |    |      |
| Strongly agree   | 32 | 39.5 |
| Agree  | 36 | 44.4 |
| Unsure   | 5  | 6.2  |
| Disagree   | 8  | 9.9  |
| <b>Parents informing the nurses when their child is in pain</b>    |    |      |
| Strongly agree   | 39 | 48.1 |
| Agree  | 30 | 37   |
| Unsure   | 6  | 7.4  |
| Disagree   | 4  | 4.9  |
| Strongly disagree  | 2  | 2.5  |
| <b>Parental involvement in pain care</b>                           |    |      |
| Strongly agree   | 40 | 49.4 |
| Agree  | 22 | 27.2 |
| Unsure   | 11 | 13.6 |
| Disagree   | 6  | 7.4  |
| Strongly disagree  | 2  | 2.5  |
| <b>Better assessment tools</b>                                     |    |      |
| Strongly agree   | 35 | 43.2 |
| Agree  | 29 | 35.8 |
| Unsure   | 9  | 11.1 |
| Disagree   | 7  | 8.6  |
| Strongly disagree  | 1  | 1.2  |
| <b>An improved scoring system</b>                                  |    |      |
| Strongly agree   | 34 | 42   |
| Agree  | 31 | 38.3 |
| Unsure   | 11 | 13.6 |
| Disagree   | 4  | 4.9  |
| Strongly disagree  | 1  | 1.2  |

|  |    |      |
|--|----|------|
| <b>Improved staffing levels</b>  |    |      |
| Strongly agree   | 23 | 28.4 |
| Agree  | 43 | 53.1 |
| Unsure   | 6  | 7.4  |
| Disagree   | 5  | 6.2  |
| Strongly disagree  | 4  | 4.9  |
| <b>Preprinted prescription chart</b>                                     |    |      |
| Strongly agree   | 27 | 33.3 |
| Agree  | 30 | 37   |
| Unsure   | 11 | 13.6 |
| Disagree   | 8  | 9.9  |
| Strongly disagree  | 5  | 6.2  |
| <b>Having a preoperative questionnaire for parents</b>                   |    |      |
| Strongly agree   | 27 | 33.3 |
| Agree  | 23 | 28.4 |
| Unsure   | 14 | 17.3 |
| Disagree   | 5  | 6.2  |
| Strongly disagree  | 12 | 14.8 |
| <b>Availability of equipment for distraction, (e.g., dolls, teddies)</b> |    |      |
| Strongly agree   | 25 | 30.9 |
| Agree  | 32 | 39.5 |
| Unsure   | 14 | 17.3 |
| Disagree   | 7  | 8.6  |
| Strongly disagree  | 3  | 3.7  |
| <b>Increased availability of a play therapist</b>                        |    |      |
| Strongly agree   | 25 | 30.9 |
| Agree  | 27 | 33.3 |
| Unsure   | 14 | 17.3 |
| Disagree   | 11 | 13.6 |
| Strongly disagree  | 4  | 4.9  |

The above table shows the nurses' facilitators that would allow them to better manage pain in children. These facilitators are listed by the most significant as follows: Using pain assessment tool 77 (95.1%), Doctors wrote the correct prescriptions for pain 72(88.9 %); Reassessment of Pain after administration of pain medication 71(87.7%) ; Parents informed the nurses when their child is in pain 69(85.1 %) , Taking a patient History 68(83.9%) Children and parents verbalizing their concerns about pain 68(83.9%), Improved staff levels 66(81.5%), Teaching

for nurses 65(80.3 %), An improved scoring system 65(80.3%), Better assessment tools 64(79%), Parental involvement in pain care 62(76.6%), availability of equipment for distraction 57(70.4%), Preprinted prescription chart 57(70.3%), Having more time 56(69.1%), Increased availability of a play therapist 52(64.2%), and Having a preoperative questionnaire for parents 50(61.7%).

### 4.3.2 NURSES' BARRIERS TO MANAGEMENT OF PAIN IN CHILDREN

#### 4.3.2.1 Nurses barriers to management of pain in terms of knowledge

Table 4. Identification of Barriers to pain management in children (in terms of knowledge)

| Identification of Barriers   | N  | %    |
|--|----|------|
| <b>Nurses do not know that pediatric pain management has priority as much as other condition</b> |    |      |
| Strongly agree   | 11 | 13.6 |
| Agree  | 16 | 19.8 |
| Unsure   | 3  | 3.7  |
| Disagree   | 15 | 18.5 |
| Strongly disagree  | 36 | 44.4 |
| <b>Nurses are worried that children may become addicted</b>                                      |    |      |
| Strongly agree   | 7  | 8.6  |
| Agree  | 30 | 37   |
| Unsure   | 11 | 13.6 |
| Disagree   | 15 | 18.5 |
| Strongly disagree  | 18 | 22.2 |
| <b>Nurses face some limitations in assessing pain</b>  |    |      |
| Strongly agree   | 11 | 13.6 |
| Agree  | 31 | 38.3 |
| Unsure   | 4  | 4.9  |
| Disagree   | 15 | 18.5 |
| Strongly disagree  | 20 | 24.7 |
| <b>There is fear to opioid overdose by nursing staff (opiophobia)</b>                            |    |      |
| Strongly agree   | 14 | 17.3 |
| Agree  | 32 | 39.5 |
| Unsure   | 16 | 19.8 |
| Disagree   | 14 | 17.3 |
| Strongly disagree  | 5  | 6.2  |
| <b>There is a concern of lethal side effect</b>  |    |      |
| Strongly agree   | 11 | 13.6 |
| Agree  | 40 | 49.4 |
| Unsure   | 16 | 19.8 |
| Disagree   | 5  | 6.2  |
| Strongly disagree  | 9  | 11.1 |

---

|  |    |      |
|--|----|------|
| <b>There is inability to interpret the pain scale tool</b> |    |      |
| Strongly agree   | 3  | 3.7  |
| Agree  | 18 | 22.2 |
| Unsure   | 9  | 11.1 |
| Disagree   | 29 | 35.8 |
| Strongly disagree  | 22 | 27.2 |

---

|  |    |      |
|--|----|------|
| <b>The nursing staff seldomly rely on pharmacological approach while managing pain in children</b> |    |      |
| Strongly agree   | 4  | 4.9  |
| Agree  | 18 | 22.2 |
| Unsure   | 24 | 29.6 |
| Disagree   | 17 | 21   |
| Strongly disagree  | 18 | 22.2 |

---

|  |    |      |
|--|----|------|
| <b>The nursing staff seldomly rely on non-pharmacological approach while managing pain in children</b> |    |      |
| Strongly agree   | 2  | 2.5  |
| Agree  | 21 | 25.9 |
| Unsure   | 23 | 28.4 |
| Disagree   | 17 | 21   |
| Strongly disagree  | 18 | 22.2 |

---

|  |    |      |
|--|----|------|
| <b>Nursing staff aware who to report when children experience pain</b> |    |      |
| Strongly agree   | 31 | 38.3 |
| Agree  | 35 | 43.2 |
| Unsure   | 3  | 3.7  |
| Disagree   | 5  | 6.2  |
| Strongly disagree  | 7  | 8.6  |

---

|   |    |      |
|---|----|------|
| <b>Nursing staff is aware where to report when children experience pain</b> |    |      |
| Strongly agree  | 32 | 39.5 |
| Agree   | 37 | 45.7 |
| Unsure  | 2  | 2.5  |
| Disagree  | 2  | 2.5  |
| Strongly disagree   | 8  | 9.9  |

---

|  |    |      |
|--|----|------|
| <b>Nursing staff is aware when to report when children experience pain</b> |    |      |
| Strongly agree   | 32 | 39.5 |
| Agree  | 37 | 45.7 |
| Unsure   | 2  | 2.5  |
| Disagree   | 2  | 2.5  |
| Strongly disagree  | 8  | 9.9  |

---



| <b>Nursing staff is aware how to report when children experience pain</b> |    |      |
|---|----|------|
| Strongly agree  | 31 | 38.3 |
| Agree   | 37 | 45.7 |
| Unsure  | 2  | 2.5  |
| Disagree  | 3  | 3.7  |
| Strongly disagree   | 8  | 9.9  |

Among the answers given by the respondents on the knowledge barriers encountered in the management of pain in children, 51 (62.9%) showed that they are concerned about lethal side effects while 46 (56.0%) said that they were afraid of opioids overdose (opiophobia), as for the limitation in assessing pain and on the worry that children may become addicted, they answered respectively at 42 (51.8%) and 37 (45.6%). However, 51 (62.9%) agreed that pain management was a priority as much as other conditions. Nurses confirmed also that they know who 66(81.5%), where 69(85.2%), when 69(85.2%) and how 68(84%) to report to when children experience pain.

#### 4.3.2.2 Nurses' barriers to management of pain in terms of practice

Table 5. Identification of barriers regarding Pain management in children (in terms of practice)

| Assessment barriers in practice   | N  | %    |
|---|----|------|
| <b>Pediatric nurses can have a powerful influence on the management of children in pain in practice</b> |    |      |
| Strongly agree  | 47 | 58   |
| Agree   | 22 | 27.2 |
| Unsure  | 5  | 6.2  |
| Disagree  | 5  | 6.2  |
| Strongly disagree   | 2  | 2.5  |
| <b>Lack of pain tools to inform practice</b>  | 6  | 7.4  |
| Strongly agree  |    |      |
| Agree   | 15 | 18.5 |
| Unsure  | 8  | 9.9  |
| Disagree  | 27 | 33.3 |
| Strongly disagree   | 25 | 30.9 |
| <b>Physicians do not prescribe pain medications</b>   | 2  | 2.5  |
| Strongly agree  |    |      |
| Agree   | 7  | 8.8  |
| Unsure  | 10 | 12.5 |
| Disagree  | 26 | 32.5 |
| Strongly disagree   | 36 | 45   |
| <b>The treating team does not allow enough time to premedicate before procedures</b>                    |    |      |
| Strongly agree  | 4  | 4.9  |
| Agree   | 19 | 23.5 |
| Unsure  | 13 | 16   |
| Disagree  | 17 | 21   |
| Strongly disagree   | 28 | 34.6 |
| <b>Physician do not write premedication orders before procedures</b>                                    |    |      |
| Strongly agree  | 2  | 2.5  |
| Agree   | 18 | 22.2 |
| Unsure  | 10 | 12.3 |
| Disagree  | 23 | 28.4 |
| Strongly disagree   | 28 | 34.6 |

|   |    |      |
|---|----|------|
| <b>Medical staff does not give priority to pain management</b>    |    |      |
| Strongly agree  | 7  | 8.6  |
| Agree   | 6  | 7.4  |
| Unsure  | 12 | 14.8 |
| Disagree  | 25 | 30.9 |
| Strongly disagree   | 31 | 38.3 |
| <b>Parent are reluctant to give children medications</b>          |    |      |
| Strongly agree  | 6  | 7.4  |
| Agree   | 16 | 19.8 |
| Unsure  | 13 | 16   |
| Disagree  | 33 | 40.7 |
| Strongly disagree   | 13 | 16   |
| <b>Patient are reluctant to report pain</b>                       |    |      |
| Strongly agree  | 11 | 13.6 |
| Agree   | 24 | 29.6 |
| Unsure  | 13 | 16   |
| disagree  | 25 | 30.9 |
| Strongly disagree   | 8  | 9.9  |
|   | 6  | 7.4  |
| <b>Lack of pain medication in the setting</b>                     |    |      |
| Strongly agree  |    |      |
| Agree   | 14 | 17.3 |
| Unsure  | 6  | 7.4  |
| disagree  | 17 | 21   |
| Strongly disagree   | 38 | 46.9 |
| <b>Nursing staff are motivated to do proper pain management</b>   |    |      |
| Strongly agree  | 46 | 56.8 |
| Agree   | 29 | 35.8 |
| Unsure  | 3  | 3.7  |
| disagree  | 3  | 3.7  |
| <b>There is no clear cut of care escalation in painmanagement</b> |    |      |
| Strongly agree  | 7  | 8.6  |
| Agree   | 18 | 22.2 |
| Unsure  | 22 | 27.2 |
| Disagree  | 14 | 17.3 |
| Strongly disagree   | 20 | 24.7 |

In practice, 69 (85.2%) of the nurses affirmed that they can have a powerful influence in the management of children's pain and that they are motivated to manage pain correctly at 75 (92.9%). Despite this, they identified that patients were reluctant to report pain and that there was no clear cut of care escalation to management of pain respectively at 35 (43.2%) and 25 (30.8%).

#### 4.3.2.3 Nurses' barriers to management of pain in terms of institution

*Table 6. Identification of nurses' barriers to pain management in children (in terms of institution)*

| <b>Assessment of barriers in terms of institution</b>              | <b>N</b> | <b>%</b> |
|--|----------|----------|
| <b>There is Little or no leadership support</b>                    |          |          |
| Strongly agree   | 5        | 6.2      |
| Agree  | 15       | 18.5     |
| Unsure   | 9        | 11.1     |
| Disagree   | 18       | 22.2     |
| Strongly disagree  | 34       | 42       |
| <b>Lack of in-service training</b>                                 |          |          |
| Strongly agree   | 4        | 4.9      |
| Agree  | 20       | 24.7     |
| Unsure   | 4        | 4.9      |
| Disagree   | 25       | 30.9     |
| Strongly disagree  | 28       | 34.6     |
| <b>The lack of appropriate place to practice pain management</b>   |          |          |
| Strongly agree   | 6        | 7.4      |
| Agree  | 16       | 19.8     |
| Unsure   | 7        | 8.6      |
| Disagree   | 22       | 27.2     |
| Strongly disagree  | 30       | 37       |
| <b>Lack of essential drugs in pain management</b>                  |          |          |
| Strongly agree   | 7        | 8.6      |
| Agree  | 10       | 12.3     |
| Unsure   | 6        | 7.4      |
| Disagree   | 22       | 27.2     |
| Strongly disagree  | 36       | 44.4     |
| <b>There is pain management policy in place to inform practice</b> |          |          |
| Strongly agree   | 42       | 51.9     |
| Agree  | 27       | 33.3     |
| Unsure   | 4        | 4.9      |

|                   |   |     |
|-------------------|---|-----|
| Disagree          | 5 | 6.2 |
| Strongly disagree | 3 | 3.7 |

---

**There is enough staff to do appropriate pain management**

|                   |    |      |
|-------------------|----|------|
| Strongly agree    | 35 | 43.2 |
| Agree             | 28 | 34.6 |
| Unsure            | 8  | 9.9  |
| Disagree          | 6  | 7.4  |
| Strongly disagree | 4  | 4.9  |

---

**Nursing staff are motivated to do proper pain management**

|                   |    |      |
|-------------------|----|------|
| Strongly agree    | 45 | 55.6 |
| Agree             | 26 | 32.1 |
| Unsure            | 6  | 7.4  |
| Disagree          | 3  | 3.7  |
| Strongly disagree | 1  | 1.2  |

---

**There is no clear cut of care escalation in pain management**

|                   |    |      |
|-------------------|----|------|
| Strongly agree    | 8  | 9.9  |
| Agree             | 19 | 23.5 |
| Unsure            | 20 | 24.7 |
| Disagree          | 16 | 19.8 |
| Strongly disagree | 18 | 22.2 |

---

Among the 8 barriers related to the institution in the management of children's pain, the nurses identified 4 barriers that hindered the proper management of pain, in a descending order: no clear cut of care escalation in pain management 27 (33.4%), lack of in-service training 24 (29.6%), lack of appropriate place to practice pain management 22 (27.2%), little or no leadership support 20 (24.7); Nevertheless, 69 (85.2%) participants affirmed that there is pain management policy in place to inform practice and enough staff to do appropriate pain management in children at 63 (77.8%).

### 4.3.3 The association between nurses' barriers and training on management of pain in children

This part focuses on identifying the association between dependent variable lack of in service training and other covariates as the table 5 shows. The variables dependents were transformed by regrouping it into two categories instead of five.

Table 7. the association between nurses' barriers in terms of knowledge and training on management of pain in children

| KNOWLEDE<br>Covariates   | To assess the nurses barriers to pain management in children<br>(in terms of knowledge) Lack of in service training |                              |                                   |                                 | Chi-square<br>P-value |
|--|---|------------------------------|-----------------------------------|---------------------------------|-----------------------|
|  | Agree/<br>strongly<br>Estimate  | Agree/<br>strongly<br>95% CI | Disagree/<br>strongly<br>Estimate | Disagree/<br>strongly<br>95% CI |                       |
| <b>Nurses do not know that<br/>pediatric pain<br/>management has priority<br/>as much as other condition</b> |   |                              |                                   |                                 |                       |
| Strongly agree   | 0.7   | [0.3,0.9]                    | 0.3                               | [0.1,0.7]                       | 0.044                 |
| Agree  | 0.6   | [0.3,0.9]                    | 0.4                               | [0.1,0.7]                       |                       |
| Unsure   | 0.7   | [0.1,1.0]                    | 0.3                               | [0.0,0.9]                       |                       |
| Disagree   | 0.1   | [0.0,0.4]                    | 0.9                               | [0.6,1.0]                       |                       |
| Strongly disagree  | 0.2   | [0.1,0.5]                    | 0.8                               | [0.5,0.9]                       |                       |
| Total  | 0.5   | [0.3,0.7]                    | 0.5                               | [0.3,0.7]                       |                       |
| <b>Nurses are worried that<br/>children may become<br/>addicted)</b>   |   |                              |                                   |                                 |                       |
| Strongly agree   | 1   | [0.7,1.0]                    | 0                                 | [0.0,0.3]                       | 0.015                 |
| Agree  | 0.4   | [0.2,0.7]                    | 0.6                               | [0.3,0.8]                       |                       |
| Unsure   | 0.2   | [0.0,0.4]                    | 0.8                               | [0.6,1.0]                       |                       |
| Disagree   | 0.4   | [0.1,0.9]                    | 0.6                               | [0.1,0.9]                       |                       |
| Strongly disagree  | 0.1   | [0.0,0.4]                    | 0.9                               | [0.6,1.0]                       |                       |
| Total  | 0.5   | [0.3,0.7]                    | 0.5                               | [0.3,0.7]                       |                       |
| <b>Nurses face some<br/>limitations in assessing<br/>pain</b>  |   |                              |                                   |                                 |                       |
| Strongly agree   | 0.9   | [0.5,1.0]                    | 0.1                               | [0.0,0.5]                       | 0.026                 |
| Agree  | 0.3   | [0.1,0.5]                    | 0.7                               | [0.5,0.9]                       |                       |
| Unsure   | 0   |                              | 1                                 |                                 |                       |
| Disagree   | 0.4   | [0.1,0.8]                    | 0.6                               | [0.2,0.9]                       |                       |
| Strongly disagree  | 0.2   | [0.1,0.4]                    | 0.8                               | [0.6,0.9]                       |                       |
| Total  | 0.5   | [0.3,0.7]                    | 0.5                               | [0.3,0.7]                       |                       |
| <b>There is fear to opioid</b>   |   |                              |                                   |                                 |                       |

|  |     |           |     |           |       |
|--|-----|-----------|-----|-----------|-------|
| <b>overdose by nursing staff (opiophobia)</b>  |     |           |     |           |       |
| Strongly agree   | 0.8 | [0.3,1.0] | 0.2 | [0.0,0.7] | 0.061 |
| Agree  | 0.4 | [0.2,0.7] | 0.6 | [0.3,0.8] |       |
| Unsure   | 0.1 | [0.0,0.4] | 0.9 | [0.6,1.0] |       |
| Disagree   | 0.7 | [0.2,0.9] | 0.3 | [0.1,0.8] |       |
| Strongly disagree  | 0   |           | 1   |           |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>There is a concern of lethal side effect</b>  |     |           |     |           |       |
| Strongly agree   | 0.8 | [0.3,1.0] | 0.2 | [0.0,0.7] | 0.037 |
| Agree  | 0.2 | [0.1,0.4] | 0.8 | [0.6,0.9] |       |
| Unsure   | 0.4 | [0.1,0.7] | 0.6 | [0.3,0.9] |       |
| Disagree   | 0.8 | [0.3,1.0] | 0.2 | [0.0,0.7] |       |
| Strongly disagree  | 0.1 | [0.0,0.5] | 0.9 | [0.5,1.0] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>There is inability to interpret the pain scale tool</b>   |     |           |     |           |       |
| Strongly agree   | 1   |           | 0   |           | 0.088 |
| Agree  | 0.3 | [0.1,0.6] | 0.7 | [0.4,0.9] |       |
| Unsure   | 0.5 | [0.2,0.8] | 0.5 | [0.2,0.8] |       |
| Disagree   | 0.5 | [0.2,0.8] | 0.5 | [0.2,0.8] |       |
| Strongly disagree  | 0.1 | [0.0,0.3] | 0.9 | [0.7,1.0] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>The nursing staff seldomly rely on pharmacological approach while managing pain in children</b>     |     |           |     |           |       |
| Strongly agree   | 1   | [0.6,1.0] | 0   | [0.0,0.4] | 0.005 |
| Agree  | 0.3 | [0.1,0.6] | 0.7 | [0.4,0.9] |       |
| Unsure   | 0.2 | [0.1,0.4] | 0.8 | [0.6,0.9] |       |
| Disagree   | 0.5 | [0.2,0.9] | 0.5 | [0.1,0.8] |       |
| Strongly disagree  | 0.2 | [0.1,0.5] | 0.8 | [0.5,0.9] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>The nursing staff seldomly rely on non-pharmacological approach while managing pain in children</b> |     |           |     |           |       |
| Strongly agree   | 1   |           | 0   |           | 0.08  |
| Agree  | 0.7 | [0.4,0.9] | 0.3 | [0.1,0.6] |       |
| Unsure   | 0.2 | [0.0,0.4] | 0.8 | [0.6,1.0] |       |

|  |     |           |     |           |       |
|--|-----|-----------|-----|-----------|-------|
| Disagree   | 0.4 | [0.1,0.8] | 0.6 | [0.2,0.9] |       |
| Strongly disagree  | 0.2 | [0.1,0.5] | 0.8 | [0.5,0.9] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>Nursing staff is aware who to report to when children experience pain</b> |     |           |     |           |       |
| Strongly agree   | 0.5 | [0.1,0.9] | 0.5 | [0.1,0.9] |       |
| Agree  | 0.3 | [0.1,0.6] | 0.7 | [0.4,0.9] |       |
| Unsure   | 1   |           | 0   |           | 0.263 |
| Disagree   | 0.3 | [0.1,0.8] | 0.7 | [0.2,0.9] |       |
| Strongly disagree  | 0.2 | [0.0,0.6] | 0.8 | [0.4,1.0] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>Nursing staff is aware where to report when children experience pain</b>  |     |           |     |           |       |
| Strongly agree   | 0.5 | [0.1,0.9] | 0.5 | [0.1,0.9] |       |
| Agree  | 0.5 | [0.2,0.8] | 0.5 | [0.2,0.8] |       |
| Unsure   | 0.7 | [0.1,1.0] | 0.3 | [0.0,0.9] | 0.847 |
| Disagree   | 0   |           | 1   |           |       |
| Strongly disagree  | 0.5 | [0.2,0.8] | 0.5 | [0.2,0.8] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>Nursing staff is aware when to report when children experience pain</b>   |     |           |     |           |       |
| Strongly agree   | 0.5 | [0.1,0.9] | 0.5 | [0.1,0.9] |       |
| Agree  | 0.3 | [0.1,0.6] | 0.7 | [0.4,0.9] |       |
| Unsure   | 0.7 | [0.1,1.0] | 0.3 | [0.0,0.9] | 0.174 |
| Disagree   | 1   | [0.6,1.0] | 0   | [0.0,0.4] |       |
| Strongly disagree  | 0.5 | [0.2,0.8] | 0.5 | [0.2,0.8] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |
| <b>Nursing staff is aware how to report when children experience pain</b>    |     |           |     |           |       |
| Strongly agree   | 0.5 | [0.1,0.9] | 0.5 | [0.1,0.9] |       |
| Agree  | 0.3 | [0.1,0.6] | 0.7 | [0.4,0.9] |       |
| Unsure   | 0.7 | [0.1,1.0] | 0.3 | [0.0,0.9] |       |
| Disagree   | 0.9 | [0.5,1.0] | 0.1 | [0.0,0.5] | 0.244 |
| Strongly Disagree  | 0.5 | [0.2,0.8] | 0.5 | [0.2,0.8] |       |
| Total  | 0.5 | [0.3,0.7] | 0.5 | [0.3,0.7] |       |



The above table shows that 70% of participants who strongly agreed that children pain is not a priority as other conditions confirmed the lack of in service training, we observed an association which is statistically significant between their statement and lack of in service training (CI:0.3;0.9, p=0.044). 100% of nurses who strongly agreed that children may become addicted confirm lack of in service training at their institutions. We observed an association which is statistically significant between their statement and lack of in service training (CI: 0.7; 1.0, P= 0.015).

We observed that nurses face some limitations in assessing pain due to lack of in service training whereby 90% of nurses were strongly agree. There is a statistical association between limitations in assessing pain and lack of training (CI:0.5 ;1.0, P= 0.026).

80% of nurses, strongly agreed that there is a concern of lethal side effect which confirm the lack of in service training. We observed an association between concern of lethal side effect and lack in service training with statistical significant (CI:0.3; 1.0, P= 0.037)

100% strongly agreed that nursing staff seldomly rely on pharmacological approach while managing pain in children due to lack of training which is confirmed by a statistical association between the two variables (CI: 0.6; 1.0, P= 0.005)

Table 8. the association between nurses' barriers in terms of practice and training on management of pain in children

| Practice covariates   | RECODE of e2 (To assess the nurses barriers to pain management in children (in terms of practice)) |                       |                    |                    |                |
|---|--|-----------------------|--------------------|--------------------|----------------|
|   | disagree/<br>strongly  | disagree/<br>strongly | Agree/<br>Strongly | Agree/<br>Strongly | Chi-<br>square |
|   | Row %  | 95% CI                | Row %              | 95% CI             | P-value        |
| <b>Pediatric nurses can have a powerful influence on the management of children in pain in practice</b> |  |                       |                    |                    |                |
| Strongly agree (n=47)   | 51.1   | [18.1,83.2]           | 48.9               | [16.8,81.9]        | 0.835          |
| Agree (n=22)  | 45.1   | [14.5,79.9]           | 54.9               | [20.1,85.5]        |                |
| Unsure (n=5)  | 60.9   | [14.1,93.6]           | 39.1               | [6.4,85.9]         |                |
| Disagree (n=5)  | 68   | [15.4,96.1]           | 32                 | [3.9,84.6]         |                |
| Strongly disagree (n=2)   | 0  |                       | 100                |                    |                |
| Total (n=81)  | 51.1   | [28.1,73.7]           | 48.9               | [26.3,71.9]        |                |
| <b>Lack of pain tools to inform practice</b>  |  |                       |                    |                    |                |
| Strongly agree (n=6)  | 8.4  | [0.6,58.0]            | 91.6               | [42.0,99.4]        | 0.013          |
| Agree (n=15)  | 56.6   | [28.0,81.4]           | 43.4               | [18.6,72.0]        |                |
| Unsure (n=8)  | 90.5   | [56.7,98.6]           | 9.5                | [1.4,43.3]         |                |
| Disagree (n=27)   | 54.8   | [23.4,82.8]           | 45.2               | [17.2,76.6]        |                |
| Strongly disagree (n=25)  | 83.1   | [60.2,94.1]           | 16.9               | [5.9,39.8]         |                |
| Total (n=81)  | 51.1   | [28.1,73.7]           | 48.9               | [26.3,71.9]        |                |
| <b>Physicians do not prescribe pain medications</b>   |  |                       |                    |                    |                |
| Strongly agree (n=2)  | 2  | [0.1,25.8]            | 98                 | [74.2,99.9]        | 0.017          |
| Agree (n=7)   | 31.4   | [6.9,73.9]            | 68.6               | [26.1,93.1]        |                |
| Unsure (n=10)   | 69   | [31.9,91.3]           | 31                 | [8.7,68.1]         |                |
| Disagree (n=26)   | 65.1   | [23.3,92.0]           | 34.9               | [8.0,76.7]         |                |
| Strongly disagree (n=36)  | 71.7   | [52.3,85.4]           | 28.3               | [14.6,47.7]        |                |
| Total (n=81)  | 50.3   | [27.3,73.2]           | 49.7               | [26.8,72.7]        |                |
| <b>The treating team does not allow enough time to premedicate before procedures</b>                    |  |                       |                    |                    |                |
| Strongly agree (n=4)  | 3.6  | [0.4,28.0]            | 96.4               | [72.0,99.6]        | 0.015          |
| Agree (n=19)  | 33.7   | [13.2,63.0]           | 66.3               | [37.0,86.8]        |                |

|  |      |             |      |             |       |
|--|------|-------------|------|-------------|-------|
| Unsure (n=13)  | 82.2 | [49.4,95.6] | 17.8 | [4.4,50.6]  |       |
| Disagree (n=17)  | 67.6 | [20.8,94.3] | 32.4 | [5.7,79.2]  |       |
| Strongly disagree (n=28)   | 64.2 | [40.6,82.6] | 35.8 | [17.4,59.4] |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>Physician do not write premedication orders before procedures</b> |      |             |      |             |       |
| Strongly agree (n=2)   | 2    | [0.1,25.8]  | 98   | [74.2,99.9] |       |
| Agree (n=18)   | 32.6 | [12.8,61.3] | 67.4 | [38.7,87.2] |       |
| Unsure (n=10)  | 76.3 | [39.4,94.1] | 23.7 | [5.9,60.6]  | 0.014 |
| Disagree (n=23)  | 70.6 | [25.2,94.5] | 29.4 | [5.5,74.8]  |       |
| Strongly disagree (n=28)   | 61.9 | [38.2,81.0] | 38.1 | [19.0,61.8] |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>Medical staff does not give priority to pain management</b>       |      |             |      |             |       |
| Strongly agree (n=7)   | 5.3  | [0.5,35.9]  | 94.7 | [64.1,99.5] |       |
| Agree (n=6)  | 9.5  | [1.6,41.0]  | 90.5 | [59.0,98.4] |       |
| Unsure (n=12)  | 72.8 | [37.8,92.1] | 27.2 | [7.9,62.2]  | 0.003 |
| Disagree (n=25)  | 65.1 | [23.7,91.8] | 34.9 | [8.2,76.3]  |       |
| Strongly disagree (n=31)   | 83.4 | [65.6,93.0] | 16.6 | [7.0,34.4]  |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>Parent are reluctant to give children medications</b>             |      |             |      |             |       |
| Strongly agree (n=6)   | 1.8  | [0.1,21.1]  | 98.2 | [78.9,99.9] |       |
| Agree (n=16)   | 48.3 | [19.8,77.9] | 51.7 | [22.1,80.2] |       |
| Unsure (n=13)  | 67.6 | [36.2,88.4] | 32.4 | [11.6,63.8] | 0.002 |
| Disagree (n=33)  | 64.6 | [28.4,89.4] | 35.4 | [10.6,71.6] |       |
| Strongly disagree (n=13)   | 87.8 | [46.1,98.4] | 12.2 | [1.6,53.9]  |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>Patient are reluctant to report pain</b>                          |      |             |      |             |       |
| Strongly agree (n=11)  | 17.3 | [2.8,60.1]  | 82.7 | [39.9,97.2] |       |
| Agree (n=24)   | 42.3 | [19.7,68.8] | 57.7 | [31.2,80.3] |       |
| Unsure (n=13)  | 69.8 | [35.7,90.6] | 30.2 | [9.4,64.3]  | 0.083 |
| Disagree (n=25)  | 65.3 | [25.0,91.4] | 34.7 | [8.6,75.0]  |       |
| Strongly disagree (n=8)  | 100  |             | 0    |             |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>Lack of pain medication in the setting (missing)</b>              |      |             |      |             |       |

|  |       |              |      |             |       |
|--|-------|--------------|------|-------------|-------|
| Strongly agree(n=6)  | 51.1  | [18.1, 83.2] | 48.9 | [16.8,81.9] |       |
| Agree(n=14)  | 45.1  | [14.5, 79.9] | 54.9 | [20.1,85.5] |       |
| Unsure(n=6)  | 60.9  | [14.1, 93.6] | 39.1 | [6.4,85.9]  |       |
| Disagree(n=17)   | 68    | [15.4, 96.1] | 32   | [3.9,84.6]  |       |
| Strongly disagree(n=38)  | 0     |              | 100  |             |       |
| Total(n=81)  | 51.1% | [28.1, 73.7] | 48.9 | [26.3,71.9] | 0.835 |
| <b>Nursing staff are motivated to do proper pain management</b>    |       |              |      |             |       |
| Strongly agree (n=46)  | 47.7  | [16.7,80.6]  | 52.3 | [19.4,83.3] |       |
| Agree (n=29)   | 48.8  | [18.9,79.6]  | 51.2 | [20.4,81.1] |       |
| Unsure (n=3)   | 100   |              | 0    |             | 0.753 |
| Disagree (n=3)   | 64.6  | [13.3,95.6]  | 35.4 | [4.4,86.7]  |       |
| Total (n=81)   | 51.1  | [28.1,73.7]  | 48.9 | [26.3,71.9] |       |
| <b>There is no clear cut of care escalation in pain management</b> |       |              |      |             |       |
| Strongly agree (n=7)   | 2.4   | [0.2,19.5]   | 97.6 | [80.5,99.8] |       |
| Agree (n=18)   | 42.2  | [17.4,71.6]  | 57.8 | [28.4,82.6] |       |
| Unsure (n=22)  | 91    | [69.8,97.8]  | 9    | [2.2,30.2]  | 0.004 |
| Disagree (n=14)  | 56.2  | [14.8,90.5]  | 43.8 | [9.5,85.2]  |       |
| Strongly disagree (n=20)   | 80.3  | [55.3,93.1]  | 19.7 | [6.9,44.7]  |       |
| Total (n=81)   | 51.1  | [28.1,73.7]  | 48.9 | [26.3,71.9] |       |

The table above shows an association between lack of pain tools to inform practice and lack of in service training whereby 83.1% of nurses were strongly disagree which is statistically significant (CI:60.2; 94.1, P=0.013); however, there is no agreement that Lack of pain tools to inform practice is linked to lack of in service training.

98% were strongly agree that physicians do not prescribe pain medications, which is linked with lack of in service training, and confirmed by the association between the two variables (CI: 74.2 ;99.9, P=0.017).

96,4% were strongly agree that the treating team does not allow enough time to premedicate before procedures which is associated with in service training (CI: 72.0 ;99.6, P= 0.015).

Physician do not write premedication orders before procedures as 98% of nurses strongly agreed which is associated with lack of in service training and statistically significant (CI: 74.2 ;99.9, P= 0.014).

94.7% strongly agreed that medical staff does not give priority to pain management and this is associated with lack of in service training and statistically significant (CI:64.1 ;99.5, P= 0.003).

98,2% of participants strongly agreed that parents are reluctant to give children medications which is associated with lack of in service training (CI: 78.9 ;99.9, P=0.002).

97.6% strongly agreed that there is no clear cut of care escalation in pain management which is linked with lack of in service training and statistically significant (CI: 80.5 ;99.8, P=0.004).

Table 9. the association between nurses' barriers in terms of institution and training on management of pain in children

| Institution covariates   | To assess the nurses barriers to pain management in children (in terms of institution) |                   |                |                | Chi-square P-value |
|--|--|-------------------|----------------|----------------|--------------------|
|  | disagree/strongly  | disagree/strongly | Agree/Strongly | Agree/Strongly |                    |
|  | Row %  | 95% CI            | Row %          | 95% CI         |                    |
| <b>There is Little or no leadership support</b>                    |  |                   |                |                |                    |
| Strongly agree (n=5)   | 10.7   | [0.9,62.1]        | 89.3           | [37.9,99.1]    | 0.013              |
| Agree (n=15)   | 27.8   | [9.3,59.3]        | 72.2           | [40.7,90.7]    |                    |
| Unsure (n=9)   | 92   | [64.1,98.7]       | 8              | [1.3,35.9]     |                    |
| Disagree (n=18)  | 61.6   | [18.1,92.1]       | 38.4           | [7.9,81.9]     |                    |
| Strongly disagree (n=34)   | 91.1   | [74.1,97.4]       | 8.9            | [2.6,25.9]     |                    |
| Total (n=81)   | 51.1   | [28.1,73.7]       | 48.9           | [26.3,71.9]    |                    |
| <b>The lack of appropriate place to practice pain management</b>   |  |                   |                |                |                    |
| Strongly agree (n=6)   | 16.3   | [1.8,67.5]        | 83.7           | [32.5,98.2]    | 0.019              |
| Agree (n=16)   | 12.9   | [3.3,38.9]        | 87.1           | [61.1,96.7]    |                    |
| Unsure (n=7)   | 87.4   | [49.3,98.0]       | 12.6           | [2.0,50.7]     |                    |
| Disagree (n=22)  | 67.1   | [21.7,93.8]       | 32.9           | [6.2,78.3]     |                    |
| Strongly disagree (n=30)   | 90.5   | [71.7,97.3]       | 9.5            | [2.7,28.3]     |                    |
| Total (n=81)   | 51.1   | [28.1,73.7]       | 48.9           | [26.3,71.9]    |                    |
| <b>Lack of essential drugs in pain management</b>                  |  |                   |                |                |                    |
| Strongly agree (n=7)   | 13.8   | [1.5,63.6]        | 86.2           | [36.4,98.5]    | 0.04               |
| Agree (n=10)   | 24.9   | [6.4,61.7]        | 75.1           | [38.3,93.6]    |                    |
| Unsure (n=6)   | 64.6   | [18.9,93.5]       | 35.4           | [6.5,81.1]     |                    |
| Disagree (n=22)  | 61.6   | [22.9,89.6]       | 38.4           | [10.4,77.1]    |                    |
| Strongly disagree (n=36)   | 89.6   | [73.3,96.4]       | 10.4           | [3.6,26.7]     |                    |
| Total (n=81)   | 51.1   | [28.1,73.7]       | 48.9           | [26.3,71.9]    |                    |
| <b>There is pain management policy in place to inform practice</b> |  |                   |                |                |                    |
| Strongly agree (n=42)  | 45.4   | [15.1,79.5]       | 54.6           | [20.5,84.9]    | 0.493              |

|  |      |             |      |             |       |
|--|------|-------------|------|-------------|-------|
| Agree (n=27)   | 39.9 | [13.8,73.4] | 60.1 | [26.6,86.2] |       |
| Unsure (n=4)   | 100  |             | 0    |             |       |
| Disagree (n=5)   | 71.6 | [16.2,97.1] | 28.4 | [2.9,83.8]  |       |
| Strongly disagree (n=3)  | 80.9 | [24.8,98.2] | 19.1 | [1.8,75.2]  |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>There is enough staff to do appropriate pain management</b>     |      |             |      |             |       |
| Strongly agree (n=35)  | 55.4 | [17.7,87.7] | 44.6 | [12.3,82.3] |       |
| Agree (n=28)   | 32.5 | [10.4,66.7] | 67.5 | [33.3,89.6] |       |
| Unsure (n=8)   | 29.7 | [6.9,70.8]  | 70.3 | [29.2,93.1] | 0.509 |
| Disagree (n=6)   | 72.7 | [17.7,97.1] | 27.3 | [2.9,82.3]  |       |
| Strongly disagree (n=4)  | 87.2 | [40.0,98.6] | 12.8 | [1.4,60.0]  |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>Nursing staff are motivated to do proper pain management</b>    |      |             |      |             |       |
| Strongly agree (n=45)  | 56.3 | [19.1,87.6] | 43.7 | [12.4,80.9] |       |
| Agree (n=26)   | 30   | [10.5,60.9] | 70   | [39.1,89.5] |       |
| Unsure (n=6)   | 30.2 | [6.5,72.9]  | 69.8 | [27.1,93.5] | 0.322 |
| Disagree (n=3)   | 100  |             | 0    |             |       |
| Strongly disagree (n=1)  | 100  |             | 0    |             |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |
| <b>There is no clear cut of care escalation in pain management</b> |      |             |      |             |       |
| Strongly agree (n=8)   | 9.7  | [1.3,46.1]  | 90.3 | [53.9,98.7] |       |
| Agree (n=19)   | 59.1 | [29.0,83.6] | 40.9 | [16.4,71.0] |       |
| Unsure (n=20)  | 65.4 | [35.3,86.7] | 34.6 | [13.3,64.7] | 0.114 |
| Disagree (n=16)  | 62.2 | [16.1,93.4] | 37.8 | [6.6,83.9]  |       |
| Strongly disagree (n=18)   | 77.6 | [50.6,92.1] | 22.4 | [7.9,49.4]  |       |
| Total (n=81)   | 51.1 | [28.1,73.7] | 48.9 | [26.3,71.9] |       |

Among 81 nurses who participated in the study as showed in the table 9, we have found that 91, 1 % of nurses who responded on the statement there is Little or no leadership support, strongly disagree and they confirm lack of in service training in their institutions. With an association

between the two variables statistically significant (CI:74.1;97.4, P=0.013).

87.1% of nurses who responded on the lack of appropriate place to practice pain management strongly disagree with the statement and they confirm lack of in service training in their institutions.

We observed an association between the lack of appropriate place to practice pain management and lack of in service training with statistical significance (CI :61.1; 96.7, P= 0.019)

We have also found that 89.6% of nurses who responded on lack of essential drugs to manage the pain, strongly disagree with the statement and they confirm no lack of in service training in their institutions with statistical significance (CI:73.3;96.4, P= 0.04)

#### **4.4. Conclusion**

This chapter included the social demographic results that describe the characteristics of the respondents and the analysis of the quantitative variables allowed to determine the age, average age, modal class, standard deviation, experience of each and the number of participants according to gender.

It also included a descriptive quantitative analysis of the facilitators and barriers that allowed to meet the objectives of the study. This analysis involved univariate categorical variables for facilitators and barriers, but also a bivariate analysis only for barriers to study the relationship between two cross-tabulated variables. The participants in the study, by answering all the questions asked, identified those that can facilitate nurses to fulfill their function in the management of children's pain, but they also showed frankly the barriers that prevented them from the best performance in the management of children's pain.

This study finding showed that lack of in service training at hospitals leads to poor management of child pain and lack of adequate equipment in institutions. A structured in-service training and appropriate equipments are needed to ensure pain management in children is done properly.



## **CHAPTER 5: DISCUSSION**

### **5.1. INTRODUCTION**

Pain in children is a common but complex phenomenon. The identification of pain is the responsibility of the medical staff, especially the nurses who are the key personnel in the management of pain and spend the maximum amount of time with the patients. If pain is not well treated it leads to multiple short and long term side effects.

The aim of this study is to assess the barriers and facilitators towards pain management in children amongst nurses working at two selected referral hospitals in Rwanda. The nurses participating in the study were responsible for the care of the pediatric patients.

### **5.2. DEMOGRAPHIC CHARACTERISTICS**

During the period of this study, we conducted a descriptive quantitative study involving 81 nurses from two referral hospitals in Kigali who worked in the pediatric ward. By answering the questionnaires, they were asked to identify the barriers encountered during their career in the management of children's pain as well as the facilitators that would allow them to overcome these barriers. The respondents had an average age of 35.68 years with a standard deviation of 5.2, while the average experience was 7.2 years with extremes of one year and 16 years. The participants were predominantly females with 91.4%.

A similar study was conducted in Ghana by Abigail Kusi Amponsah and reports characteristics of the participants that resemble those in our study. Indeed, the author selected 28 nurses working in five hospitals in the pediatric services; their average age was 30 years, the majority of them were females, 24 or 85.7% of the total participants, the average longevity at work was 7 years [6].

Another study done by Michelle L. et al. about Barriers to Pediatric Pain Management: A Nursing Perspective, the majority of participants were female 83.1% and 59% of responding nurses had <10 years' experience [21].

These two studies corroborate ours and show a dominant participation of females. Kusi's study and ours show that nurses had sufficient experience over 7 years. Michelle's study also showed that the majority of nurses had less than 10 years of experience.

### 5.3. NURSE'S FACILITATORS TO MANAGEMENT OF PAIN IN CHILDREN

Our study has set itself the idea of identifying the types of facilitators needed in the management of children's pain. Indeed, it is well known that pain is a physiological signal or warning sign. The hospital staff should not let the patient suffer for a long time. It would be abnormal for pain to be prolonged in patients, especially in children, the youngest of whom are even unable to express themselves. Therefore, it is the duty of all caregivers, generally nurses, as they are always close to the patients, to be able to assess and relieve the pain of the patients. It is also the duty of health professionals to inform patients or sick guards that they are there to listen, support and care for them. We can note that the facilitators mentioned during our study in the management of children's pain are part of the quality indicators of medical care in each health facility.

In the course of our study, respondents to the questionnaires distributed in 2 hospitals stated that they had encountered 16 types of facilitators in their health facilities, which, if combined, could allow better management of children's pain. Here we report the facilitators of child pain management in descending order according to the percentage priority given by participants' responses: Using pain assessment tool 95,1%, Doctors write the correct prescriptions for pain medication 88,9 %; Reassessment of Pain after administration of pain medication 87,7% ; Parents informing the nurses when their child is in pain 85,1 % , Taking a patient History 83,9% Children and parents verbalizing their concerns about pain 83,9. % Improved staffing levels 81,5% Teaching for nurses 80,3 % An improved scoring system 80,3% Better assessment tools 79% Parental involvement in pain care 76,6% , availability of equipment for distraction 70,4 Preprinted prescription chart 70,3% Having more time 69,1% Increased availability of a play therapist 64,2% Having a preoperative questionnaire for parents 61,7%.

According to the responses obtained in our study, if the identified facilitators in pain management were available and used correctly in hospitals, the management of children's pain would undoubtedly improve. We note that different authors have published articles on the same subject. According to Erica Busca et al., the facilitators are mainly linked to the nurse's adaptability to the various contexts of care, recognizing the patient's role, and the desire to develop multidisciplinary and effective working groups to respond to the health needs of the population in primary care contexts [43].

According to K. Alotaib et al, facilitators for the effective management of pain include parental participation in care, trusting and respectful relationships between nurses and children, and adequate nurse-patient ratios[44]. In his research Onanong Mala et al. reported that Potential facilitators to effective neonatal pain management included clear evidence-based guideline/ protocols, adequate training, and the use of appropriate and accurate pain assessment tools, parent involvement and a team approach to neonatal pain management were also identified[45].

In sum, the results of the different authors and ours, prove that there is an urgent need to improve the facilitators of the management of the child's pain in the different corners of the world, whether in developing countries or in developed countries. This calls on hospital managers to try to make the work of nurses easier by making available those they need in order to provide quality daily care.

#### **5.4. NURSE'S BARRIERS TO MANAGEMENT OF PAIN IN CHILDREN**

In order to better manage the child's pain, it is necessary to know first of all if there are any barriers that would prevent the optimization of this management. Many barriers exist in the management of pain from the newborn to the adolescent, it is then up to the medical staff, particularly the nurse, to master the management of this pain. This requires a better understanding of the concept of pain; the nursing staff must understand it and be able to recognize it, and know the existing pharmacological and non-pharmacological analgesic means.

Without good knowledge of these barriers, there would be no improvement in the quality of care. In fact, during our study, 52 questions were asked to the nurses, of which 31 allowed the identification of the barriers to the management of the child's pain. Of course, pain management has always been a concern for health care providers, institutions and states,

It is in this context that in France in 1995, after observing that, taking pain into account in the organization of health and care has not always been a priority and it was only in 1995 that a law provided for pain to be taken into account. This care was then enshrined in law with the law on patients' rights of March 4, 2002, which states that: "everyone has the right to receive care aimed

at relieving their pain. This must be prevented, evaluated, taken into account and treated in all circumstances".

With the same objective, of wanting to relieve the pain of diseases, World Health Organization (WHO on November 11, 2004 in Geneva) supports global effort to relieve chronic pain co-sponsors the first Global Day Against Pain, which seeks to draw global attention to the urgent need for better pain relief for sufferers from diseases such as cancer and AIDS. The campaign, organized by the International Association on the Study of Pain (IASP) and the European Federation of the IASP Chapters (EFIC), asks for recognition that pain relief is integral to the right to the highest attainable level of physical and mental health.

With this in mind, our study was conducted to identify barriers. By answering questionnaires, nurses from two hospitals were able to identify 31 barriers which, in their absence, would allow for the improvement of pain management.

In a similar study Michelle L. Czarnecki et al. identified and evaluated 18 barriers[21]. While Hu J. et al. in their study identified 22 barriers to pain management in children[46].

In interpreting our results, we performed a univariate descriptive analysis that showed 31 barriers to effective pain management for children. In the bivariate analysis of these variables, 15 were found to be statically significant, and are discussed in detail in the discussion of cross-tabulated results below.

## **5.5. THE ASSOCIATION BETWEEN NURSES' BARRIERS AND TRAINING ON PAIN MANAGEMENT IN CHILDREN**

### **5.5.1. Knowledge and training**

In this study, we found that there was an association between nurse-related barriers, such as inadequate knowledge, skills, and lack of teamwork with physicians.

Indeed, this association of variables were statistically significant whereby the P.Value was  $\leq 0.05$  and is confirmed by the respondents who strongly believe that children's pain management is not a priority as other conditions, we also found that Nurses face some limitations in assessing pain, the same nursing staff seldomly rely on pharmacological approach while managing pain in children due to lack of training. Due to lack of training, nurses also believe that drugs can have deadly side effects for children.

The survey conducted by Abigail Kusi Amponsah et. al. in Ghana corroborates ours: they were familiar with the usage of various non-pharmacological interventions but mainly used medications to relieve pain. However, they were interested in learning more about how to assess pain in children with speech impairment. They were also curious about the various drug and nondrug pain management methods for children [6].

Another study conducted in China by Hu J. et al. reports that Common barriers to using evidence-based pain treatments across different contexts were identified, such as health care professionals' limited knowledge and misconceptions on pediatric pain management, no specific policies, low priority, heavy workload, staff shortage, and limited time. Unique determinants in the Chinese context were also identified, including parents' concerns of these new interventions, parent wrath[46].

### **5.5.2. Practice and training**

During our study, we noticed that nurses' training is closely related to their practice, the association between the two is statically significant. Similarly, parents show reluctance to give children medication and need to be trained or informed about the care their children receive. As our results showed, the nurses highlighted 4 important contexts that handicap their practices due to the absence of training during their careers on pain management in children. These were highlighted by the staff of two hospitals as being respectively:

Lack of practice skills on using tools to manage children pain, to allow enough time to premedicate before procedures by treating team, not give priority the pain management by medical staff, is due lack of in service training, no clear cut of care escalation in pain management is linked directly with lack of in service training.

The results of Abigail Kusi Amponsah et al. in a study done in Ghana are similar to ours. Indeed, they report the nursing-related barriers to children's pain management in the Ghanaian context, the nursing-related barriers identified included insufficient training, misconceptions on the experience of pain in children, lack of assessment tools, and insufficient number of nurses to manage the workload and nurses' inability to prescribe analgesics[6].

### **5.5.3. Institutions and training**

Pain management in children is an absolute necessity but remains in most cases non-performing in different institutions. As our study states, this is due to the lack of continuous training of nurses during their careers, but also due to the lack of sufficient support from their managers. Some of the participants interviewed in this study agreed that there is a significant lack of pain management, due to: little or no leadership support, the lack of appropriate place to practice pain management and lack of essential drugs to manage the pain. These findings are the result of a cross-tabulation of the independent variable, assessment of institutional barriers, and the dependent variable, Lack of training, and revealed that this association was statistically significant.

Certainly the results below reported by Hu J. et al. in China are similar to our results and show the lack of involvement or inability of managers to provide the essentials that can help in the management of the child's pain. In fact in his article, he precise that the system-related barriers include a lack of clearly defined standards and pain management protocols, and limited access to pain specialists and analgesics. Staff-related barriers include inadequate knowledge and skills, and lack of team-work[46].

In his study, Alison Twycross and Sue Collins present also data similar to ours, he reported that on pediatric pain management practices in one hospital in the south of England. They report that nurses indicated that they and the medical staff lacked knowledge about pain management. Several participants indicated that insufficient analgesic drugs were sometimes prescribed. Many of the barriers identified related to parents and children[34].

### **5.6. CONCLUSION**

The results of our study show that it is imperative to improve skills of hospital staff, especially nurses and patients' families, with regard to pain management in pediatric wards. In order to ensure the best management of pain in children, it is essential to intensify intrahospital communication and collaboration and to provide the maximum number of facilitators, as this will help to overcome the barriers.

## **CHAPTER 6: CONCLUSION AND RECOMMENDATIONS**

### **6.1. CONCLUSION**

According to the results of our study we can confirm that the lack of continuous training of nurses in hospitals leads to inadequate pain management in children. Hospital leaders must be aware of the importance of providing their nurses with the necessary equipment and advanced training to facilitate better pain management in children. Nurses must also be trained on the administration of pharmacological and non-pharmacological drugs; they must understand the action of these drugs as well as their undesirable effects so that they are not afraid to administer them. In fact, for nurses the practical experience and the increase of their intellectual capacity will be the best solution for the management of children's pain. The hospital administration should also promote the education of parents and children who are old enough to describe their pain so that they all participate and collaborate in the management of the child's pain.

### **6.2. RECOMMENDATIONS**

This research recommends the following entities:

#### **6.2.1. Education**

Considering the extent of pain in children and given that they often do not even know how to express the degree of their pain, there is a great difficulty in managing it, it seems essential that this condition be addressed more in basic nursing training so that future nurses will be able to manage correctly children's pain in a more optimal way than at present. It would be better to have more knowledge of specific pharmacology for the child with pain.

The relational aspect with the child also seems to be an important point following non-verbal communication, especially in the case of the youngest children who are unable to express themselves, but we must become familiar with the parents because, in the end, they are the best people to negotiate with the child to ensure adequate care. The component of pain management in children should be included and emphasized in the nursing curriculum starting from advanced diploma level.

#### **6.2.2. Nursing practice**

There are protocols in each hospital department and WHO guidelines which can help nurses. “The aim of these guidelines is to assist WHO Member States and their partners to develop and implement national and local policies, regulations, protocols and good practices for pain

management”. Finally, if one nurse in each unit was specialized in pain management, there would certainly be an improvement in pain management.

The policy makers should make sure pain management tools and policies are made available to every nurse.

Provide the trainings to nurses in form of continuing professional development (CPD) related to the management of pain in children so that nurses working in pediatric departments can have essential knowledge and skills to allow them to be able to manage pain in children.

### **6.2.3. Research**

Many authors agree that more research is needed to identify the concerns of nurses about the use and interpretation of assessment tools and strategies that would further improve their knowledge and attitudes towards pain assessment and management in children, especially the very young. Although there are assessment tools such as pain scales, the inter-prevalence leaves much to be desired, so future studies should focus on children's pain in order to validate the most appropriate tools, similar studies should also be conducted with large sample size involving all health care providers in pediatric department, not only nurses and extend the study to other hospitals.

### **6.2.4. Leadership and Management**

Nursing and health care policies should prioritize pediatric pain management. Health policies should also promote training on pain management throughout the medical training course for nurses and doctors, and even for paramedics, from the beginning of their training until the end of their studies. For those who deal with children's pain, especially nurses, should have the privilege of receiving regular, continuous training and profession development on the management of children's pain.

It is also necessary to provide training sessions for parents or caregivers in the hospital, on children's pain in order to establish a close, correct and friendly collaboration and trust between nurses and parents.



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## **APPENDICES**

## **APPENDIX I: QUESTIONNAIRE ON NURSES' BARRIERS AND FACILITATORS TO PAIN MANAGEMENT IN CHILDREN**

### **SECTION 1: Demographic Data**

#### **1. Gender**

Male

Female

#### **2. What is your level of education?**

Associate Nurse

Registered Nurse A1

bachelor's degree

master's degree

#### **3. What is your age? \_\_\_\_\_**

#### **4. How many years of Pediatric experience do you have? \_\_\_\_\_**

#### **5. What type of pediatric unit do you work on?**

Surgical ward

Medical-Surgical

Cardiac

Oncology

o Neurosurgical

**SECTION 2: To identify facilitators to pain management in children among nurses** Please

tick (✓) the best answer to the following questions.

| How do you rate the following factors to facilitate you assessing and managing pain in children? | Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|--|-------------------|----------|--------|-------|----------------|
| 1. Using pain assessment tools   |                   |          |        |       |                |
| 2. Reassessment of pain after administration of pain medications                                 |                   |          |        |       |                |
| 3. Taking a patient history  |                   |          |        |       |                |
| 4. Having more time  |                   |          |        |       |                |
| 5. Teaching for nurses   |                   |          |        |       |                |
| 6. Doctors write the correct prescriptions for pain medications                                  |                   |          |        |       |                |
| 7. Children and parents verbalizing their concerns about pain                                    |                   |          |        |       |                |
| 8. Parents informing the nurses when their child is in pain                                      |                   |          |        |       |                |
| 9. Parental involvement in pain care   |                   |          |        |       |                |
| 10. Better assessment tools  |                   |          |        |       |                |
| 11. An improved scoring system   |                   |          |        |       |                |
| 12. Improved staffing levels   |                   |          |        |       |                |
| 13. Preprinted prescription charts   |                   |          |        |       |                |
| 14. Having a preoperative questionnaire for pare   |                   |          |        |       |                |
| 15. Availability of equipment for distraction, e.g., dolls, teddies                              |                   |          |        |       |                |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| 16. Increased availability of a play therapist (child life worker) |  |  |  |  |  |
|--|--|--|--|--|--|

**SECTION 3: To identify barriers to pain management in children (in terms of knowledge)**

Please tick (✓) the best answer to the following questions

| <b>How do you rate the following factors to facilitate you assessing and managing pain in children?</b> | <b>Strongly Disagree</b> | <b>Disagree</b> | <b>Unsure</b> | <b>Agree</b> | <b>Strongly Agree</b> |
|---|--------------------------|-----------------|---------------|--------------|-----------------------|
| 1.Nurses do not know that pediatric pain management has priority as much as other condition             |                          |                 |               |              |                       |
| 2.Nurses are worries that children may become addicted  |                          |                 |               |              |                       |
| 3.Nurses face some limitations in assessing pain  |                          |                 |               |              |                       |
| 4.There is fear to opioid overdose by nursing staff (opiophobia)  |                          |                 |               |              |                       |
| 5.There is a concern of lethal side effect  |                          |                 |               |              |                       |
| 6.there is inability to interpret the pain scale tool   |                          |                 |               |              |                       |
| 7.The nursing staff seldomly rely on pharmacological approach while managing pain in children           |                          |                 |               |              |                       |
| 8.The nursing staff seldomly rely on non-pharmacological approach while managing pain in children       |                          |                 |               |              |                       |
| 9.Nursing staff is aware who to report to when children experience pain                                 |                          |                 |               |              |                       |
| 10.Nursing staff is aware where to report when children experience pain                                 |                          |                 |               |              |                       |
| 11.Nursing staff is aware when to report when children experience pain                                  |                          |                 |               |              |                       |
| 12.Nursing staff is aware how to report when children experience pain                                   |                          |                 |               |              |                       |



**To assess nurses' barriers regarding Pain management in children (in terms of practice)**

|   | <b>Strongly Disagree</b> | <b>Disagree</b> | <b>Unsure</b> | <b>Agree</b> | <b>Strongly Agree</b> |
|---|--------------------------|-----------------|---------------|--------------|-----------------------|
| 1. Pediatric nurses can have a powerful influence on the management of children in pain in practice |                          |                 |               |              |                       |
| 2. Lack of pain tools to inform practice  |                          |                 |               |              |                       |
| 3. Physicians do not prescribe pain medications   |                          |                 |               |              |                       |
| 4.The treating team does not allow enough time to premedicate before procedures                     |                          |                 |               |              |                       |
| 5.physician do not write premedication orders before procedures                                     |                          |                 |               |              |                       |
| 6.medical staff does not give priority to pain management by  |                          |                 |               |              |                       |
| 7.Parent are reluctant to give children medications   |                          |                 |               |              |                       |
| 8.Patient are reluctant to report pain  |                          |                 |               |              |                       |
| 9.lack pain medication in the setting   |                          |                 |               |              |                       |
| 10.Nursing staff are motivated to do proper pain management   |                          |                 |               |              |                       |
| 11. There is no clear cut of care escalation in pain management                                     |                          |                 |               |              |                       |

**To assess the nurses' barriers to pain management in children (in terms of institutional)**

|  | <b>Strongly Disagree</b> | <b>Disagree</b> | <b>Unsure</b> | <b>Agree</b> | <b>Strongly Agree</b> |
|--|--------------------------|-----------------|---------------|--------------|-----------------------|
| 1. There is Little or no leadership support                    |                          |                 |               |              |                       |
| 2. Lack of in-service training                                 |                          |                 |               |              |                       |
| 3.The lack of appropriate place to practice pain management    |                          |                 |               |              |                       |
| 4.lack of essential drugs in pain management                   |                          |                 |               |              |                       |
| 5. There is pain management policy in place to inform practice |                          |                 |               |              |                       |
| 6.there is enough staff to do appropriate pain management      |                          |                 |               |              |                       |
| 7.Nursing staff are motivated to do proper pain management     |                          |                 |               |              |                       |
| 8. There is no clear cut of care escalation in pain management |                          |                 |               |              |                       |

## **APPENDIX II: INFORMED CONSENT**

Consent to participate in a project about nurse's barriers and facilitators to management of pain in children.

Greetings! My name is UWERA NOELLA. I am a student nurse working on a research proposal with the objective of assessment of nurses' barriers and facilitators to management of pain in children

### **Purpose of the Study**

Ninety-five (95) nurses are enrolled to participate in this study to assess nurses' barriers and facilitators to management of pain in children; if you agree to join the study, you will be asked to answer some questions.

### **Confidentiality**

The study will not include details that directly identify you, such as your name. Only a participant identification number will be used in the survey.

If the results of the current study were published or presented in a scientific meeting, names and other information that might identify you will not be used.

### **Risks**

The researcher does not expect that any harm will happen to you because of joining this study.

**Rights to Withdraw and Alternatives** You are free to skip any question if you feel uncomfortable to disclose information.

You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate, or withdrawal from the study, will not involve penalty or loss of any benefits to which you are otherwise entitled.

### **Benefits**

There are no direct benefits to you; however, the researcher hope that the results of the study will provide valuable information regarding nurses' barriers and facilitators to management of pain in children and help to focus on nursing education and training.

### **In Case of Injury**

The researcher does not anticipate that any harm will occur to you as a result of participation in this study.

### **Who to Contact**

If you ever have questions about this study, you should contact the researcher UWERA NOELLA

RN (0784144581) University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery in Pediatric track

Signature:

Do you agree to participate?

Participant agrees .....

Participant does not agree .....

I, \_\_\_\_\_ have read the contents in this form. My questions have been answered.

I agree to participate in this study.

Signature of participant \_\_\_\_\_

Signature of the researcher \_\_\_\_\_

Date \_\_\_\_\_

Chairperson of the CMHS IRB Tel: 0788490522

Deputy Chairperson Tel: 0783340040

# APPENDIX III: PERMISSION TO USE AN ADAPTED TOOLS FROM THE AUTHORS

3/26/2021

Request for a research questionnaire - uwera25nono@gmail.com - Gmail



Rechercher dans les messages

Nouveau message

Boîte de récepti... 1 071

Messages suivis

En attente

Important

Messages envoyés

Brouillons 43

Meet

Nouvelle réunion

Rejoindre une réunion

Hangouts

noella +

Pas de chat récent  
Démarrer un nouveau chat

A rosemary.wilson

Hello

Greetings, my name is UWERA NOELLA a student at the UNIVERSITY currently doing an academic research project entitled "**nurses barriers**" The research questionnaire I am requested is the one you used in your **perspective of health care providers: A contextualization of the the** I will ensure that you are acknowledged for that favor and I will referenc

I deeply thank you as I am waiting for your considerate answer.

kind regards

UWERA NOELLA,RN,BSCN

A continuing nursing student in master program/pediatric track  
UNIVERSITY OF RWANDA

**Rosemary Wilson**

Hi! Lovely to hear from you – would you like the French, English or Ki

**noella Uwera**

Thank you very much for such a prompt and kind reply, I am kindly re

**Rosemary Wilson**

Hi again – here's the English version. I may have to spend some time

Nouveau message

Boîte de récepti... 1 071

Messages suivis

En attente

Important

Messages envoyés

Brouillons 43

Meet

Nouvelle réunion

Rejoindre une réunion

Hangouts

 noella +

Pas de chat récent  
Démarrer un nouveau chat

perceived barriers.  
I will ensure that you are acknowledged for that favor and I will referenc  
I deeply thank you as I am waiting for your considerate answer.

kind regards  
UWERA NOELLA,RN,BSCN  
A continuing nursing student in master program/pediatric track  
UNIVERSITY OF RWANDA

**katende godifrey**

Dear Noella,You have permission to use the questionnaire based on )

**noella Uwera** <uwera25nono@gmail.com>  
À katende

Thank you for your response.

📧 Répondre      📧 Transférer

## APPENDIX IV: ETHICAL CLEARANCE APPROVAL FROM UNIVERSITY



UNIVERSITY of  
RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES  
DIRECTORATE OF RESEARCH & INNOVATION

---

**CMHS INSTITUTIONAL REVIEW BOARD (IRB)**

Kigali, 17<sup>th</sup> /08/2021

Ref: CMHS/IRB/274/2021

UWERA NOELLA  
School of Nursing and Midwifery, CMHS, UR

Dear UWERA NOELLA

**RE: ETHICAL CLEARANCE**

Reference is made to your application for ethical clearance for the study entitled "*Nurses' Barriers and Facilitators to Management of Pain in Children in Two Selected Referral Hospitals in Rwanda*".

Having reviewed your application and been satisfied with your protocol, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.


**Dr. Stefan JANSEN**  
Ag. Chairperson Institutional Review Board,  
College of Medicine and Health Sciences, UR

**Cc:**

- Principal, College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

# APPENDIX V: APPROVAL NOTICE FROM UNIVERSITY TEACHING HOSPITAL OF KIGALI



CENTRE HOSPITALIER UNIVERSITAIRE  
UNIVERSITY TEACHING HOSPITAL

Ethics Committee / Comité d'éthique

19<sup>th</sup> Nov,2021

Ref.:EC/CHUK/127/2021

## **Review Approval Notice**

Dear Noëlla Uwera,

Your research project: **"NURSES' BARRIERS AND FACILITATORS TO MANAGEMENT OF PAIN IN CHILDREN IN TWO SELECTED REFERRAL HOSPITALS IN RWANDA. "**

During the meeting of the Ethics Committee of University Teaching Hospital of Kigali (CHUK) that was held on 19<sup>th</sup> Nov,2021 to evaluate your request for ethical approval of the above mentioned research project, we are pleased to inform you that the Ethics Committee/CHUK has approved your research project.

You are required to present the results of your study to CHUK Ethics Committee before publication by using this link:[www.chuk.rw/research/fullreport/?appid=467&&chuk](http://www.chuk.rw/research/fullreport/?appid=467&&chuk).

PS: Please note that the present approval is valid for 12 months.

Yours sincerely,

**Dr Emmanuel Rusingiza Kamanzi**  
The Chairperson, Ethics Committee,  
University Teaching Hospital of Kigali



Scan code to verify.

**" University teaching hospital of Kigali Ethics committee operates according to standard operating procedures (Sops) which are updated on an annual basis and in compliance with GCP and Ethics guidelines and regulations "**

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## APPENDIX VI: APPROVAL NOTICE FROM KING FAISAL HOSPITAL



### KING FAISAL HOSPITAL, RWANDA ETHICS RESEARCH COMMITTEE

Patient Centered Care

19<sup>th</sup>, November, 2021

#### ETHICAL APPROVAL

Dear UWERA NOELLA

We acknowledge receipt of your study protocol: "NURSES' BARRIERS AND FACILITATORS TO MANAGEMENT OF PAIN IN CHILDREN IN TWO SELECTED REFERRAL HOSPITALS IN RWANDA "

After a thorough review, the reviewers of KFH Ethics Research Committee consider this study relevant. The investigator is allowed to start data collection.

#### N.B.

- The investigator is **requested to submit one hard copy of his final research results** in the office of the Directorate of Education, Training and Research at King Faisal Hospital, Kigali

Best Regards



Dr. Dushimiyimana Jean Marie Vianney

Consultant ENT surgeon

Chair, Ethics Research Committee

King Faisal Hospital, Rwanda.

#### CC:

1. Chief Executive Officer\_ KFH-Rwanda
2. Director of Education, Training & Research\_ KFH- Rwanda
3. Members of the Ethics Research Committee, KFH- Rwanda

King Faisal Hospital, Kigali will become a Centre of Excellence in health services provision and clinical education in Africa

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