



**KNOWLEDGE AND BARRIERS OF PAIN MANAGEMENT IN CHILDREN AMONG
NURSES IN TWO SELECTED REFERRAL HOSPITALS, RWANDA**

BY

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Masters of Nursing Sciences

2019



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REF. NUMBER: 216338654

A dissertation submitted in partial fulfilment of the requirement for degree of

MASTER OF SCIENCE IN NURSING PEDIATRIC

In college of Medicine and Health Sciences

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Co-Supervisor: RUGEMA Joselyne

June, 2019

DECLARATION

I declare that this dissertation submitted in partial fulfillment of the requirements for the degree of masters of Science in nursing, at the University of Rwanda/College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

MUKANDANGA Antoinette

Signed.....

DEDICATION

To my almighty God for his unlimited love and protection, forgiveness and favor he gives to me for my daily life.

To my beloved husband RURANGWA Eugene for his overwhelming morally support, understanding and encouragement he offered to me during this hardness journey.

To my children RURANGWA Jessy, RWIGEMA Robert, MURINZI Michael, NTABANA Tanguy, RURANGWA Kevin, my Sisters and brother for their kindness and psychological support.

To my grandson RWIGEMA Jaden and RURANGWA Arthur for accept missing me during this period.

To my parents for their encouragement to be strong despite of many obstacles in life.

ACKNOWLEDGEMENT

I have put forth a great deal of effort in this journey of masters program. However, it will not have been possible without the kind support and help of many individuals and organization. I like to extend my sincere thanks to all of them.

I thank my God for providing me with everything that I required for completing this studying journey.

I like to thank my employer CHUK especially General Director, Nursing Director Pediatric managers and all staff for an incomparable flexibility support of learning time.

I am highly indebted to the MOH, HRH faculty program, and University of Rwanda for the guidance and constant support in this study program.

I like to thank RUGEMA Joselyne for guidance during my proposal research process.

I like to express my special gratitude toward my dissertation supervisor KATENDE Godfrey for her kind cooperation and support; they have been helping me from the beginning of this study.

I like to thank the lecturers to who have spent and sacrificed their time to teach us with commitment and help us to grow as nurses.

My thanks and appreciations also go to my classmates who willingly help me out with their abilities.

ABSTRACT

Background: Pain, distress, anxiety, agitation and fear are often experienced by children undergoing medical treatment(Beckman et al., 2017). When care provider miss to manage children's pain, this can lead to severe complications and it may lead to further deterioration of the children. It was revealed that (49–64%) of hospitalized children receives inadequate pain management despite the increase in knowledge and available treatments(Ortiz et al., 2015).

Aim: The aim of this study was to determinine the knowledge and barriers of nurses regarding pain management in children.

Method: A cross sectional and descriptive study was conducted involving 136 nurses working in pediatrics wards of University teaching Hospital of Kigali and Rwanda Military Hospital. The data was collected after obtaining oral and written informed consent from each participant. Confidentiality was maintained by excluding the name of participants from questionnaire.

The beneficence was respected during the study process. a non-probability sampling technique to select the participants was used . A pre-tested self- administered and semi- structured questionnaire was used to collect the data. Data was analyzed using the Statistical Package for the Social Sciences Study (SPSS) and descriptive statistics run on all the variables. The pilot study consisted of 10% of total population. The reliability of the questionnaire was determined using Cronbach's alpha test . Ethical approval letters from College of Medicine and Health Sciences at University of Rwanda and research committee of University Teaching Hospital of Kigali(UTHK) and Rwanda military Hospital (RMH) have been granted .This study assessed the nurses 'knowledge and barriers towards pain management among children, in two selected referral hospitals in Rwanda which may limit the generalization of the findings to other referral hospitals in Rwanda .

Results: Of the 102 questionnaires distributed, 102 (RR = 100 %) were returned and completed. Based on these findings of the current study, it was revealed that nurses had poor knowledge level as regard to pain management among children. Findings from this study demonstrated that 51.1% of respondents provided wrong answer about pain assessment in children while 56.9% of respondents provided correct answers about pain medication. The findings from this study indicate that there was low positive correlation ($\rho = 0.18$, $p=0.03$) between nurses 'knowledge

towards pain management among children and gender where by being female working in pediatric department demonstrated good pain management among children.

Conclusion and recommendation: In order to improve the quality of pain management among children in these hospitals, the hospital administration need to plan in-service training programs to enhance nurses' knowledge towards pain management among children and to avail pain management policy and tools in place.

TABLE OF CONTENTS

DECLARATION.....i

DEDICATION.....ii

ACKNOWLEDGEMENT.....iii

ABSTRACTiv

TABLE OF CONTENTSvi

LIST OF SYMBOLS AND ACRONYMS/ ABBREVIATIONS x

LIST OF TABLES.....xi

CHAPTER ONE: INTRODUCTION 1

 1.1. INTRODUCTION..... 1

 1.2. BACKGROUND:..... 1

 1.3. PROBLEM STATEMENT 3

 1.5. RESEARCH OBJECTIVES..... 3

 1.6. RESEARCH QUESTIONS 4

 1.7. SIGNIFICANCE OF THE STUDY 4

 1.8. DEFINITION OF CONCEPTS 4

 1.9. ORGANISATION OF THE STUDY..... 4

 1.10. CONCLUSION OF CHAPTER ONE..... 5

CHAPTER TWO: LITERATURE REVIEW 6

 2.1 INTRODUCTION 6

 2.2 THEORETICAL LITERATURE 6

 2.2.1 PAIN DEFINITION AND ASSESSMENT 6

2.2.2 CLASSIFICATION OF PAIN	6
2.2.3. ASSESSMENT OF PAIN IN PEDIATRICS	6
2.3 EMPIRICAL LITTERATURE	7
2.3.1. KNOWLEDGE OF NURSES TOWARDS PAIN MANAGEMENT	7
2.3.2 BARRIERS TOWARDS PAIN MANAGEMENT	8
2.4. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION.....	9
2.5. CONCEPTUAL FRAMEWORK.....	10
2.6. CONCLUSION CHAPTER TWO	11
CHAPTER THREE: METHODOLOGY	12
3.1. INTRODUCTION:.....	12
3.2. RESEARCH DESIGN.....	12
3.3. RESEARCH APPROCH.....	12
3.4. RESEARCH SETTING.....	12
3.5. STUDY POPULATION.....	13
3.6. SAMPLING.....	14
3.6.1. Sample size.....	14
3.6.2. Sampling strategy	14
3.7. VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS	14
3.7.1. RELIABILITY	14
3.7.2. VALIDITY	15
3.8. DATA COLLECTION	16
3.9. DATA ANALYSIS	17

3.10 ETHICAL CONSIDERATIONS	17
3.11. DATA MANAGEMENT	17
3.12. DATA DISSEMINATION.....	17
3.13. CHALLENGES AND LIMITATIONS OF THE STUDY	18
3.14. CONCLUSION TO CHAPTER THREE.....	18
CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS	19
4.1. INTRODUCTION.....	19
4.2. PRESENTATION OF FINDING ALIGNED WITH THE OBJECTIVES	19
4.3. CONCLUSION OF CHAPTER FOUR	31
CHAPTER FIVE: DISCUSSION	33
5.1. INTRODUCTION.....	33
5.2. STUDY PARTICIPANT CHARACTERISITICS	33
5.3. NURSES’ KNOWLEDGE LEVEL TOWARDS PAIN MANAGEMENT AMONG CHILDREN.....	33
5.4. NURSES BARRIERS TO PAIN MANAGEMENT AMONG CHILDREN	34
5.5. ASSOCIATED FACTORS OF NURSES’ KNOWLEDGE TOWARDS PAIN.....	35
MANAGEMENT AMONG CHILDREN	35
5.6. CONLUSION OF CHAPTER FIVE.....	35
CHAPTER SIX: CONCLUSION AND RECOMMENDATION.....	36
6.1. CONCLUSIONS	36
6.3. RECOMMENDATIONS	36
6.3.1. Hospital administration	36
6.3.2. Nursing administration	36

REFERENCES	37
LIST OF APPENDIX.....	a
Appendix 4: . ASKING PERMISSION	e
Appendix 5 . QUESTIONNAIRE	f
Appendix 6.j
IBIBAZO BYO GUKUSANYA AMAKURU.....	.j
IBIBAZOj

LIST OF SYMBOLS AND ACRONYMS/ ABBREVIATIONS

CPD	: Continuing professional Development
CHUK	: Centre Hospitalier Universitaire de Kigali
CI	: Confidence interval
FLACC	: Face, Legs, Activity, Cry and Consolability
HIV/AIDS	: Human immunodeficiency virus/Acquired immunodeficiency syndrome
IV	: Intravenous
KAP	: Knowledge Attitude and Practice
HDU	: High Dependant Unit
NCNM	: Council National Council of Nurses and Midwives
NSAID	: Nonsteroidal Anti- inflammatory Drug
PICU	: Pediatric Intensive Care Unit
RMH	: Rwanda Military Hospital
RR	: Relative risk
SPSS	: Statistical Package for the Social Sciences Study
SSI	: Supplemental Security Income
UTHK	: University Teaching Hospital of Kigali
UR	: University of Rwanda

LIST OF TABLES

Tabel 4.2. 1 Demographic characteristics of respondents ($n = 102$).....	19
Tabel 4.2. 2 The overall participant's knowledge score about pain assessment and pain medication	21
Tabel 4.2. 3. Overall level of nurse's knowledge towards pain management among children in pediatric department	22
Tabel 4.2. 4. The level of nurse's knowledge about pain assessment among children in pediatric department.....	23
Tabel 4.2. 5.Nurses knowledge about medication of pain management in children	25
Tabel 4.2. 6 . Perceived barriers of nurses towards pain management among children.....	27
Tabel 4.2. 7.The associated factors of nurses 'knowledge towards pain management among children and gender	31

LIST OF FIGURES AND GRAPHS

Figure 1: Conceptual framework of the study (Basak et al., 2010).....	10
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LIST OF APPENDIX

Appendix 1: IRB FROM RWANDA MILITARY HOSPITAL b

Appendix 2. IRB FROM CHUK c

Appendix 3. ETHICAL CLEARANCE d

Appendix 4: . ASKING PERMISSION e

Appendix 5 . QUESTIONNAIRE f

CHAPTER ONE: INTRODUCTION

1.1. INTRODUCTION

This part described main titre like background, problem statementthe background of the study, problem state, main objective and specific objectives of the study, research questions, and significance of the study, operational definitions of key terms pertinent to the study, and organization of the study that mentions the main parts of this thesis.

1.2. BACKGROUND:

Pain, distress, anxiety, agitation and fear are often experienced by children undergoing medical treatment(Beckman et al., 2017). When care provider misses to manage children's pain, this can lead to severe complications and it may lead to further deterioration of the child. It was revealed that(49–64%) of hospitalized children receive inadequate pain management despite the increase in knowledge and available treatments(Ortiz et al., 2015)

It was revealed that only 18.9% of nurses showed good pain management knowledge signifying that the knowledge of nurses regarding pain management in pediatric is still wanting(Shahdad et al., 2016) .

A Study done in Malawi also showed that 53 % of Nurses had a poor knowledge towards pain management in children(Kholowa, Chimwaza, Majamanda, & Maluwa, 2017). The major problem in hospitalized children is the nurses' knowledge and perceived barriers towards pain management among hospitalized children and poor pain relieve leads to the negative outcomes. Thus, to improve adequate pain management on the children hospitalized , nurses need to have a good knowledge and identify barriers through continuous professional and development as well as receiving caregiver reports of pain (Namukwaya, Leng, Downing, & Katabira, 2011).

The study done in Ethiopia revealed that over a half (53.7%) of health care providers had a poor knowledge while 46.3% had a positive knowledge towards pain management (Kassa & Kassa, 2014).

Reference to the study done in School of Business Management, University Utara Malaysia (UUM), findings show that knowledge of nurses are statistically significant and explained about 69 % of the variance in pain management practices(Alzghoul & Abdullah, 2015)

According to the study conducted in Uganda on variety of methods used to ensure children are well comfortable when nurses proceed during peripheral IV line insertion to reduce pain, has identified that 72% of nurses greet the child while 90% of them greet the next of kin or parents, over half (58%) emphasize on breast feeding children during IV line procedure and only 57% received consent before starting peripheral line procedure (Katende & Mugabi, 2015)

Multiple validated scoring systems exist to assess pain in pediatrics; however, there is no standardized or universal approach for pain management, therefore healthcare facilities should establish pediatrics pain control program(Ortiz et al., 2015).Therefore, knowing and have a good knowledge towards pain management among children can have a good outcome to children and also to the parents.

In Rwanda, study done in centre Hospitalier Universitaire de butare/ Rwanda on barriers and facilitators to postoperative pain management from the perspective of health care providers the findings show that barriers are fear of administering opioid and not having the ability to recognize and deal with adverse effects. Other barriers were availability of pain management drugs(Nyirigira et al., 2018).

Most of the studies have analyzed the knowledge ,attitude and practice of pain management in surgery,post operative care, adult intensive care unit(ICU) and neonatology . An existing guideline on pain management across different departments including pediatric(Mediani, Duggan, Chapman, Hutton, & Shields, 2017), but no published data found about nurses ‘knowledge and perceived barriers in pain management in pediatric patients, Due to all these facts, the literature had some limitations, where the researcher couldn’t find available data regarding pain management knowledge and barriers in children among nurses working in pediatric department of University Teaching Hospital of Kigali and Rwanda Military Hospital. The aim of this study was to identify nurses’s knowledge and barriers in pain management among children.

Therefore the current study will be the basis for further researches about knowledg and barriers faced by nurses in pain management among hospitalized children .

1.3. PROBLEM STATEMENT

Globally, it has been revealed that 49–64% of hospitalized children receive inadequate pain management despite the increase in knowledge and available treatments. The level of knowledge about pain and its proper management is very poor in both active pediatric nurses and nursing student. (Ortiz et al., 2015).

According to studies, pain management in children admitted in the pediatric department is a major problem in the hospitalized children (Namukwaya et al., 2011; Sadeghy et al., 2016) . Untreated pain may cause a significant disability and increases the risk of death in pediatric Poorly relieved pain has been associated with negative outcomes including the delayed recovery and increased likelihood of early death(Gan, 2017).

In Rwanda there is an existing guideline on pain management across different departments including pediatric(Mediani et al., 2017), but no published data found about nurses ‘knowledge and perceived barriers in pain management in pediatric patients, Therefore, The current study will help to identify the nurses’ knowledge and perceived barriers regarding management of pain among children in pediatric department at university teaching hospital of Kigali and Rwanda Military Hospital.

1.4. THE AIM OF THE STUDY

The current study aimed at determining the knowledge and barriers of nurses regarding pain management in children in two selected referral hospitals in Rwanda.

1.5. RESEARCH OBJECTIVES

To determine the nurses’ knowledge towards pain management among children in pediatric department at university teaching hospital of Kigali and Rwanda Military Hospital.

To determine the perceived barriers of nurses towards pain management among children in university teaching hospital of Kigali and Rwanda Military Hospital.

To assess the associated factors of nurses towards pain management among children in university teaching hospital of Kigali and Rwanda Military Hospital.

1.6. RESEARCH QUESTIONS

What is the level of knowledge of nurses towards pain management among children at university teaching hospital of Kigali and Rwanda Military Hospital?

What are the perceived barriers of nurses towards pain management among children at university teaching hospital of Kigali and Rwanda Military Hospital?

What are associated factors of nurses towards pain management among children at university teaching hospital of Kigali and Rwanda Military Hospital?

1.7. SIGNIFICANCE OF THE STUDY

The current study findings will help to improve nurses' knowledge about management of pain and its proper management in both active pediatric nurses and nursing students and will also help administrators to establish policies and guideline for management of pain in children.

1.8. DEFINITION OF CONCEPTS

A nurse: a person trained to care for the sick or infirm, especially in a hospital(Kumar & Elavarasi, 2016)

Pain: Highly unpleasant physical sensation caused by illness or injury(Kumar & Elavarasi, 2016)

Barrier: something material that blocks or is intended to block pain management, which results in low expectations of pain relief and satisfaction with inadequate pain control(Czarnecki et al., 2011).

1.9. ORGANISATION OF THE STUDY

The study was having 6 chapters

1. Introduction
2. Literature review
3. Methodology,
4. Results presentation and interpretation and chapter
5. Discussion of the results
6. Conclusion and recommendation

1.10. CONCLUSION OF CHAPTER ONE

It was found the major problem in hospitalized children is the nurses' knowledge and perceived barriers towards pain management among hospitalized children and poor pain relieve leads to the negative outcomes. Thus, to improve adequate pain management on the children hospitalized, nurses need to have a good knowledge and identify barriers through continuous professional and development as well as receiving caregiver reports of pain. That is why the current study was carried out. In the next chapter, an overview of literature regarding nurses' knowledge, and nurses perceived barriers in pain management among children at University Teaching Hospital of Kigali and Rwanda Military Hospital was presented.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will provide information about conceptual framework used in this study, pain and pain management theories, knowledge of nurses regarding pain management and possible barriers to effective pain management in pediatrics.

2.2 THEORETICAL LITERATURE

2.2.1 PAIN DEFINITION AND ASSESSMENT

Pain is defined as an unpleasant sensation that can range from middle, localized and generalized and is assessed using several tools such as; questioning, rating scale, numeric, FLACC, depending on the age of the child (Collins dictionary, 2017). It is managed by utilizing play therapy when necessary, give analgesic when there is no improvement with play therapy and when with analgesia there is no improvement take an action; don't say analgesia has worked(Spine Health, 2017).

2.2.2 CLASSIFICATION OF PAIN

Many classification systems are used to describe the different types of pain. The most common classification schemes refer to pain as acute or chronic; malignant or nonmalignant; and nociceptive or neuropathic(Ortiz et al., 2015). Most studies are agreed with the following classification of pain: acute and chronic pain.

According to (Kumar & Elavarasi, 2016), defined acute pain as it occurs on recent onset with a limited duration while chronic pain refer to persistence of pain over 3 to 6 months.

2.2.3. ASSESSMENT OF PAIN IN PEDIATRICS

Fifth vital sign and it should be assessed using the standarised tools in order to plan the intervention then recorded in the patient file. (Ortiz et al., 2015).

A study done in Brazil suggests that “Face, Legs, Activity, Cry and Consolability score”are used to evaluate pain(Ortiz et al., 2015).

As reported that pain is a subjective experience, individual self-reporting is the favorite method for assessing pain. However, when valid self-report is not available as in children who cannot communicate due to age or developmental status, the observational and behavioral assessment tools are acceptable substitutions(Ortiz et al., 2015).

2.3 EMPIRICAL LITTERATURE

2.3.1. KNOWLEDGE OF NURSES TOWARDS PAIN MANAGEMENT

According to Shahdad *et al.*,2016) study done in Shahid Sadoughi Hospital which is one of the largest teaching hospitals in south west of Iran ,Nurses showed that knowledge of nurses regarding pain management only 18.9% of nurses achieved a score of 80% or greater on the instrument survey which indicates the magnitude of knowledge deficits and poor knowledge (Shahdad et al., 2016).

Another study conducted in Malawi Paediatric Department showed that the big number of nurses had a good knowledge towards management of pain (Kholowa et al., 2017). Similarly to the study done in Ethiopia entitled nurses knowledge and barriers towards pain management, had revealed that over a half (53.7%) of health care providers had a negative knowledge, while 46.3% had a positive knowledge towards pain management (Kassa & Kassa, 2014).

Furthermore, in the same study it has been found that the majority of the nurses (79.3%) didn't document the results of pain assessment. Interestingly, another big number of them (73.2%), had at least said that the usually provide health education about pain and management to either the family or patient (Kassa & Kassa, 2014).

In Malaysia, the findings showed that the knowledge was statistically significant and explained about 69 % of the variance in pain management practices (Alzghoul & Abdullah, 2015)

According to the study conducted in Uganda on variety of methods used to ensure children are well comfortable when nurses proceed during peripheral IV line insertion to reduce pain, has identified that 72% of nurses sent greetings to the child while 90% of greet the next of kin or parents, over s half (58%) emphasize on breast feeding children during IV line procedure and only 57% received consent before starting peripheral line process (Katende & Mugabi, 2015)

2.3.2 BARRIERS TOWARDS PAIN MANAGEMENT

According to (Kassa and Kassa, 2014), in their study conducted among nurses on their knowledge, practice and barriers towards pain management in Ethiopia, the results showed that the barriers that nurses face in pain management of children were: lack of human resource in nursing, lack of continuing training in pain management, lack of courses related pain in the undergraduate classes, patient and work overload, inadequate knowledge or information gap, role confusion and lack of motivation including salary were the identified barriers for adequate pain management.

Among the participants in the study done in Iran, has identified several barriers such as some myths that pain medications could not reach the patient satisfaction every day, addiction to pain medication, fear of some side effects associated to pain medications and that the pain medication can bias the course of treatment (Sadeghy et al., 2016). It has been showed that insufficient knowledge about pain assessment and its management, difficulty in making decisions about pain management and nurses' fear or misconceptions regarding the use of opioid analgesics are the most important barriers in implementing effective pain management (Alzghoul & Abdullah, 2015)(Mediani et al., 2017)

Another study entitled barriers to pediatric pain management in children undergoing surgery among several health care providers has identified that most of the time there was no adequate trainings provided regarding pain management, poor knowledge and different guidelines(Beckman et al., 2017).

A study done by Katende and Mugabi, (2015) identified some barriers faced by nurses during peripheral Intravenous line insertion to insure pain had well managed are: 42 % said that lack of time of nurses to stay with children and next of kin to all strategies that could help to reduce pain, 13% highlighted the instability of the children to be the main cause, 18% said that the emergency situation also was among the cause, overload work and non availability of materials to distract children during Peripheral Intravenous line procedure (Katende & Mugabi, 2015).

According to the study conducted in different settings of pediatric , barriers to pain management can be grouped into four themes: nurse-related barriers, patient-related barriers, physician-related barriers and system-related barriers(Mediani et al., 2017).

In Rwanda, study done in centre Hospitalier Universitaire de butare/ Rwanda on barriers and facilitators to postoperative pain management from the perspective of health care providers the findings show that 68% of participants demonstrate that, barriers are fear of administering opioid and not having the ability to recognize and deal with adverse effects. Other barriers were availability of pain management drugs(Nyirigira et al., 2018).

Most of the studies have analyzed the knowledge ,attitude and practice of pain management in surgery, post operative care, adult intensive care unit and neonatology . Due to all these facts, the literature had some limitations, where the researcher couldn't find available data regarding pain management knowledge and barriers in children among nurses working in pediatric department of University Teaching Hospital of Kigali and Rwanda Military Hospital.

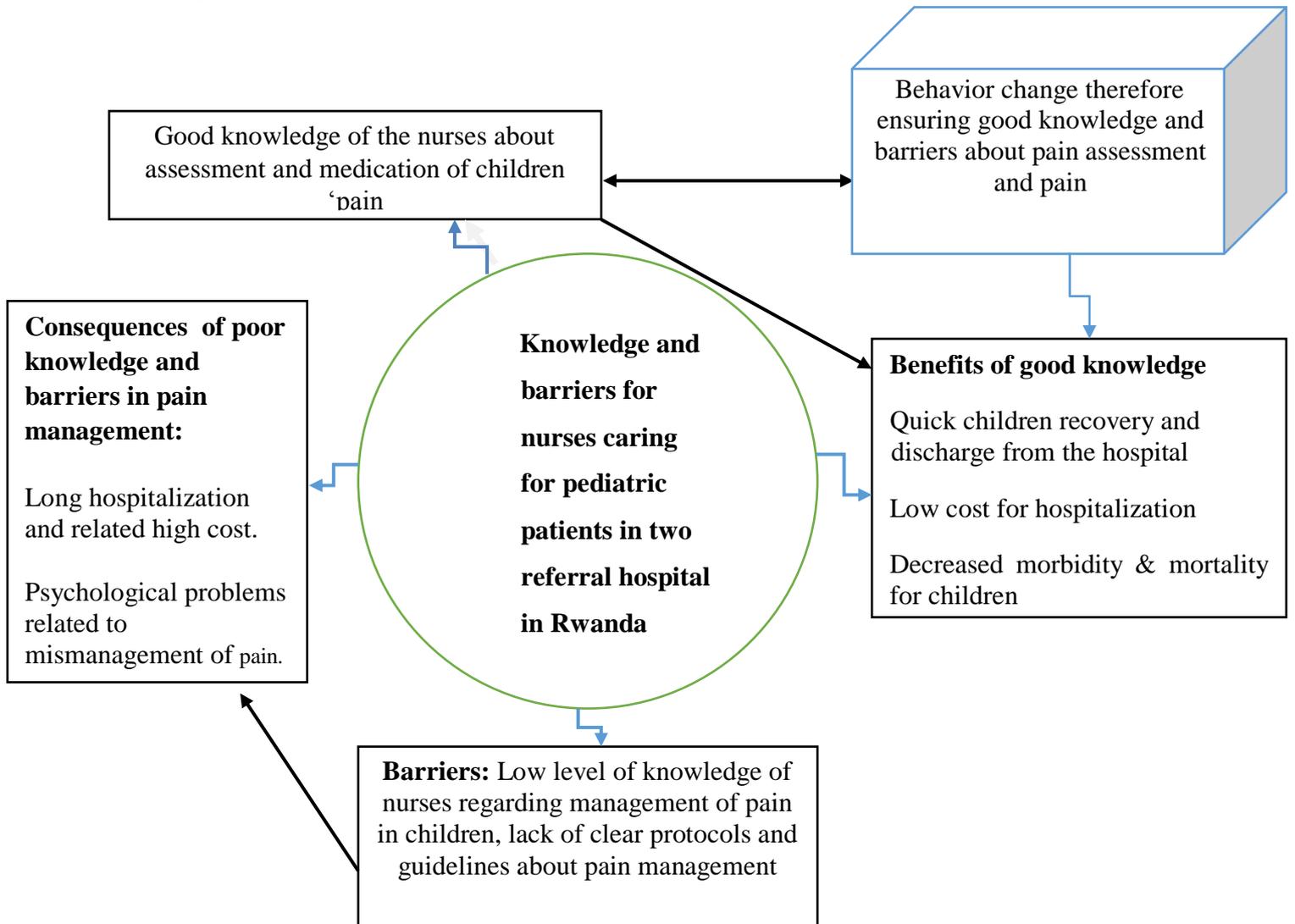
2.4. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION

The study conducted on nurses' knowledge and attitudes towards pain management in children admitted in the pediatric department of Queen Elizabeth Central Hospital, Blantyre, Malawi has revealed knowledge and attitude gaps which may reflect deficiencies in the pain education nurses received, non-availability of pain scales and lack of support for nurses to link theory with practice. Nurse leaders are challenged to provide repeated comprehensive education for nurses on pain assessment and management(medication). Furthermore, user friendly pain scales should be developed, and nurses educated and demonstrated on their use. In addition, opportunities for supportive supervision with nurses in the clinical setting should be created for linkage of theory and practice (Kholowa et al., 2017). Most of the studies have analyzed the knowledge, attitudes and practice. Due to all these facts, the literature had some limitations, where the researcher couldn't find available data regarding knowledge and barriers of pain management among nurses in children.

2.5. CONCEPTUAL FRAMEWORK

Figure 1: Conceptual framework of the study (Basak et al., 2010).

This conceptual framework was adopted from the framework of the studies done about knowledge and the review of the existing literature about pain management by Basak and colleagues (Basak et al., 2010}.



In this conceptual framework the knowledge has been divided into two categories: knowledge on pain assessment and knowledge on pain management (medication) among children hospitalized in pediatric department of Centre Hospitalier Universitaire de Kigali (CHUK) and Rwanda military Hospital (RMH).

Nurses with good knowledge will have better behavior towards pain assessment and pain medication leading to benefits for the children(quick recovery, discharge..),for the hospital(space for other clients,decrease morbidity,mortality) and for the family(reduction of medication expenses,..)

Nurses with poor knowledge coupled with barriers will not be able to manage correctly pain, with following consequences: mismanagement of pain, long stay in hospital; increasing expenses for the family, anxiety and other related psychological complications.

2.6. CONCLUSION CHAPTER TWO

The literature review has revealed that with regard to pain definition and assessment there are many classification systems which were used. In addition various studies proposed/suggested how pain should be assessed and recorded. Regarding knowledge of nurses towards pain assessment/management studies it was demonstrated that the lack of knowledge was due mainly to lack of sufficient courses, continuing profession development, supportive supervision. However the question of knowledge was not the only barrier to pain assessment/management; other related factors have been identified i.e heavy workload, lack of distraction materials. children instability, motivation incentives,myths.

CHAPTER THREE: METHODOLOGY

3.1. INTRODUCTION:

This chapter describes the methods to be used in carrying out this proposed study, the research setting, research approach, study design, population, sampling methods, data collection, management and analysis was explained. As well as, ethical considerations and limitations for this study were detailed.

3.2. RESEARCH DESIGN

This study used a descriptive cross-sectional design because the data was collected at the same area and same period.

3.3. RESEARCH APPROACH

This study used a quantitative and descriptive approach .

3.4. RESEARCH SETTING

This study was carried out at University Teaching Hospital of Kigali (UTHK) and Rwanda Military Hospital (RMH). The UTHK was built in Rwanda, Kigali city, Nyarugenge District, Nyarugenge sector. It is situated in few meters from Serena Hotel, next to Baho Medical clinic. It is the main public health institution in the country. It was built in 1918, from when it served as health center. In 1965 becoming the hospital of Kigali. UTHK was awarded a status of a referral and teaching hospital on 7/12/2000 by the law No41/2000; it has capacity of 472 beds. The UTHK has 384 Nurses.

Rwanda Military Hospital (RMH) was built in 1968 as a Military Referral Hospital. It continued to provide health care services to the military and their immediate families until after the 1994 genocide against the Tutsi when doors were opened to the general population. RMH currently treats 80% civilian and 20% military patients.

While RMH has been offering secondary and tertiary level health care services, its new strategic direction focuses on referral hospital (and teaching) activities. The 5-year strategic plan (2011-16) clearly defines the parameters for making RMH a fully-fledged referral hospital of excellence. The Government of Rwanda, through the Ministries of Health and Defense, is committed to offering

quality health care services to the military and the general population through strengthening and refocusing RMH in terms of the infrastructure, human resources capacity building, equipment and management systems. Development partners are encouraged to work with the Government to ensure that RMH has the required capacities to deliver quality services as a referral and teaching hospital.

3.5. STUDY POPULATION

The study recruited all nurses working in pediatric department at UTHK and RMH was involved in this study.

Inclusion criteria

Nurses work in pediatric wards of University Teaching Hospital of Kigali and RMH

Working experience in pediatric wards for six months and above as probation period at University Teaching Hospital of Kigali and RMH is fixed to six months.

Willing to participate in the study

Aged 20 years and above was included.

Nurses with experience above six months

Exclusion criteria

Nurses working in Pediatric out patient department

Nurses who work in Pediatric pharmacy

Nurse ward clacker in pediatric department

Nurses with experience less than six months

Nurses who were in leave (Annual and maternity)

Nurses work in others department of UTHK and RMH

In this study, the populations were all nurses working in pediatric wards of University Teaching Hospital of Kigali and Rwanda Military Hospital.

3.6. SAMPLING

According to (Polit and Beck, 2014 pp.177), study sample is a subset of the population element. The total number of nurses working in pediatric department of CHUK was 72 and the total number of nurses working in pediatric department in Rwanda military hospital(RMH) was 64. So the total number of nurses was 136. The study sample size of this study was calculated by using Yamane (1967):

$$n = \frac{N}{1 + N(e)^2}$$

n= Sample size; N= Population= 136; e= margin of error=0.05

$$N= 136 \quad =101.49 = 102$$
$$\frac{136}{1 + 136(0.05)^2}$$

3.6.1. Sample size

Sample size was 102 Nurses

3.6.2. Sampling strategy

This study used a non-probability sampling technique to select the participants.

3.7. VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS

For data collection a self-administrative questionnaire was used to determine the study variables.. The permission of using the tool was given through the email Correspondence with the author.

3.7.1. RELIABILITY

A pilot study:

According to (Polit, Denise F. & Beck., 2010) pilot study allows the researcher to do evaluation of the instrument before actual data collection begins. A pilot study was carried out at University Teaching Hospital of Kigali. The pilot study consisted of 10% of total population. Among total population who were N= 136 nurses working in pediatric department of Kigali University Teaching Hospital and Rwanda Military Hospital, 10% of them was calculated and it was n= 13 nurses. The researcher used convenience sampling method to get 13 participants.

Table 3.7. 1.1. Reliability statistics findings from pilot study (n=13)

Reliability Statistics			
Nurse's knowledge Regarding Pain		Perceived barriers	
Cronbach's-Alpha	N of Items	Cronbach's Alpha	N of Items
1.00	14	0.81	6
Participants			
13			

The above table was showing the reliability statistics findings. Out of thirteen questionnaires distributed during pilot study, 13 participants completed the questionnaires, response rate was 100%. The reliability of the questionnaire was determined using Cronbach's alpha test 1.0 for the knowledge section and 0.81 for perceived barriers section. The tool is reliable if Cronbach's Alpha test varies between 0.7 to 1. The findings from this pilot study were useful in determining the clarity of questions. The researcher determined that it would take twenty (20) minutes to complete the questionnaire. The results of pilot study were not considered in the final data analysis.

3.7.2. VALIDITY

Validity of the instrument has been defined as the extent to which the research tool measures what it is proposed to measure. The instrument should address all features of the problem being studied (Polit, Denise F. & Beck., 2010). To meet this requirement, the table below shows the content validity which highlights items of measurement corresponding to the study objectives and theoretical reviewed.

Table 4.2. 1.7.2.1.Content validity

Objectives	Conceptual framework	Questionnaires
To determine the nurses' knowledge towards pain management among children in pediatric department.	<p>- Good knowledge of the nurses about assessment and management of children 'pain</p> <p>-Benefits of good knowledge</p> <ul style="list-style-type: none"> • Quick children recovery and discharge from the hospital • Low cost for hospitalization • Decreased morbidity & mortality for children 	<p>Objective 2</p> <p>Question from No1 to 14th Question</p>
To determine the perceived barriers of nurses towards pain management among children in university teaching hospital of Kigali and Rwanda Military Hospital.	<p>Barriers: Low level of knowledge of nurses regarding management of pain in children, lack of clear protocols and guidelines about pain management</p>	<p>Objective 3</p> <p>From Question No1 to Question No 6</p>

3.8. DATA COLLECTION

Data was collected within a period of two months. The researcher collected the data only on working days (from Monday to Friday, from 7h00am to 5h00 pm). Structured and pretested self-administered questionnaire English version was used to collect the data. The English version was used because it is a working language used at University Teaching Hospital of Kigali and also English language is the academic language in all Rwanda nursing schools. The researcher waited for the participants to complete the questionnaire before she collected them for coding into the computer.

3.9. DATA ANALYSIS

Statistical package for the Social Sciences study (SPSS) version 20 software was used for analysis. Descriptive statistics was used to illustrate the frequencies, means, standard deviations, medians. Inferential statistics was used to identify the associated factors with nurses' knowledge in pain management among children. Inferential statistics was used where by correlation was useful; P. value was set at 0.05 and a confidence interval (CI) at 95% was considered as statistically significant.

3.10 ETHICAL CONSIDERATIONS

After being granted ethical approval letters from College of Medicine and Health Sciences, at University of Rwanda and research committee of UTHK with ref. N0 EC/CHUK/017/2019 and RMH the ref. N0 RMH/IRB/006/2019. The researcher sought permission from the pediatrics wards to meet with participants. Each participant who met inclusion criteria was given more explanations about the study purpose, objectives and importance of his/her participation. The participants were informed that participation was voluntary and that they had the right to refuse to participate or they may withdraw at any time without prejudice to his/her relations with the hospital. The data was collected after obtaining oral and written informed consent from each participant. Confidentiality was maintained by excluding the name of participants from questionnaire. The beneficence was respected during the study process.

3.11. DATA MANAGEMENT

All the data was accessed by a computer guarded password by the researcher. Hard copies of the questionnaires will be kept in locked cupboard for 5 years. After that time, they will be discarded. Soft copies of the data set will kept in my computer with a password.

3.12. DATA DISSEMINATION

The final report will be disseminated as well as submission of a manuscript for publication in a peer-reviewed journal. Study results will be shared with partners at the national and global level: In conference and in Departmental meetings in both referral hospitals.

3.13. CHALLENGES AND LIMITATIONS OF THE STUDY

1. This study used a self-administered questionnaire to examine nurses' knowledge towards pain management among children hospitalized at University Teaching Hospital of Kigali and Rwanda Military Hospital, that may not reflect the actual nursing knowledge. Therefore, the implications of the findings may be used with carefulness.

2. This study assessed the nurses' knowledge and barriers towards pain management among children, in two selected referral hospitals in Rwanda which may limit the generalization of the findings to other referral hospitals in Rwanda.

3.14. CONCLUSION TO CHAPTER THREE

This chapter 3 included the research methodology that was applied to determine the nurses' knowledge and perceived barriers regarding pain management among children at CHUK and RMH in Rwanda. The research design, population and sampling procedures, data collection and data analysis methods were discussed. In the next chapter, the results and interpretation of the collected and analyzed data are presented and discussed.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1. INTRODUCTION

In this chapter 4, the findings on the data collected and analyzed are presented. The study results are described, discussed, analyzed and presented in tables. Data was analyzed to demonstrate **nurses' knowledge and barriers of pain management in children among nurses in two selected referral hospitals**. The Statistical package for the Social Sciences study (SPSS version 21) was used to analyze the data. Descriptive statistics were used to illustrate the means, standard deviations, medians, and frequencies of the study variables. The data are presented according to study objectives.

4.2. PRESENTATION OF FINDING ALIGNED WITH THE OBJECTIVES

Tabel 4.2. 1 Demographic characteristics of respondents (n = 102).

Gender	Frequency	Percent
Male	11	10.8
Female	91	89.2
Level of education		
A1	74	72.5
A0	26	25.5
Masters	2	2
Years of pediatric experience?		
6 months-5years	59	57.8
6years-15years	37	36.2
>15 years	6	6
Age		
18-30 years	15	14.7
31-45years	77	75.5
46-65years	10	9.8
Type of pediatric unit do you work on?		
Surgical service	17	16.6

Cardiology Service	8	7.8
Oncology service	5	4.9
Neurosurgical service	9	8.8
Neonatology service	18	17.6
PICU and HDU	7	6.8
General pediatric service	24	23.5
Pediatric Emergency	11	10.7
Chronic diseases Service	3	2.9

One hundred and two (102) nurses were recruited and all completed the study. The majority of the study participant were female 91(89.2%) of the age range 31-45years (75.5%) . The majority (72.5%) of the nurses had attained A1 level of education. More than half (57.8%) of the respondents had worked for more than 6 months and less than 5 years. A good proportion of nurses (23.5%) had worked in general pediatrics

Tabel 4.2. 2 The overall participant’s knowledge score about pain assessment and pain medication

		PAIN ASSESSMENT	PAIN MEDICATION	OVERALL KNOWLEDGE
N	Valid	102	102	102
Mean		2.9314	4.5490	7.4
Median		3.0000	4.5000	7
Mode		3.00	4.00	8
Std. Deviation		1.15407	1.43939	1.765
Skewness		.530	.103	0.61
Std. Error of Skewness		.239	.239	.239
Sum		299.00	464.00	755.00

The above table indicates the overall participant’s knowledge score (mean score=7.4) Participants' knowledge was assessed using 14 multiple choice questions. Among those, six(6) were for pain assessment(mean score=2.9314) while the other eight (8) were for pain medication(mean score=4.5490).The correct answer was scored one point “1” and incorrect (wrong) answer was scored zero “0”. Correct responses were summed up to get a total knowledge scores for each participant. Total score for all questions was 14 points. The overall mean knowledge score was 7.4, median was 7 and standard deviation was 1. 765. The Skewness was (0.61) which shows that the data was normally distributed; the reason why mean was considered in taking the conclusion about nurses ‘knowledge level towards pain management among children in pediatric department. The mean score (2.9314)of participants in pain assessment showed an incompetence of nurses in pain assessment .

Tabel 4.2. 3. Overall level of nurse’s knowledge towards pain management among children in pediatric department

On this table, the nurse’s knowledge towards pain management among children in pediatric department was then categorized into two : pain assessment and pain medication

		Frequency	Percent
Pain assessment			
	Poor knowledge	52	51.1
	Good knowledge	50	48.9
Pain medication			
	Poor knowledge	42	43.1
	Good knowledge	60	56.9

Findings show that the overall level n:102, of nurse’s knowledge towards pain management among children in pediatric department, more nurses had poor knowledge 51.1% on pain assessment. We can say that this results can be ether by experience as a big number of them has an experience between 6 month and 5years and a big number shown a good knowledge on pain medication 56.9% .This pourcentage was calculated from the mean of wrong pourcentage of six questions of pain assessment.

Tabel 4.2. 4. The level of nurse’s knowledge about pain assessment among children in pediatric department

Item n= 102		Frequency	Percent,
Vital signs are always reliable indicators of the intensity of a patient’s pain			
	wrong answer	80	78.4
	Correct answer	22	21.6
Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences		Frequency	Percent
	wrong answer	27	26.5
	Correct answer	75	73.5
Children who can be distracted from pain usually do not have severe pain		Frequency	Percent
	wrong answer	67	65.7
	Correct answer	35	34.3
Children may sleep in spite of severe pain		Frequency	Percent
	wrong answer	73	71.6
	Correct answer	29	28.4
Respiratory depression rarely occurs in children who have been receiving stable doses of opioids over a period of months		Frequency	Percent
	wrong answer	46	45.1
	Correct answer	56	54.9
Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity			
	wrong answer	20	19.6
	Correct answer	82	80.4

Assessment of nurses' knowledge about pain management in children was done by using 14 questions categorized in two parts: knowledge about pain assessment and knowledge about pain management medication in children. This results of 6 questions among 14 concerning pain assessment, 78.4% of nurses who were eligible to participate had wrong answer about " Vital signs are always reliable indicators of the intensity of a patient's" and 65.7% respond wrong answer about "Children who can be distracted from pain usually do not have severe pain",while 71.6% of participate responded that"Children may sleep in spite of severe pain".

Tabel 4.2. 5.Nurses knowledge about medication of pain management in children

		Frequency	Percent
Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent			
	wrong answer	23	22.5
	Correct answer	79	77.5
The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours			
	wrong answer	72	70.6
	Correct answer	30	29.4
Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics			
	wrong answer	36	35.3
	Correct answer	66	64.7
After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the child's response			
	wrong answer	27	26.5
	Correct answer	75	73.5
Giving sterile water by injection (placebo) is a useful test to determine if the pain is real.			
	wrong answer	58	56.9
	Correct answer	44	43.1
If the source of the children's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain			
	wrong answer	57	55.9
	Correct answer	45	44.1
Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose			

	wrong answer	44	43.1
	Correct answer	58	56.9
Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm			
	wrong answer	35	34.3
	Correct answer	67	65.7

Assessment of nurses' knowledge about pain management in children was done by using 14 questions categorized in two parts: knowledge about pain assessment and knowledge about pain medication in children: Eight (8) questions were about nurses knowledge about pain medication in children, 70.6% responded that "the usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours" and 56.9% of participants responded wrong answer about "Giving sterile water by injection (placebo) is a useful test to determine if the pain is real" while 55.9% responded wrong answer about "If the source of the children's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain".

But even those wrong answers were founded the eight (8) questions had a means of 56,9% of participants responded correct answers.

Tabel 4.2. 6 . Perceived barriers of nurses towards pain management among children

Item		Frequency	Percent
Pediatric nurses can have a powerful influence on the management of children in pain	Strongly disagree	4	4
	Disagree	8	8
	Agree	29	28
	Strongly agree	61	60
There is no pain management policy in place	Strongly disagree	65	64
	Disagree	11	11
	Unsure	5	5
	Agree	14	14
	Strongly agree	7	7
Lack of pain tools	Strongly disagree	42	41
	Disagree	31	

			30
	Unsure	5	5
	Agree	18	18
	Strongly agree	6	6
Little or no leadership support	Strongly disagree	38	37
	Disagree	36	35
	Unsure	11	11
	Agree	15	15
	Strongly agree	2	2
Physicians do not prescribe pain medications	Strongly disagree	54	53
	Disagree	31	30
	Unsure	1	

			1
	Agree	8	8
	Strongly agree	8	8
Lack of in-service training	Strongly disagree	29	28
	Disagree	29	28
	Unsure	11	11
	Agree	21	21
	Strongly agree	12	12
Total		102	100

About Perceived barriers of nurses towards pain management among children, 88% (90) of respondents were agree and strongly agree that pediatric nurses can have a powerful influence on the management of children in pain, 21% (21) were agree and strongly agree that there is no pain management policy in place, 24% (24) were strongly agree and agree that lack of pain tools is a barrier of nurses towards pain management among children, 17%(17) were strongly agree and agree that little or no leadership support is a barrier of nurses towards pain management among children, 16% (16) were strongly agree and agree that physicians do not prescribe pain medications is a

barrier of nurses towards pain management among children and 33%(33) were strongly agree and agree that lack of in-service training is a barrier of nurses towards pain management among children.

Tabel 4.2. 7.The associated factors of nurses ‘knowledge towards pain management among children and gender

Correlations		Gender	
Spearman's rho	Total Knowledge	Correlation Coefficient	.18*
		Sig. (1-tailed)	0.034
		N	102
			How many years of pediatric experience?
		Correlation Coefficient	0.026
		Sig. (1-tailed)	0.397
		N	102
			What is your level of education?
		Correlation Coefficient	-0.002
		Sig. (2-tailed)	0.988
		N	102

The Nonparametric Correlations Spearman's rho was used to demonstrate the correlation between nurses' knowledge towards pain management among children and gender, years of experience and level of education. The findings showed that there is low positive correlation between gender and knowledge level (rho = 0.18, p=0.03) which is statistically significant. About nurses' knowledge towards pain management among children and working experience. The findings showed that there no correlation (rho=0.026) p=0.397). Concerning the level of education, it was so difficult to conclude on level of education and nurses 'knowledge towards pain management due to the nurses were A1 very big number (74) and A0 nurses were 26 and masters level was not represented enough 2. (p=0.9)

4.3. CONCLUSION OF CHAPTER FOUR

This chapter 4 was presenting the findings about nurses' knowledge towards pain management among children in 2 selected referral hospitals. Based on these findings of the current study, it was concluded that nurses had poor knowledge level towards pain assessment in children hospitalize in University Teaching Hospital of Rwanda and Rwanda Military Hospital.. Regarding

the barriers of pain management among children, majority were agree and strongly agree that there is no pain management policy in place, few were strongly agree and agree that lack of pain tools is a barrier of nurses towards pain assessment among children, small number were strongly agree and agree that little or no leadership support is a barrier of nurses towards pain management among children, (16%) were strongly agree and agree that physicians do not prescribe pain medications is a barrier of nurses towards pain management among children and (33%) were strongly agree and agree that lack of in-service training is a barrier of nurses towards pain management among children. The findings from this study indicates that there was low positive correlation ($\rho = 0.18$, $p=0.03$) between nurses' knowledge towards pain management among children and gender. Being female working in pediatric department demonstrates a good pain management among children.

Therefore, in order to improve the quality of pain management among children especially in these hospitals and other related hospitals in Rwanda, the hospital administrators need to plan in-service training programs to enhance nurses' knowledge towards pain management among children and to avail pain management policy and tools in place.

CHAPTER FIVE: DISCUSSION

5.1. INTRODUCTION

The relief of pain in children is a necessary and humane aspect of pediatric and adolescent health care; indeed, it is a basic human right. Knowing and have a good knowledge towards pain management among children can have a good outcome to children, to the parents and also to the institution. The aim of this study was to improve knowledge and identify barriers about relieving children's pain

5.2. STUDY PARTICIPANT CHARACTERISTICS

The majority of the study participant were females. The majority of the nurses had attained A1 level of education. This was similar with study participants characteristic in Ethiopia which revealed that majority of the respondents, were female nurses. More than half of the respondents, were within age group of 25 to 29 years .

5.3. NURSES' KNOWLEDGE LEVEL TOWARDS PAIN MANAGEMENT AMONG CHILDREN

Findings from this study demonstrated that on the over all, a large proportion of nurses had poor knowledge level regarding pain management among children. The findings are described in 2 categories, named: Knowledge (assessment of children and medication).

Regarding knowledge of assessment of children, more nurses 51.1% provided wrong answer about pain assessment in children. This means that nurses don't have knowledge to assess children and they miss tools which can help the in assessment, all those can lead to power management of children . This was in line with a study done in Ethiopia on nurses knowledge, practice and barriers towards pain management(Kassa & Kassa, 2014).

It was revealed that only fewer nurses showed good pain management knowledge levels signifying that the knowledge of nurses regarding pain management in pediatric is still wanting(Kumar & Elavarasi, 2016).

A study done in Malawi also showed that more than half of nurses had a poor knowledge. It has been acknowledged that this lack of knowledge is asignificant barrier to the adequate pain management in children(Lewithwaite et al., 2011).

The overall aim of this study was to determine the knowledge and barriers of nurses regarding pain management in children in two selected referral hospitals in Rwanda. Globally it has been revealed that 49–64% of hospitalized children receive inadequate pain management despite the increase in knowledge and available treatments, the level of knowledge about pain and its proper management is very poor, in both active pediatric nurses and nursing students to have a good knowledge and identify barriers through continuous professional development as well as receiving caregiver reports of pain (Ortiz et al., 2015).

Literature has demonstrated that pain management in pediatric patients should be given a high priority by all health care professionals (Neil, 2013). It can be inferred that a nurse's knowledge and attitude can affect his or her ability to adequately provide pediatric pain management (Stanley & Pollard, 2013). The major problem in hospitalized children is the nurses' knowledge and perceived barriers towards pain management among hospitalized children and poor pain relief leads to negative outcomes. Thus, to improve adequate pain management on the children hospitalized, nurses need to have a good knowledge and identify barriers through continuous professional development as well as receiving caregiver reports of pain (Namukwaya et al., 2011). Findings from this study revealed that majority provided wrong answer about pain assessment in children and more than half of respondents provided correct answer about pain management medication. This was contrary to the study done by Jocelyne on nursing knowledge and attitudes toward pain management which showed that the major areas which showed the most substantial knowledge deficits and weaknesses revolved around pharmacology based knowledge (Craig, 2014).

5.4. NURSES BARRIERS TO PAIN MANAGEMENT AMONG CHILDREN

Nurses' barriers to pain management among children were identified. The findings from this study demonstrated that the majority of respondents agreed that the main barrier of pain management in children was lack of policy in place. In fact, findings of the study revealed that a big proportion of the nurses agreed that there was lack of pain assessment tools and while less than half of the nurses agreed that nurses lacked in-service training on pediatric pain management.

According to one study conducted in Ethiopia, it was revealed that lack of continuing training, patient and work overload, inadequate knowledge were identified as barriers for adequate pain management among children (Kassa & Kassa, 2014).

5.5. ASSOCIATED FACTORS OF NURSES' KNOWLEDGE TOWARDS PAIN

MANAGEMENT AMONG CHILDREN

The findings from this study indicate that there was low positive correlation ($\rho = 0.18, p=0.03$) between nurses' knowledge in regard to pain management among children and gender. Being female and working in pediatric department demonstrated good pain management knowledge among children. This finding is not surprising as women or female gender is well known globally for being caring individuals to their children. This is also similar to study done in Uganda on the variety of methods used to ensure children are well comfortable when nurses proceed during peripheral IV line insertion to reduce pain, has identified that 72% of nurses greet the child while 90% of them greet the next of kin or parents, over half 58% emphasize on breast feeding children during IV line procedure and only 57% received consent before starting peripheral line procedure (Katende & Mugabi, 2015)

5.6. CONCLUSION OF CHAPTER FIVE

A big proportion of the nurses agreed that they had powerful influence on pediatric pain management in the 2 Referral hospital, findings demonstrated more nurses have poor assessment, and majority of participants provided correct answer in knowledge of medication; after analyzing thus findings, I can say that poor knowledge can be due to lack of tools for assessment of children. Therefore, the lack of tools also means that their use is inadequate yet they are great facets of pain management,

CHAPTER SIX: CONCLUSION AND RECOMMENDATION

6.1. CONCLUSIONS

Based on these findings of the current study, it was concluded that nurses had poor knowledge level towards pain management among children. The findings from this study indicates that there was low positive correlation ($\rho = 0.18, p=0.03$) between nurses 'knowledge towards pain management among children and gender. Being female working in pediatric department demonstrates a good pain management among children.

From this current study , the findings shown that, nurses had poor knowledge level towards pain management among children in pain assessment as shown of findings of 51.1%.

The barriers to pain management among children were lack of pain management policy in place, lack of pain tools, little or no leadership support. Physicians do not prescribe pain medications and 33% were lack of in-service training as shown by the results of this current study done in children hospitalize in two referral hospital in Rwanda among nurses.

The associated factors to pain management was that being female working in pediatric department demonstrated a good pain management among children.

6.3. RECOMMENDATIONS

Based on the findings of this study, the researcher suggests the following recommendations:

6.3.1. Hospital administration

Should provide regular continuing profession development training on pain management among children.

6.3.2. Nursing administration

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

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LIST OF APPENDIX

1. IRB from rwanda military hospital
2. IRB from CHUK
3. Ethical clearance
4. Asking permission
5. Questionnaire
6. Ibibazo byo gukusanya amakuru

Appendix 1: IRB FROM RWANDA MILITARY HOSPITAL



March 29, 2019

Ref.: RMH/IRB/006/2019

REVIEW APPROVAL NOTICE

Dear MUKANDANGA Antoinette
School of Nursing and Midwifery, CMHS
University of Rwanda

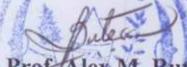
Your Research Project: “**Knowledge and Barriers of pain management in Children among Nurses in Two Selected Referral Hospitals, Rwanda**”.

With respect to your application for ethical approval to conduct the above stated study at Rwanda Military Hospital, I am pleased to confirm that the RMH/Institutional Review Board (IRB) has approved your study. This approval lasts for a period of **12 months** from the date of this notice, and after which, you will be required to seek another approval if the study is not yet completed.

You are welcome to seek other support or report any other study related matter to the Research office at Rwanda Military Hospital during the period of approval.

You will be required to **submit the progress report** and any major changes made in the proposal during the implementation stage. In addition, you are required to **present the results** of your study to the RMH/IRB before publication.

Sincerely,


Prof. Alex M. Buteera
Colonel
Chairperson Institutional Review Board, RMH

Appendix 2.IRB FROM CHUK



**CENTRE HOSPITALIER UNIVERSITAIRE
UNIVERSITY TEACHING HOSPITAL**

Ethics Committee / Comité d'éthique

February 08th, 2019

Ref.: EC/CHUK/017/2019

Review Approval Notice

Dear Mukandanga Antoinette,

Your research project: "Knowledge and barriers of pain management in children among nurses at CHUK"

During the meeting of the Ethics Committee of University Teaching Hospital of Kigali (CHUK) that was held on 08th February, 2019 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.

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

Yours sincerely,



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

<<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>>

B.P. :655 Kigali- RWANDA www.chk.rw Tél. Fax : 00 (250) 576638 E-mail : chuk.hospital@chukigali.rw

Appendix 3.ETHICAL CLEARANCE



COLLEGE OF MEDICINE AND HEALTH SCIENCES

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 14/01/2019
Ref: CMHS/IRB/042/2019

MUKANDANGA Antoinette
School of Nursing and Midwifery, CMHS, UR

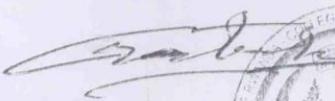
Dear MUKANDANGA Antoinette

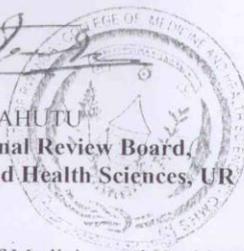
RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled "*Knowledge And Barriers Of Pain Management In Children Among Nurses In Two Selected Referral Hospitals, Rwanda*".

Having reviewed your protocol and found it satisfying the ethical requirements, 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.


Professor Jean Bosco GAHUTU
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 4: . ASKING PERMISSION

Hi, Congratulations on your study, I wish you well.

I'm not sure which study you saw, so I attached them both along with the tool

All we ask is that you cite our tool in any publications you produce from your study.

Thanks

Michelle

Michelle Czarnecki, MSN, RN-BC, CPNP

Pain Management APN

Jane B. Pettit Pain and Headache Center

Children's Hospital of Wisconsin

8915 W Connell Ave MS 792

Wauwatosa, WI, 53226

414-266-3589

Fax: 414-266-1761

From: mukandanga antoinette [mailto:mndanga17@gmail.com]

Sent: Tuesday, May 22, 2018 11:21 AM

To: Czarnecki, Michelle

Subject: request to use tool

I am called Antoinette MUKANDANGA (Masters Program) in University of RWANDA. I am doing Research Titled **knowledge and barriers of pain management in children among Nurses Working in pediatric at University Teaching Hospital of Kigali .**

I have found your study that you have done.

Kindly, Could you allow me to have access on the tool that you have used and how was validity and reliability?

Best Regards

Appendix 5 . QUESTIONNAIRE

Objective 1

I. 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
- Neurosurgical

Objective 2

II. Nurse's knowledge Regarding Pain

True/False – Circle the correct answer.

- T** **F** 1. Vital signs are always reliable indicators of the intensity of a patient's pain.
- T** **F** 2. Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.
- T** **F** 3. Children who can be distracted from pain usually do not have severe pain.
- T** **F** 4. Children may sleep in spite of severe pain.
- T** **F** 5. Respiratory depression rarely occurs in children who have been receiving stable doses of opioids over a period of months.
- T** **F** 6. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.
- T** **F** 7. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.
- T** **F** 8. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics.
- T** **F** 9. Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity.
- T** **F** 10. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the child's response.

- T F** 11. Giving sterile water by injection (placebo) is a useful test to determine if the pain is real.
- T F** 12. If the source of the children's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.
- T F** 13. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.
- T F** 14. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.

Objective 3: To identify perceived barriers to pain management in pediatric care areas Please tick (✓) the best answer to the following questions:

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. Pediatric nurses can have a powerful influence on the management of children in pain					
2. There is pain management policy in place					
3. Lack of pain tools					
4. Little or no leadership support					
5. Physicians do not prescribe pain medications					
6. Lack of in-service training					

Appendix 6.

IBIBAZO BYO GUKUSANYA AMAKURU

Umutwe: Ubumenyi n'imbogamizi bya ba foromo mu kuvura abana bafite ububabare mu bitaro bikuru bya kaminuza ya ya Kigali n'ibitalo bya gisirikare, Rwanda

IBIBAZO

INTEGO 1

Umwirondoro rusange

1.Igitsina

- a. Gabo
- b. Gore

2. Amashuli wize?

- a. Umuforomo ku rwego rwa A0
- b. Kaminuza icyiciro cya mbere
- c. Kaminuza icyiciro cya kabiri
- d. Kaminuza icyiciro cya gatatu

3. Ufite imyaka ingahe? _____

4. Umaze imyaka ingahe muri pediatiri? _____

5. Ukora mucyihe cyumba muri ibi bikurikira?
- Icyumba cy'abana b'imbagwa n' imitsi?
 - Icyumba cy'abana bafite indwara zidakira
 - Icyumba cy' abana bafite indwara z'umutima
 - Icyumba cy'abana bafite canseri
 - Neurosurgical
 - Mubana barembye cyane
 - Abana barembye buhoro
 - Irijansi

IMPAMVU 2

Ubumenyi aba foromo bafite kubijyanye n'uburibwi

Yego/Oya – kugisubizo cyiricyo

- T F 1.** Ipipimo by'ubuzima bihora igihe cyose zerekana uburemere bw'uburibwe
- T F 2.** Umwana uri muni y'imyaka ibiri (2)ntiyinva ububabare cyangwa ntiyibuka ibyamubayeho kubijyanye n'ububabare kuberako imitsi imyakuro ituma yumva ububabare iba itarakomera.
- T F 3.** Umwana ushobora kurangazwa n'ibintu mugihe afite uburibwe, biba bisobanurako nta buribwe bukabije afite.
- T F 4.** Umwana nubwo yaba afite ububabare bukabije ntibimubuza gusinzira.
- T F 5.** Birashobokako umwana umaze igihe cy'ukwezi afashe opioids yashobora kugira ikibazo cyoguhumeka.
- T F 6.** Kuvanga imiti igabanya ububabare ikora kuburyo bunyuranye (e.g., combining An NSAID with an opioid)bishobora kugabanya ububabare ntangaruka zibayeho kurusha

gukoresha umuti w'ubwoko bumwe.

- T F 7.** Mubusanzwe umwanya dose ya morphine ya 1-2mg IV imara mumubiri ni 4-5 hours.
- T F 8.** Ubushakashatsi bwagargaje ko promethazine (Phenergan) and hydroxyzine (Vistaril) zongerera imbaraga imiti igabanya ububabare yo mu bwoko bwa opioid.
- T F 9.** Abana bafite imyaka iri muni ya 11 ntibashobora gusobanura ububabare bwabo biryo umuganga agomba kwifashisha ababyeyi bakaba aribo basobanura ububabare bw'umwana.
- T F 10.** Nyuma yo gutanga dose yambere y'umuti ugabanya uburibwe wo mu bwoko bwa opioid, dose ikurikira igombagutangwa hakurikijwe uko umwana agabanuka ububabare.
- T F 11.** Gutera amazi sterile (placebo) bishobora kwerekana nezako umwana afite ububabare
- T F 12.** Mugihe impamvu y'ububabare itazwi, opioid ntiyahabwa mukugabanya uburibwe mugihe cyo gusuzuma umwana kuko bituma impamvu nyayo ituma uburibwe itagaragara.
- T F 13.** Imiti igabanya kugagara nka gabapentin(Neurontin) igabanuraho gato uburibwe nyuma yo gufata dose imwe.
- T F 14.** Benzodiazepines ntabwo ikuraho ububabare cyereka igihe ububabare bwaba biterwa n'imitsi yihina(muscle spasm).

Objective 3: Kureba impamvu zituma ububabare butitabwaho mu ibitalo byabana

Shyira iyi sinye (✓) ku igisubizo cyiricyo:

	Simbyemera cyane	Simbyemera	Simbizi	Ndabyemera	Ndabyemer a cyane
1. Umu foromo wo muri pediatric afite ubububasha bwo kwandika no gutanga imiti igabanya uburibwe					
2. Aho ukorera hari polisi ivuga uko bita kuba rwayi bafite ububabare					
3. Kubura ibikoresho					
4. Ubuyobozi butabibafashamo					
5. Abaganga batandika imiti yububabare					
6. Kudahabwa amahugurwa					

APPENDIX 7.

INFORMED CONSENT

CONSENT FORM

Consent to participate in a project about knowledge and barriers of pain management in children among nurses.

Greetings! My name is MUKANDANGA Antoinette. I am a student nurse working on a dissertation with the objective of assessment of knowledge and barriers of pain management in children among nurses

Purpose of the Study

One hundred and thirty four (134) nurses are enrolled to participate in this study to assess knowledge and barriers of pain management in children among nurses

What Participation Involves

If you agree to join the study, you was asked to answer 24 questions. The questionnaires consist of section A with 5 questions on demographic information, section B with 14 questions that was asked to evaluate the level of Nurse's knowledge regarding pain management in children and 6 was asked to Assess Nurses' barriers regarding pain management.

Confidentiality

The study will not include details that directly identify you, such as your name. Only a participant identification number was used in the survey. If the results of the current study was 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 knowledge and barriers of pain management in children among nurses 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 MUKANDANGA Antoinette RN (0788500633) University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery in Pediatric track

Signature:

Do you agree to participate?

Participant agreesParticipant 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