KAMUZU COLLEGE OF NURSING

PAIN ASSESSMENT AND MANAGEMENT IN CHILDREN AT LUSAKA CHILDREN'S HOSPITAL: A MIXED METHODS STUDY

BY

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DECLARATION

I hereby declare that this report is entirely the product of my work which I have done as a requirement for the award of Master of Science Degree in Child Health nursing at Kamuzu College of Nursing, University of Malawi. This work has not been submitted to any university for any other academic award and it has not been submitted anywhere else. To the best of my knowledge, the work is as a result of my hard work and originality. The sources I am indebted to are all well referenced and cited

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CERTIFICATE OF APPROVAL

We, the undersigned hereby certify that this Dissertation is Eric Chisupa's own work and effort and has been submitted with our approval.

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ACRONYMS

COMREC	College of Medicine Research Ethics Committee
EN	Enrolled Nurses
GNCZ	General Nursing Council of Zambia
LCH	Lusaka Children's Hospital
KASRN	Knowledge and Attitudes Survey Regarding Pain
P- NKAS	Paediatrics Nurses Knowledge Attitude Survey
RN	Registered Nurses
RCCN	Registered Critical Care Nurses
RPN	Registered Pediatric Nurses
RM	Registerd Midwives
UNZABREC	University of Zambia Bioethics Research Committee
UTH	University Teaching Hospital
WHO	World Health Organization

Table of contents

Abstract

Pediatric pain is a neglected area in child health, particularly in low resource settings. All health workers poorly manage pain in children generally. Since Nurses are the closest health workers to the patient their knowledge, attitudes, and practices on pain affect the patients directly. The aim of the study was to explore nurses' experiences in management of pain in children. The study used a convergent parallel mixed methods design. Qualitative and quantitative data were collected using the questionnaires, focus group discussions, and a case review. 40 nurses responded to a survey done using the Pediatric nurses' *Knowledge* and *Attitudes Survey* tool. This was followed up by three focus group discussions made up of at least six (6) nurses in each group and a two (2) case file review.

Quantitative data were analyzed using STATA 15, for associations using chi-square, and Fisher's exact tests. Overall, the nurses' scored poorly, with a median score of 40.7%, while the World Health Organization's (WHO) expected pass mark is 80%. Neither self-rated knowledge nor years of experience had any significant association with the score. A higher level of education was both significantly associated with a higher score (Fisher's exact 0.038). Qualitative data was analyzed using content analysis. Some of the themes, which emerged, were nurse's lack of knowledge on the management of pain, barriers to pain management, and influencers for deciding on management of pain in children. Nurses made negative statements about self-reported patient pain, attributing child and parent reports as attention-seeking behaviors, yet at the same time, the nurses expressed a positive desire to have training on pediatric pain management augmented by clear hospital policies and protocols. Heath workers rarely use a tool to assess and manage child pain and this was reinforced by the two file case reviews.

The overall findings suggest that nurses were lacking in knowledge and practice for providing appropriate pain management to children. It is being recommended that the guidelines on pediatric pain management in pre-service curriculum and in-service training be cemented, and to explore forming hospital pediatric pain management teams to address in-facility needs.

CHAPTER ONE: INTRODUCTION

1.0 Introduction:

Children are born with functional pain pathways; hence they can perceive pain at birth (Walker, 2013). These pathways are responsible for the physiologic as well as behavioral responses seen in a child with pain. Undetected and untreated pain in a child can produce immediate as well as long-term negative developmental effects. Immediate effects may be exhibited in uncontrollable crying, distress, and neurological problems (Walker, 2013). While long term effects can lead to developmental problems and a lower score on the Denver score chart for motor and psychomotor parameters. This is because the maturation of the brain cells is affected when the child has uncontrolled pain. This makes the child susceptible to severe forms of diseases when they fall sick in the first few days of life (Walker, 2013). The child may also exhibit physiologic problems like hypertension, tachycardia, and increased cardiac output. These physiology derangements put a strain on the body and increase metabolism and may predispose to cardiac conditions of the myocardium both ischemic and infarction as well as ventricular dysfunction (Vickers, 2011). In older children, uncontrolled pain produces complications in the sympathetic nervous system, such as anxiety, confusion, sleep disturbance, delirium, and paranoia (Ufashingabire *et al*., 2016).

In the long run, the response to painful stimuli is reformatted affecting the child's response to the stimuli in future exposures. The reformatted stimuli response causes the child to experience pain and distress longer and with high intensity for minimal exposure. The whole mark of life is to be as pain-free as possible. A prolonged sense of pain, therefore, causes loss of quality of life (Casey, 2011). Health workers generally like to focus on trying to treat the cause of something as opposed to worrying about the long-term effects. Pediatric pain remains one of the most misunderstood, under-diagnosed, and under-treated/untreated medical problems in children (Mathew, 2011). Management of pain in children is a very complex phenomenon because they react differently to it depending on their developmental age (Eke & Briggs, 2019). Moreover, in most cases, they do not easily verbalize or localize their pain. Children from Africa are considered

particularly vulnerable to pain because of the presence of disease, injury, and lack of access to restraints and support systems (Walters, 2009). Pain ranks as the foremost reason the caregivers seek medical attention. Apart from the pain due to illness, children also suffer pain due to medical procedures. Annually worldwide, close to 1.5 million children, undergo surgeries for various reasons, and their pre-operative, as well as post-operative pain, is poorly managed as well (Mathew, 2011). Poorly managed pain in children leads to them developing chronic pain, emotional and psychological scars. These scars can negatively influence future choices they will be making concerning their lives in general and health care in particular (Mathews, 2011). Fortunately, Pain assessment tools appropriate for the developmental age are available. Since it is expected that sick children will exhibit some form of pain, health workers are expected to anticipate, identify, and grade the pain in each child under their care. The grading of the pain should include the intensity, and then to provide the appropriate measures needed to manage the pain (Shrestha-Ranjit & Manias, 2010). This study was done to ascertain the knowledge, attitude, and practices of health workers at Lusaka Children Hospital.

1.1 Background Information:

The need for assessment of pain in children who are sick is well documented. The strategies for controlling pain must be based on an accurate measurement of pain and discomfort. These measurements must take into consideration the age, cognitive, and psychological development of the child (Kraemer & Rose, 2009). The recommendations from the Royal College of Nursing are that pain in children must be anticipated first, assessed, and thereafter treated. The college further recommends that those patients who can verbalize must be allowed to state and report their pain. When they verbalize their pain, their opinion on the pain and its intensity must be respected. There are various types of tools, which can be used to assess pain in children. Whatever tool is used, it must be validated. The results of the assessment using the tool must be used to treat the pain (Royal College of Nursing, 2009). Management of pain has been identified actually as one of the main reasons why caretakers bring their children to the hospital (Mathews, 2011). The presence of pain can be noticed in children by signs of distress, stress, and inconsolable crying.

The problem of poorly managed pain in children is huge. Many health workers have challenges in managing children's pain. Even in wealthier nations, like in Europe, where resources for childcare and hospitalization are abundant, children's pain is still frequently not assessed or not adequately treated. Children are usually left to needlessly experience pain arising from minor illnesses, injury, and medical procedures (Fortinguerra *et al*., 2010). In developing countries, the problem of effective pain management in children is even worse. The reasons for the poor management of pain in children are varied in both wealthier and poor countries. In Indonesia, for instance, the reason for poor management of pain in children is due to a lack of prescription from physicians and poor nurses' knowledge in pain assessment and management (Cahyani *et al*., 2019). In Sub-Saharan Africa, the situation is not different. The assessment of pain in children is not properly done if done at all. Pain is rarely anticipated and the children are seldom prepared emotionally or physically for painful procedures. If premedication is given such as before dressing in burns, the premedication is usually inadequate. The premedication is many a time given as a monotherapy and the prescription is not based on the assessment of any kind. There are no guidelines to be followed in most cases (Walter, 2009). At Lusaka Children Hospital (LCH), all nurses have received education and training in some aspects of pain management as seen in the curriculum for both Enrolled Nurses and Registered Nurses (General Nursing Council, 2010; General Nursing Council, 2012). Pain has always been a part of the nurse's curriculum, meaning that, just about all the trained nurses have some orientation on pain management. The evidence of the nurses having been exposed to some aspects of pain management in children during training is not apparent in their practice. It is common to find babies and children crying uncontrollably and exhibiting other signs associated with pain in the wards. This is also true during procedures like injection giving, setting up intravenous cannulae, and many others. There are no efforts made to minimize or remove pain altogether. Both the health workers and the mothers consider the crying as a normal feature in a sick child especially if the caregiver is not at the bedside. The expectation is that the child must endure that pain. However, it is an established medical fact that a patient that is not assessed for pain, and

whose pain is not managed is not receiving quality care from the health workers (Subhashini, Vatsa & Lodha, 2009). Likewise, the Declaration of Montreal (International Association for the Study of Pain, 2011), indicated that every patient must be assessed and have their pain managed as a standard of quality care. In that regard, there is sufficient knowledge on the subject which can help the nurses in particular and the health workers in general to make appropriate plans of care for children with pain (Kraemer & Rose, 2009, WHO, 2012). Moreover, appropriate pain management in children is beneficial, because it improves their physiology, behavioral, and hormonal outcomes aiding in the healing process (Kahsay, 2017).

The recognition that if the pain is not treated in children it can cause harm has led to an improvement in how the children are treated. A few hospitals have established policies and protocols of how pain can be treated in children. Newer drugs are being used alone or in combination with other drugs (Verghese & Hannalla, 2010). Some of the innovative ways include administering opioids via the skin and nasal mucosa and the provision of premedication before a painful procedure. When these policies are followed, the children end up receiving quality care. Despite existing hospital policies and having a pain-consulting team, significant room for improvement in pain management was still identified in the study done in the United Kingdom. Another key thing to remember is that there are few examples of positive practices on pain management, especially in children. Therefore, more needs to be done to remove the gloomy picture in the management of pain in children (Friedrichsdorf, 2016). Even in settings where well-defined guidelines exist to guide practice, they are not being fully used to manage children (Twycross, 2013). In children's pain management, the gap between knowledge and practice is still dangerously huge and it looks like it continues to widen. This unfortunately is the true world over, even in developed nations (Akuma & Jordan, 2011; King & Fraser, 2013). This study explored pain assessment and management in children at Lusaka Children’s Hospital.

1.2 Statement of the Problem:

Lusaka Children Hospital (LCH) is the largest pediatric facility in Zambia, receiving referrals of children from throughout the country. These children suffer a variety of conditions with a good number of them presenting with pain. Some children suffer pain due to their conditions, and some of the pain is made worse due to the medical procedures they have to undergo. Pain control at the hospital for children is sub-optimal in some cases and some cases completely wrong (Mutale, 2015). However, the hospital has no guidelines in the form of protocols on how to identify, assess, and manage pain in children. This creates a problem for nurses and other health workers (Clancy, 2014). Although the nurses have a component of pain assessment and management in their basic pre-service nurse training curriculum, this does not seem to have helped them to prioritize management of pain in children (GNC, 2010). This is despite the fact that a variety of resources are available in the literature on the assessment and management of children's pain. Literature indicates that unmanaged somatic pain can affect the comfort of the child and the disease process in the immediate, and also affect growth and development of the child in the long run (Munkombwe, Petersson & Elgán, 2020). The lack of protocols and standards at LCH, in the management of pain, has contributed to the haphazard and uncoordinated way of managing pain, especially in children. At most, the pain prescriptions are monotherapies and the shortage of drugs is a common feature (Sinkala *et al.*, 2018). In some instances, the prescriptions for pain management are on a pro re nata (PRN) basis. Children's pain is not assessed and no single pain tool is available in the children's medical files. Since the nurses are the ones who are mostly with the patient, it is profoundly important that their beliefs, perceptions, and practices are understood because these are a major contributing factor to whether pain management will be successful or not (Twycross, 2010). The nurses have a lack of knowledge on the management of pain in children, and their attitudes are wrong arising from poor experiences (Munkombwe, Petersson & Elgán, 2020). There is a need, therefore to study the nurses' experiences in dealing with pain in children.

1.3 Significance of the Study:

This study will benefit the children who are hospitalized and improve the quality of care they receive while in the hospital. The other possible beneficiaries of this study will be the health care workers, who will benefit from the introspection this study will provide in their practice. It is also hoped that the findings will help improve practice, training, management, and policy at the local level on how to assess and manage pain in children. This study may inform the process of formulation, and updating protocols on the management of pain. This may also provide the impetus for the formation of pain teams as a measure to improve quality of health care in children (Dunwoody *et al.*, 2008).

1.4 Study Objectives

Aim

The general aim was to explore nurses' knowledge, attitudes, and practices towards the management of pain in children at Lusaka Children Hospital.

Specific objectives

1. To assess the nurses' knowledge on how to manage pain in children at LCH
2. To explore attitudes, beliefs, and practices of nurses on the management of pain in children
3. To identify the resources available for managing pain at Lusaka Children Hospital

Variables

Independent variables are gender, age of the nurse, years of nursing experience, level of education, years in a pediatric unit, nursing grade, and training in pain management.

The dependent variables include the practices related to pain, attitude on pain management, and knowledge on pain assessment

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this section, the researcher presents the literature search in relation to pain management in children. The section reviews literature which discusses the topic of pain and its management in children. The literature search was done using various online electronic platforms. The data searches used were CINAHL, PUBMED, Science Direct, Wiley-Blackwell, Google Scholar, and MEDLINE. The terms used for the search were: Assessment, pain in children, pain management in children, and nurses' knowledge, beliefs, and attitudes of pain and its management in children. The search focused on empirical research, professional journals, and guidelines published in English between 2008 and 2019. Information was also sought from international authorities like the International Association for the Study of Pain and World Health Organization articles which came up from the search. The data were checked for relevance and recency. Only literature that was peer-reviewed and was published in the last ten (10) years was used. The reference lists of the articles were also used to identify other useful articles that were downloaded and included in the discussion. The literature review focused on the general research on pain, the health workers knowledge and attitude on pain, and the health workers knowledge and practice on pain

2.1 Research on Pain in Children

A literature search showed that generally, research on pain in children is growing. The future of pain research is bright and promising. This can be seen in the increased number of publications, journals, and websites dedicated to pain management. However, this increase in pain research and interest is mainly in developed countries. Very little research has been done and very little is being published on pain in the sub Saharan Africa region (Onyeka & Chukwuneke, 2013). United States of America (USA) and Europe are the regions with the most research in pain in the world. This is despite the fact that Africa has 90% of the world's health problems. It is ironic that Africa only produces less than 10% of the health research including pain research (Onyeka & Chukwuneke, 2013). Since most research about pain is conducted in Europe and the USA, there is a

need for more research on pain in Africa (Onyeka & Chukwuneke, 2013). The consequence of Africa doing little research is that the problems in pain management cannot be solved and the practice cannot be improved. Children's pain will remain untreated and their quality of health care will remain below standard. This scenario underscores the need for more research on pain in Africa to be supported and published (Onyeka & Chukwuneke, 2013). The other reason why pain research and management may not be receiving sufficient attention in Africa and other developing countries is that developing nations are mainly preoccupied with providing curative services to the public than spend resources on pain management and research (King & Fraser, 2013). They also tend to pay more attention to other health indicators, which have a direct link to donor aid like maternal and child mortality.

A further review of the literature shows that the subject of pain in children does not receive sufficient attention. Despite the agreed fact that children make up about 52% of the African population, research involving them makes only up to a total of 6% (Onyeka & Chukwuneke, 2013). Twycross (2010) published a review of worldwide literature dealing with the management of pain in children, which looked at the past 15 years. The review looked at factors affecting pain management in children. Like many other studies done in children's pain assessment and management, it was noted that despite the fact that guidelines existed in some settings to guide practice, they are not being fully used to manage children (Twycross, 2010). The gap between knowledge and practice is still dangerously huge and it looks like it continues to widen. This unfortunately is the true world over, even in developed nations (Akuma & Jordan, 2011; King, & Fraser, 2013)

2.0 Health workers' knowledge and attitudes on pain

A substantial number of health workers ignore moderate to severe pediatric pain even if that pain is clinically significant. A study entitled the Hospitalized children to continue to report undertreated and preventable pain done at IWK Grace Hospital for Women, Children, and Families in Canada concluded that for inpatient children pain is still ignored and under-treated. This study was conducted to obtain cross-sectional experiences on pain by children who were admitted in the oncology, ICU, surgical and

medical wards. For the children who could talk they were interviewed while those too young their parents were interviewed over a period of 48 hours. The significant finding was that up to 94% of the admitted children regardless of the diagnosis report having pain during the illness (Bernie *et al*., 2014). The review by Twycross (2010) summarized the factors, which are affecting pain management for children. Key among them was that health workers were affected by their belief in the way they responded to pain in children. Most of them had incorrect beliefs, such as pain is a part of illness; hence it has to be faced without necessarily complaining about it. In a study conducted in a tertiary care hospital in north India whose title was Knowledge, Attitude, and Practices among Health Care Professionals Regarding Pain, the findings showed that the health workers' beliefs make them negate comforting a crying child to being a parental role while they pay attention to more technical aspects of the nursing care, like writing a report (Subhashini, Vatsa & Lodha, 2009). Another study was done at a UK pediatric hospital to assess the sustainability and efficacy of pain practices among health workers. This study also confirmed the understanding that in the developed world, pain management guidelines exist; however, consensus on the best model of care to be used does not exist. The increased patient load and new disease burden has increased challenges of taking care of children with pain in the hospital. The study was done using 2013 data, which looked at case notes of Acute Pain Services referrals over 14 days. The data was compared to non-referred against the referred in children patients (Beckett *et al.,* 2016). To complete the mixed method, seven semi-structured interviews were done with the health workers. The results indicated that all 30 children (100%) who were referred for pain-related problems were appropriately referred. Three key themes emerged through interview analysis: 'addressing pain', 'changing contexts' 'pain as an "expert" skill'. However, this study identified two big challenges that health workers face in managing pain in children. The first one was increased specialization. The more health workers were getting specialized, the more the reduced clarity in different pain modalities. On the other hand, the less trained the nurses were, the less the accuracy of referrals. This underscores the importance of continued education for health workers in pain management (Beckett *et al.,* 2016).

In a study done at the emergency department in Saudi Arabia, a two-phase mixed method design revealed five important findings. The study was investigating the knowledge and attitude of nurses on pain using the mixed method design. This study further sought to reveal the barriers and facilitators to pain management and the influencers of pain management among nurses in the kingdom of Saudi Arabia. Semi-structured interviews were conducted using the Knowledge and Attitudes Survey Regarding Pain (KASRP) and focus group discussions. Both data sets were analyzed individually and then brought together to probe and better understand the survey findings in greater depth. The mean score of the nurses on the KASPR was 48.0% against the expected mean score of 80%. This finding meant that nurses were poor in their knowledge of pain. This study produced very interesting findings. It reported that nurses when dealing with a patient with pain were bound to give the patient labels or tags as truthful or not truthful patient depending on the way they expressed their pain. These labels given to the patients influenced how the nurses reacted to the patient's pain. The judgement nurses made was used when they were making any decisions about the patient's pain. The units where the nurses were working encouraged them to make clinical decisions. These clinical decisions were many a time based on intuition. These decisions were respected and followed even when there was sufficient information showing that such decisions were contrary to best practice. Nursing patients with pain was blamed as a cause of fatigue for nurses and patients who needed more pain medication were further called as substance abusers and the nurses often under administered opioids. All these practices were due to a lack of knowledge about how to manage pain. This study recommended the development and consistent use of triage and pain assessment tools as a way of improving how pain is managed in patients as well as the development of standard protocols. It also recommended that continuous education sites for staff be set up so that they can be updated on new trends on pain management (Mohammed, 2015).

Alotaibi *et al.* (2018) undertook a study to identify and synthesize evidence regarding the knowledge and attitudes of nurses, and barriers and facilitators to effective pain

assessment and management in infants and children in Saudi Arabia. Using Whittemore & Knafl's five-stage framework, the researchers reviewed studies published from 2000 to 2018. The search was done using search platforms like CINAHL, PubMed, ProQuest, PsycINFO, and Scopus. The first outcome brought out a total of 292 papers, which were published. These papers were reviewed and were reduced to only 27 papers that were used in the review. There were 18 quantitative, 5 qualitative, and 4 mixed-methods papers (Alotaibi *et al*., 2018). Similar to the other findings, which show that health workers lack knowledge of pain in children, the review of these reports showed that nurses internationally have poor knowledge and attitudes of basic pain assessment and management principles. This lack of knowledge arises from the lack of education and the non-availability of assessment tools in the clinical area. The other issue that was raised in this review was that parents were reluctant to report pain because the physicians provided insufficient prescription of analgesia. Pain management is easy and successful if the parent participates in the child's care, and when a trusting and respectful relationship exists between nurses and children. The review findings suggested a need for continued education for nurses, doctors, and the patients' families in relation to Paediatric pain management, and improving communication among health workers (Alotaibi *et al*., 2018). Huth, Gregg and Lin (2010) did a study in Mexico on nurses working in a children's hospital. In this Survey, the Pediatric Nurses Knowledge Attitude Survey tool was used. A total of 106 pediatric nurses were surveyed. The study found out that the knowledge and attitude of nurses towards pain management was poor. The mean score in the study was 46.6%.

Another study done in India, probably the first study to explore the knowledge, attitude, and practice of nurses working in children intensive care unit revealed that having formal training in pediatric critical care nursing and pediatrics was useful in managing pain in children. Those not formally trained were likely to use intuition and individual experience in taking care of children with pain. This study was done at a tertiary care teaching hospital on nurses working in pediatric/neonatal intensive care units. The study further found that nurses' actions depended on their knowledge and how sensitive they

were to pain. The study was done in a critical care unit where the children receive more invasive procedures than in other wards. The study used a questionnaire on nurses working in pediatrics/neonatal care units of three (3) teaching hospitals. From the three units that were involved in the survey, they had a combined total of 81 nurses but only 56 (69.1%) participated in the study. Only 27 (33%) nurses had undergone formal training in pediatrics and that had a strong collaboration to knowledge (P=0.03). This survey revealed that 50% of the respondents felt that infants experienced less pain than adults. These units used restraints and distractions when performing painful procedures and they never used any analgesia or any local anesthetist. In terms of pain assessment, these units relied on observing the face of the child and posture to decide if the child was in pain. The units never used any formal assessment tools (Mathew, Mathew & Singhi, 2018).

3.0 Health workers' knowledge and practices on pain

A study was done to assess nurses' knowledge, attitudes as well as practices on pain in children. The study used a structured questionnaire to nurses and nurse assistants working with neonates. A total of 50 respondents took part in the study. The results showed that the nurses and the nursing assistants had poor knowledge of pain. However, it was noted that the more education the nurse had the more knowledge they had about pain in neonates. Overall the mean score on knowledge was very poor (48.2%). The respondents however showed good attitudes toward pain management in trying to control pain in neonates. The mean attitude score was 90%, but the practice was poor with a mean score of 40%. This could be because practice is affected by knowledge. If one has no knowledge their practice is likely to be poor too even if their attitude is good (Asadi-Noghabi *et al*., 2014).

Literature acknowledges that pain assessment is crucial to the management of pain. What cannot be assessed cannot be treated (Voepel-Lewis, 2011). Optimal pain management depends on how accurate the assessment of the pain of the child is (Abazari & Namnabati, 2017). Every patient must be assessed for pain. Having pain management is a human right as noted in the Montreal Declaration of 2010 (International Association for the Study of Pain, 2010). It is for this reason that it has been called the 5th vital sign, after

temperature, pulse rate, respiratory rate, and blood pressure checking which are done on all admitted patients as a routine (Georgina, 2011). For accuracy in assessing pain, it is thus recommended that all three aspects be used in combination, that is the behavioral, physiological signs, and the child's self-reporting (APCA, 2010).

In a study done in India, a total of 47 nurses and 30 doctors were researched to ascertain the knowledge they had on pain management in children. This study too showed that the health workers had poor knowledge of children's pain management. Close to 50% could not even mention any pain scales, which are supposed to be used in children. 65% of the respondents indicated crying as an indication of pain in all age groups, which is an understatement. What was more alarming in this study was that one third of the health workers were not aware that poorly managed pain can have adverse effects on the child. They did not know any problem, which could arise if the pain is not managed appropriately (Subhashini, Vatsa & Lodha, 2009).

Sadly, many research studies indicate that nurses only consider self-reporting as the main indicator of the presence of pain. This is against the backdrop of the fact that assessment tools, which are validated and scientifically tested, are available for assessment of pain in children. Health workers and nurses in particular do not fully use such tools. The prescribed medication for pain is usually given on as needed basis and not as prescribed (Shrestha-Ranjit & Manias, 2010). This is most disappointing especially for nurses because they make up a large number of professionals who are crucial in managing patient pain and are expected to be able to assess it well for them to manage it well (O'Regan, Wills & O'Leary, 2010). On the contrary, they continue to portray inadequate knowledge especially on the assessment of pain (Reshma *et al*., 2015).

A study that was conducted by Subhashini, Vatsa and Lodha, on nurse's knowledge and practices on children's pain in India also indicated that non-pharmacological treatment was the best way of treating pain than drugs. This was regardless of the intensity of the pain. Most of the respondents (64%) believed that the treatment must first start with non-

pharmacological treatment like distraction before pharmacological treatments are used (Subhashini, Vatsa & Lodha, 2009). A study by Twycross (2010), looked at pain management in a hospital in England. A total of 30 nurses participated in focus group discussions where they discussed factors that enable effective pain management and problems, which hindered appropriate pain management. The results indicated that there is a gap between what nurses do, and what they know on assessment. The nurses indicated that they used a variety of pain scales to assess pain; however, the patient's documentation did not indicate the use of the pain scales mentioned by the nurses in the focus group discussion. The nurses' knowledge and practices of pain management were also not satisfactory (Twycross, 2010). In some cases, practices of pain management are not always linked to the experience of the nurses (Reshma *et al.,* 2015). Nurses seem to be very aware of pharmacological approaches to pain management and most of them think that is the only effective method. Non-pharmacological approaches to pain relief especially in neonates are not appreciated, not fully utilized, and not well understood (Hall & Anand 2014).

4.0 Attitude towards pain in children

Even in hospitals and settings where guidelines are available for effective pain relief, pain is still undertreated and mismanaged. Pain medications are mostly on a PRN even when pain is evident, like in the case of post-operative children. (Shrestha-Ranjit & Manias, 2010). In one study in the USA, a total of 724 nurses were studied and they reported that the significance of non-pharmacological interventions to relieve the pain was known to them though they did not routinely use it and the most frequently used methods were play and distraction (Kwekkeboom *et al.,* 2008). There are several reasons nurses identify for preventing them from assessing and prescribing appropriate pain therapies for children. Among the factors mentioned in a study by Twycross (2010) include the nurse's personal judgments, personal preconceived ideas such as that pain is part of the illness and as such the children must experience it to some degree. Some nurses lack knowledge of the therapies to give the child in pain, and the fear of overdosing the children prevents some nurses from helping the children in pain (Subhashini, Vatsa, & Lodha, 2009).

Even wealthy nations have a high burden of acute and chronic pain in children. The prevalence is high among children presenting for health care and these children are poorly managed and assessed. It is clear therefore that there is a special need for health workers to receive cross-discipline training on pain (Hurley-Wallace *et al*., 2019). The study from England on Paediatric pain education for health care professionals found that the provision of online training is one feasible short-term solution to the lack of pre-licensure pain education in health care professionals. Further development of Paediatric pain education is essential at every level along with research to determine whether such initiatives improve professional knowledge, attitudes, and clinical outcomes for patients (Hurley-Wallace *et al*., 2019). Online education programmes for professionals may present an innovative solution to the lack of interdisciplinary knowledge on Paediatric pain; however, there is currently a lack of available resources. Current and future online resources must be assessed to determine whether they can improve professional knowledge, attitudes, and clinical outcomes for patients (Hurley-Wallace *et al.*, 2019). Nurses spend more time with admitted children than other health workers. They are usually the first health worker, in some settings the only health worker available to attend to the patient in pain (Bajjali, 2019). The nurse's attitude towards pain is very important because it can entail the difference between appropriate management of pain and poor pain management for the child in pain. The nurses can also be a source of pain in children because they perform many painful procedures routinely on admitted children (Bajjali, 2019). In one study it was reported that children with poorly managed pain end up staying longer in the hospital, they have higher readmission rates, more frequent outpatient visits, delayed healing of wounds, and altered immune functions (Bajjali, 2019).

Unfortunately, health professionals, including nurses, have historically underestimated the existence of pain in children; therefore, pain management has often been less than optimal because of their poor attitude towards pain (Bajjali, 2019). The role of the nurse in pain management includes the entire nursing process. The nurse does an assessment for the presence of pain, makes a plan of pharmacological and non-pharmacological pain

management strategies with the medical team, implements the plan, and evaluates the effectiveness of the interventions. This role is undermined if the attitude of nurses is bad towards pain. Among the many factors identified as the influencers of effective pain management, attitude ranks very highly (Bajjali, 2019). The bad attitude of nurses towards the management of pain is seen in the belief nurses may hold that pain is part of illness so it is to be expected. Hence nothing needs to be done about it. The other belief is that the mother must be able to deal with a child in distress. If the child is crying the mother of the child is expected to offer a solution to it and the nurses may not feel the urge to do anything. All these are signs of a poor attitude towards pain management. Further, some nurses may hold an attitude of mistrust towards the caretaker, in that when the caretaker reports that the child is in pain they may view it as seeking attention.

5.0 Conclusion

Pain management in children has become complex (Beckett *et al*., 2014). The literature review shows that guidelines on how pain should be assessed and managed do exist. Despite all these available guidelines, the pain in children continues to be undertreated. Among the reasons why the pain is undertreated in children are the poor knowledge, attitude, and practices of health workers.

CHAPTER THREE: METHODOLOGY

6.0 Introduction

This chapter contains detailed descriptions of the methodology used in this study, and will include the study design, study setting, sample size, sampling method, study population, recruitment criteria, data collection, data management, and data analysis used in this study. The chapter further discusses ethical considerations, limitation of the study, and dissemination of the study findings

3.1 Research Design:

Mixed methods study design was used in this study. Mixed method is a study design where both the qualitative and quantitative methods are used in one study to maximize the benefits and minimize the inadequacies of individual study designs (Tashakkori & Teddlie, 2008). Creswell states that all mixed methods research designs are underpinned in three designs. These three are "Convergent design, exploration sequential design, and explanatory sequential design" (Zhneg, 2015). The researcher chose the convergent mixed method design because it offers an opportunity to explore the phenomenon of pain in much more details.

The Convergent mixed method: In this type of mixed method study the two designs complement each other. The data from the Quantitative design generally produce generalized connections and trends whereas the qualitative method will produce an in-depth understanding of a phenomenon **(**Onwuegbuzie & Collins, 2017). When used in one study this creates a complete understanding of the phenomena under study. Convergent design, the mixed methods researchers can advance multiple perspectives or even validate one database with the other (Creswell, 2015).

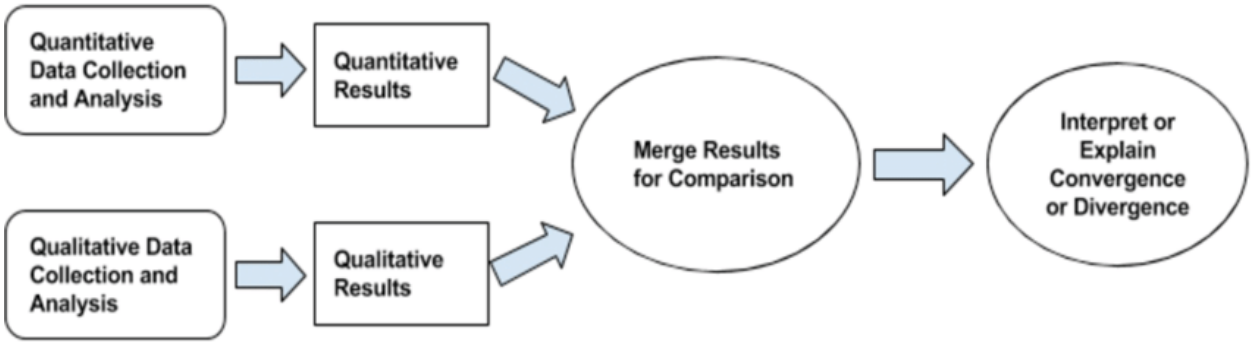


Fig 1. Source: Creswell, 2013

This helped to overcome weaknesses in using qualitative or quantitative methods only by riding on the strengths of another (Terrell, 2012). In this study, the Convergent mixed method design was used. The administration of the questionnaire, which generates quantitative data, was followed by the focus group discussions and review of the patients' records. This added up to a more complete understanding of pain attitudes, knowledge, and practices on pain management in children at Lusaka Children's Hospital.

3.2 Setting

This study was conducted at the Lusaka Children's Hospital. This is the biggest health institution for children in Zambia. It has 10 admitting wards, 1 Out Patient Department, and 1 clinic for reviews. The hospital also has specialized wards that admit renal and hematology patients. It has a total bed capacity of 352 beds. This site was selected because it is the hospital where very sick children are admitted to the country, and the practices of the health workers will reflect the quality of care the children are receiving in Zambia. The hospital also has a majority of pediatric trained and specialized health workers. Therefore, doing the study at this facility will make it easy for the findings to be used in the process of developing protocols in the care of children in Zambia. The hospital is also the University Teaching Hospital for medical doctors, nurses, and other health workers in child health.

3.3 Study Population

The study population comprised all nurses working at Lusaka Children's Hospital in all the wards. The nurses are categorized into five groups: (1) Registered Pediatric Nurses (RPN); these are nurses who have had a -post-basic nurse training and have practiced for at least two years as registered nurses. They have an advanced diploma in pediatric nursing. They are specialized and have received specialized training in nursing children. (2) Registered Critical Care Nurses (RCCN); these too are nurses who have had post-basic nurse training and have practiced for at least two years as registered nurses. They have an advanced diploma in critical care nursing mainly in adult health though they do some children critical care nursing. (3) Registered Midwives are also registered nurses who have undergone postgraduate midwifery training. (4) Registered Nurses (RN) and (5) Enrolled Nurses (EN) have generic nurse training; Registered nurses undergo a three-year nurse training and are awarded a diploma in nursing whereas the enrolled nurse undergoes a two-year nurse training and receive a certificate in nursing. All the levels of nursing have some pain management in their official curricula. There are a total of 60 nurses in the hospital.

Inclusion Criteria

1. All the nurses working at Lusaka Children's Hospital
2. Nurses who consent to participate in the study

Exclusion Criteria

1. Nurses working around Lusaka children's Hospital on other projects
2. Nurses working at Lusaka Children's Hospital and refuse to consent to take part in the study

3.4 Sampling technique (s) and the recruitment process

The first sample was a quantitative sample. It was the sample of nurses who took part in answering the self-administered questionnaire. 60 nurses were available for selection in the study. All those nurses who were working in the hospital were included. Some nurses were on a night off, study leave, maternity leave, and occasion leaves during the period and they were not included in the sampling. The study was done in 28 days. A total of

36 respondents were planned to be invited to answer the questionnaire. However, 42 nurses collected the questionnaires, and 40 returned the filled-in questionnaires. The sample was chosen conveniently. All the 40 were included in the analysis of the findings. The researcher with the help of one of the in-charges went round the wards to recruit the respondents. The researcher was given permission from the senior medical superintendent and the chief nursing officer for data collection. A photocopy of the clearance letter from the chief nursing officer was shown to each ward in charge to get permission to speak to the nurses. The researcher went round the wards between 10 hrs. And 12 hrs. And again between 15hrs and 16hrs because nurses are relatively free these times after they are through with most ward routines. All the nurses who were available on duty after reading for them the information leaflet and the consent form were asked by the researcher if they wanted to take part in answering the questionnaire and after if they were available to be part of the focus group discussion.

Three sheets of paper were provided for the nurses to write on indicating their willingness to be involved in the focus groups (appendix 9). One sheet of paper was for nurses with postgraduate training, the second sheet was for those who were Registered nurses with no specialization and the third sheet was for those who were enrolled nurses. The sheet of paper had spaces to write the name, phone number, rank, and a question asking if they would mind being added to a WhatsApp group. The nurses who signed up for the focus groups were informed that an appropriate day and time would be communicated when the focus groups will be held according to their ranks. The nurses who preferred to answer the questionnaire were given one on the spot and the serial number recorded denoting the ward for easy follow-up. The second batch of the qualitative data was the review of the patient files. The file review was done on the patients who were in the ward. The two (2) files were picked randomly among the patients who have presented with pain in the wards. One file was from a ward, which admits patients with cancers, and the other one was picked from a fee-paying ward. The patients were still in the ward and the caretaker was asked for consent to allow the researcher to go through the file. The caretaker was asked to confirm if the child presented with pain on admission. The confirmation that the

child presented with pain on admission was the single most important factor for the file to be reviewed and the data being included for review.

The other Qualitative sample consisted of three (3) focus groups. According to Guest *et al.* (2016), at least three focus groupings are needed to get to almost ninety percent (90%) or more of the relevant domains being explored in the research. The focus groups were broken down by years of nursing training with the first focus group consisting of postgraduate nurses (RPN, RCCN, and RM); the second focus group discussion consisted of Registered Nurses (RN), and the third focus group was made up of Enrolled Nurses (EN). There was an overlap in the respondents where some nurses attended the focus group discussion and answered the self-administered questionnaire as well.

The recruitment process started with obtaining all the appropriate ethical permission from the College of Medicine research ethics committee (COMREC) and the University of Zambia Bioethics Research Committee of the University of Zambia (UNZABREC), and Lusaka Children's Hospital management. The chief nursing officer issued a notice to all the wards introducing the researcher.

3.5 Sample Size

The sample was selected out of 60 available nurses working at the time. The researcher ensured a power of 1-B 0.80, with a type 1 error at 5%, a true mean of 2, 1.5 null hypotheses, and a standard deviation of 1. The respondents were selected using simple random sampling methods. All the 60 nurses were assigned a number randomly then numbers were pulled in a random draw using the seed 3438. A total of 36 participants were planned to be invited to take part in the answering of the questionnaire. To improve the return rate for the completed questionnaires, the researcher distributed 42 questionnaires and 40 respondents submitted back the filled-in questionnaires for data analysis. Three focus group discussions of 6, 7, and 6 participants were held.

3.6 Data collection

The data were collected using the file case review, observations, questionnaire, and focus group discussion. For the focus group discussion, nurses were assigned to three groups of 6 - 8 each (Guest, Namey & McKenna, 2016). Qualitative research questions were developed using the specific objectives of the study. Flip charts, whiteboard markers, and Bostic were provided for the participants to use during the focus group. Each participant was allowed to introduce themselves. They were asked to discuss the topic presented to them one after the other. In the introduction, they were guided that they should mention their gender, age, level of education, years of nursing experience as a nurse as well as the years of paediatric nursing and nursing grade experience. They were further to mention if they had any training in pain management. At least 15 minutes were given for each question.

The file case review involved going randomly through all the notes of the patients admitted before the focus group discussion. Two files were chosen and the charts were examined for any prescription for pain and any evidence of assessment carried out for pain. File reviews also called clinical record reviews are called out to gather information to answer clinical questions (Sarkar & Seshadri, 2014). On the other hand, a full file review would involve a big number of files with already recorded data which is later subjected to statistical analysis and inferences drawn from it. In this study, the files were reviewed to validate the retrospective clinical practice of pain management. A guide prepared by the researcher was used so that the data collected is useful in the process of data analysis. The files reviewed were those for patients who most likely presented with pain on admission and the presence of pain was confirmed by the caretaker at the time of signing a consent. The review was done to check the possible pain practices (Sarkar & Seshadri, 2014).

The Pediatric Nurses' Knowledge and Attitudes Survey Regarding Pain (PNKASRP) questionnaire was used for the quantitative data. The PNKASRP is a modification of the Knowledge Attitude Survey Regarding Pain (KASRP) (Manworren & Stinson, 2016).

This tool is also used to assess nurses and other professionals as a pre and posttest evaluation measure for educational programmes. The latest revision was done in 2014. When using this tool it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction measure both pieces of knowledge of addiction and attitude about addiction. The authors of the tool, hence recommend that the data is analyzed in terms of the percentage of complete scores (Manworren & Stinson, 2016).

3.7 Validity and reliability

This tool has been developed over several years. Content validity has been established by review by the tool by pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the National Comprehensive Cancer Network Pain Guidelines (Ferrell, & McCaffery, 2014). Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established ($r>.80$) by repeat testing in a continuing education class of staff nurses ($N=40$). Internal consistency reliability was established (alpha $r>.70$) (Ferrell & McCaffery, 2014) with items reflecting both knowledge and attitude domains (National Comprehensive Cancer Network, 2014).

3.8 Trustworthiness

The trustworthiness of the qualitative data of this mixed method study must demonstrate dependability, credibility, and transferability. These concepts describe various aspects of trustworthiness and they should always be seen as interrelated (Holloway & Wheeler, 2010). The researcher ensured that trustworthiness was achieved by making sure that the qualitative findings represented reality as demonstrated by the respondents in the study (Holloway & Wheeler, 2010). Dependability evaluates the degree to which data change over time; this includes an evaluation of how the researcher changes interpretation during the analysis. Credibility deals with how well the data and processes of analysis address

the intended focus, selection of context, participants, and approach to gathering data (Holloway & Wheeler, 2010).

The sample represented the available variation in reality. Nurses were of different ages, experiences and gender and this added to the richness of the responses. In this study nurses of various ages, gender, and working experience contribute to a richer variation in phenomena. During data analysis, the researcher avoided using overly broad meaning units, which carry the risk that they will contain various meanings, as well as overly narrow units, which may result in fragmentation. To achieve credibility, quotations from the transcribed text are shown. The researcher performed the first part of the analysis and a supervisor reviewed the different steps of the analysis. The objective of this review was to ensure trustworthiness (Vincent, Wilkie, & Szalacha, 2010). To facilitate transferability of the findings of this study, the clear and distinct description of the study site, inclusion, and exclusion of the participants, data collection, and process of analysis was shown and it is up to the reader to determine whether or not the findings are transferable to another context (Holloway & Wheeler, 2010).

3.9 Data Analysis

The quantitative data was in the form of questionnaires, while the qualitative data was in the form of notes taken during the focus group discussion and observation of the patients' files. The quantitative data were analyzed and tabulated in the form of graphs and computerized tables. The focus group notes were first transcribed and analyzed using the content analysis method. Content analysis is used to analyze and present data that has been collected in both visual and verbal forms (Elo & Kynga, 2008).

Content analysis is used to analyze qualitative data and makes it easy to understand the data collected. Content analysis involved organizing the data into themes. The texts were checked overall and the text with similar words were put in the same category. The phrases and sentences sharing meaning were also grouped in the same category as well (Elo and Kynga, 2008). This was done in six phases. In step one, the materials were reviewed for overall meaning. In the second phase, meaning units were created. In step

three the meaning units were revised. In the fourth stage, the meaning units were coded and in the fifth step, the developed codes were revisited making sure that the phrasing was consistent with the study objectives and in the final sixth steps the selected codes were validated. The following meaning units came up: assessment tools, facial expressions, biological features, treatment plans, guidelines, watching TV, sucrose sucks, self-report, knowledge, availability of drugs, and nurses' background. The other ones were the presence of the caretaker, the attitude of the caretaker, unsupportive nurse supervisors, poorly trained pharmacy staff on pain management, nurse beliefs about pain, and nurse's place of training or lack of it. In step three the meaning units were revised by combining those with similar meaning and those with very little detail were dropped.

In the fourth stage, the meaning units were coded. Seven different codes were developed, namely: duration of stay at the children's hospital, a pain assessment tool used, availability of guidelines, pain interventions used, the involvement of children, what influences nurses' decisions, and barriers to pain management. In the fifth step, the developed codes were revisited making sure that the phrasing is consistent with the study objectives, and in the sixth step the selected codes were validated (Elo & Kynga, 2008). The researcher used inductive content analysis approach which relies heavily on the participants' experiences as raw data and the themes developed from there (Azungah, 2018)

Quantitative data from the questionnaires was sorted for completeness before being analyzed. Completeness involved making sure the questionnaires were filled in. Incomplete questionnaires were removed. The remainder of the completed questionnaires were analyzed using statistical data package SPSS version 15. The statistical data package was used to analyze the survey for associations using correlations, chi-square, and Fisher's exact tests.

The qualitative and quantitative data were collected and analyzed separately. The three raw data were kept separate and they were presented separately the way they were

collected. The synthesis was done when discussing the findings as shown in Figure 1 on page 25 above.

3.10 Ethical Consideration:

Ethics approval was obtained from both the College of Medicine Research Ethics Committee (COMREC) and the University of Zambia Biomedical Research Ethics Committee (UNZABREC). The University of Malawi allowed this study to be conducted in partial fulfillment for the award of Masters of Science degree in Child Health Nursing. Permission from the Lusaka Children's Hospital was obtained from the Senior Medical superintendent and the Chief Nursing Officer.

The participants' confidentiality was ensured. All participants were allowed to consent before joining the study. The consent form was read to them indicating that they were free to take part in the study or refuse to take part in the study without any repercussion. They were also informed that they were still free to terminate their participation at any stage of the study if they felt like. They were further informed that there was no direct benefit to them which will arise from taking part in the study (Polit & Beck, 2013). They were informed that their identity would not be used in the study instead codes were used. All those who accepted to freely take part were asked to sign the consent form (Appendix 1). The data collected was in the form of notes. The notes will be stored safely and kept for 2 years after the study is approved and published (Polit & Beck, 2013). The respondents were informed that in case any one of them experiences emotional discomfort, they would be referred for counseling to support them emotionally at the staff clinic (Appendix 2).

Every participant signed before data was collected from them (Appendix 3) and the schedule was used in the focus groups with side questions to clarify the points (Appendix 4). For the file review, the caregivers were asked to consent to have the files reviewed (Appendix 5). The purpose of the information from the file review was to check the consistency of assessment and pain management indicated in the file (Appendix 6).

3.11 Study Limitations:

The researcher recognises that every study has inherent limitations. However, since this study used mixed methods study design the limitations which come from the methodology were mitigated. This means that the limitations of qualitative research were overcome by the use of a quantitative method and vice versa (Brink, Walt & Rensburg, 2012). The findings can hence be generalizable and the results are reliable because the tool used was valid. However, this does not mean that this study did not have any limitations. One limitation arises from the fact that the study used a cross-sectional study. This means the study population was reviewed at a linear point or one point. Other factors or events which may occur at various other moments in time may not be included in the observation (Houser 2008). The other limitation arises from the fact that the study sample for the quantitative data was small making some correlations with the statistical package difficult to make. However, this limitation was reduced to the minimum by doing the file review and conducting the focus group discussions.

3.12 Plan for Dissemination of Findings:

The research report was submitted to ethics clearing bodies, that is the COMREC and UNZABREC. Another report will be presented to the Zambian Ministry of Health, and another report will be given to the Lusaka Children's Hospital where the study was conducted. . The report would also be presented in research forums as opportunity arises.

CHAPTER FOUR: PRESENTATION OF RESULTS

7.0 Introduction

The study used a convergent mixed method design and focus group discussion, questionnaire, and file review data were collected as separate sources of data. The data will be presented first separately as quantitative data and then qualitative data. Then they will be compared, contrasted, and synthesized during the discussion of the results. In keeping with the convergent method, in several cases the qualitative data provided explanations as to why the health workers answered some questions the way they did.

8.0 Quantitative Results

Firstly the demographic characteristics will be presented. The results will be presented using the objectives which are knowledge of health care workers; then Attitudes, beliefs, and practices of nurses, and lastly the availability of resources. They will be presented using the objectives of the study. The P- NKAS questionnaire results from the 40 nursing staff sampled were analysed using STATA 15 and they revealed that the nurses had poor knowledge of pain in general. Overall they scored a median score on the 43 item survey of 40.7%, (mean 41.5% 95% CI 38.4%-44.6%). The expected pass score for the tool is 80%. In a further assessment of the results, the nurses' self-rated knowledge or years of experience did not have any significant association or correlation with the score. The more nurses got an additional postgraduate training the more the knowledge on pain although the increase in the knowledge was not so significant. On the other hand, the higher nursing grade was positively and significantly correlated with higher scores (Corr 0.5192, P>0.001) and similarly, a higher level of education was significantly associated with a higher score (Fisher’s exact 0.038). Most of the respondents (70.0%) were registered nurses, while 17.5% were registered paediatric nurses and 12.5% were enrolled nurses. The tables below present findings from the quantitative inquiry.

Table 3: Demographic Characteristics of Respondents

Sex	**Frequency**	**Percentage**
Male	7	17.5
Female	33	82.5
Total	**40**	**100**

The Demographics frequency tabulations above show that most respondents (82.5%) were females while 17.5% were males.

Table 4: Age of Respondents

Age group	**Frequency**	**Percentage**
20 – 30	24	60
31 – 40	13	32.5
41 – 50	2	5.0
51 – 65	1	2.5
Total	**40**	**100**

The above table shows that 60% (n=24) of the respondents were aged between 20 and 30 years, 32.5% (n=13) were aged between 31 and 40 years, 5.0% were aged between 41 and 50 years, and 2.5% (n=1) were aged between 51 and 65 years.

Table 5: Level of Education

Educational Level	**Frequency**	**Percentage**
Certificate	4	10.0
Diploma	28	70.0
Advanced Diploma	7	17.5
Degree	1	2.5
Total	**40**	**100**

In terms of educational levels, the majority (70.0% n= 28) of the respondents had diplomas, 17.5% (n= 7) had advanced diplomas, and 10.0% (n= 4) had certificates while 2.5% (n= 1) had degrees.

Table 6: Years of experience

Years of experience	Frequency	Percentage
Less than 1 year	8	20.0
1-5 years	20	50.0
6-10 years	7	17.5
11-15 years	4	10.0
More than 20 years	1	2.5
Total	**40**	**100**

On years of nursing experience, 50.0% (n= 20) of the respondents reported having 1-5 years of experience, followed by 20.0% (n=8) who reported having less than one year. Respondents with 6 – 10 years of experience made up 17.5% (n= 7), those with 11 – 15 years made up 10.0% (n=4) while those with more than 20 years made up 2.5% (n=1) of the respondents.

Table 7: Years of Pediatric Nursing Experience

Peds Nursing Experience	Frequency	Percentage
Less than 1 year	12	30.0
1-5 years	20	50.0
6-10 years	5	12.5
11-15 years	2	5.0
16-20 years	1	2.5
Total	**40**	**100**

In terms of pediatric nursing experience, 50.0% (n=20) of the respondents had 1 – 5 years working in the pediatric hospital, 30.0% (n=12) had less than one year, 12.5% (n=5) had 6 – 10 years, and 5.0% (n=2) had 11 – 15 years while 2.5% (n=1) of the respondents had 16 – 20 years of experience.

Table 8: Nursing Grade

Nursing Grade	Frequency	Percentage
Enrolled Nurse	5	12.5
Registered Nurse	28	70.0
Registered Pediatric Nurse	7	17.5
Total	**40**	**100**

In terms of respondents' nursing grades, 70.0% (n=28) were Registered Nurses, 17.5 % (n=7) were Registered Pediatric Nurses and 12.5% (n=5) were Enrolled Nurses.

The sample was largely female (n=33, 83%) and between 20 and 30 years of age (n=24, 60%) see Table 7. The results of a Pearson x^2 test suggested no important age difference between age groups and gender in the distribution of the sample (Pearson x^2 0.928, degrees of freedom 3, Pr 0.819, Fisher's exact 0.822) as shown in the table below.

Table 9. Age and gender of the sample

Demographic	Age group in years									
Gender	20 – 30		31 – 40		41 – 50		51 – 65		Total	
	n	%	n	%	n	%	n	%	N	%
Male	4	10	3	8	0	0	0	0	7	18
Female	20	50	10	25	2	5	1	3	33	83
Total	**24**	**60**	**13**	**33**	**2**	**5**	**1**	**3**	**40**	**100**

Half of the sample, comprised primarily of younger nurses, had between 1 and 5 years of overall nursing experience (n=20, 50%), see Table 9. Similarly, half of the sample had between 1 and 5 years of nursing experience specific to pediatrics (n=20, 50%). However, the Pearson x^2 test was significant for differences between overall nursing and pediatric specific experience in the sample, with few participants reporting more than 5 years of nursing or pediatric specific work experience (Pearson x^2 64. 591, degrees of freedom 16, Pr 0.00, Fisher's exact 0.000).

Table 10. Years of experience in nursing and pediatric nursing

Years of experience	Pediatric nursing											
Nursing	<1		1-5		6-10		11-15		16-20		Total	
	n	%	n	%	N	%	n	%	n	%	N	%
<1	8	20	0	0	0	0	0	0	0	0	8	20
1-5	4	10	15	38	1	3	0	0	0	0	20	50
6-10	0	0	4	10	3	8	0	0	0	0	7	18
11-15	0	0	1	3	1	3	1	3	1	3	4	10
>20	0	0	0	0	0	0	1	3	0	0	1	3
Total	12	30	20	50	5	13	2	5	1	3	40	100

2.1.1 The nurse's knowledge of pain in children

The overall findings were that the nurses had poor knowledge of pain management in children. This poor knowledge was also seen in the nurses' self-rating as shown in Table 11 below. The table shows that 5.0% (n=2) rated their knowledge as excellent. 45.0% (n=18) of the respondents rated their knowledge as average, 30.0% (n=12) rated it as good, 12.5% (n=5) rated it as fair, 7.5% (n=3) rated it as poor

Table 11: Self-rating level of knowledge in pain management

Self-rating	Frequency	Percentage
Excellent	2	5.0
Good	12	30.0
Average	18	45.0
Fair	5	12.5
Poor	3	7.5
Total	**40**	**100**

The lower the rank of the nurse the less knowledge they possessed. Table 12 above indicates that the pediatric nurses were correct 100% (n=7) that the sensitivity to pain for the child does not reduce or get affected.

Table 12: Nursing Grade versus knowledge of decreased pain sensitivity

Table 12. Belief in Decreased pain sensitivity in children

Nursing Grade	Correct Answer	Incorrect Answer	Total	Test Statistic	
	n (%)	n (%)	n (%)	Fisher's Exact	p-value
Enrolled Nurse	3 (60.0)	2 (40.0)	5 (100.0)		
Registered Nurse	11 (39.3)	17 (60.7)	28 (100.0)	8.735	0.009
Registered Pediatric Nurse	7 (100.0)	0 (0.0)	7 (100.0)		
Total	21 (52.5)	19 (47.5)	40 (100.0)		

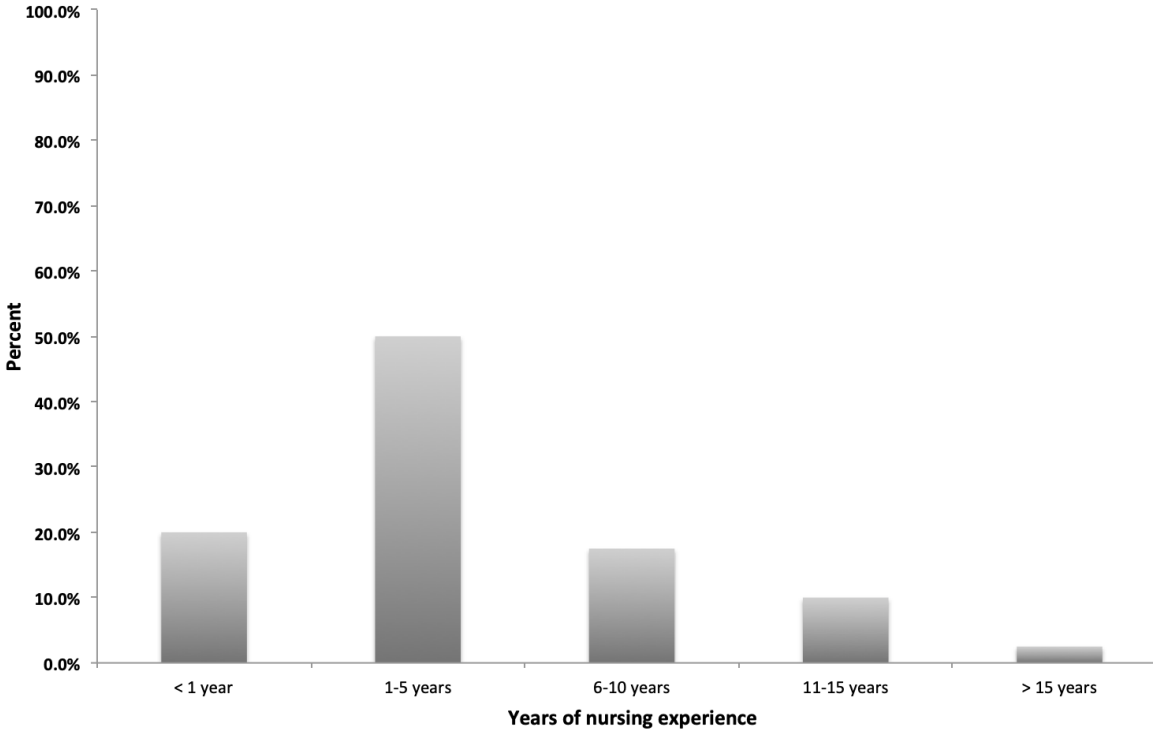
Table 13 below shows that the nurses who were close to the patients were almost certain to take action when faced with a child who was in pain. The absence of the protocols and policies meant that nurses did what they could. It was observed that enrolled nurses were more likely to give a placebo of water to ascertain if the child was in pain. 60% of the nurses confirmed that they would give the placebo to avoid attending to the pain. However, a total of 78.6% of the registered nurses also agreed that the placebo would be useful to determine if the child was in pain. This action shows poor knowledge of physiology of pain.

Table 13: nursing grade Vs placebo

Table 13. Knowledge of placebo use

Nursing Grade	Correct Answer n (%)	Incorrect Answer n (%)	Total n (%)	Test Statistic Fisher's Exact	p-value
Enrolled Nurse	2 (40.0)	3 (60.0)	5 (100.0)	6.209	0.031
Registered Nurse	6 (21.4)	22 (78.6)	2 (100.0)		
Registered Pediatric Nurse	5 (71.4)	2 (28.6)	7 (100.0)		
Total	13 (32.5)	27 (67.5)	40 (100.0)		

Table 14 on frequency tabulation reveals that in terms of formal training in pain management, vast majority of 87.5% (n=35) of the respondents were not formally trained in pain management for children, while 12.5%(n=5) felt that they had received some training and frequency table 15 shows that 82.5% (n= 33) never received any informal training on pain management in children while 17.5% (n= 7) received some informal training.


100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
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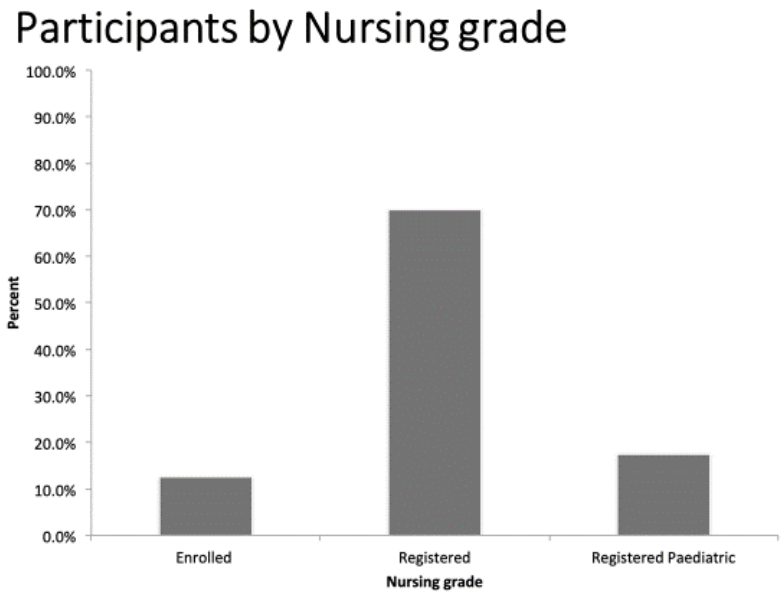
Percent
< 1 year
1-5 years
6-10 years
11-15 years
> 15 years
Years of nursing experience


Participants by Nursing grade
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
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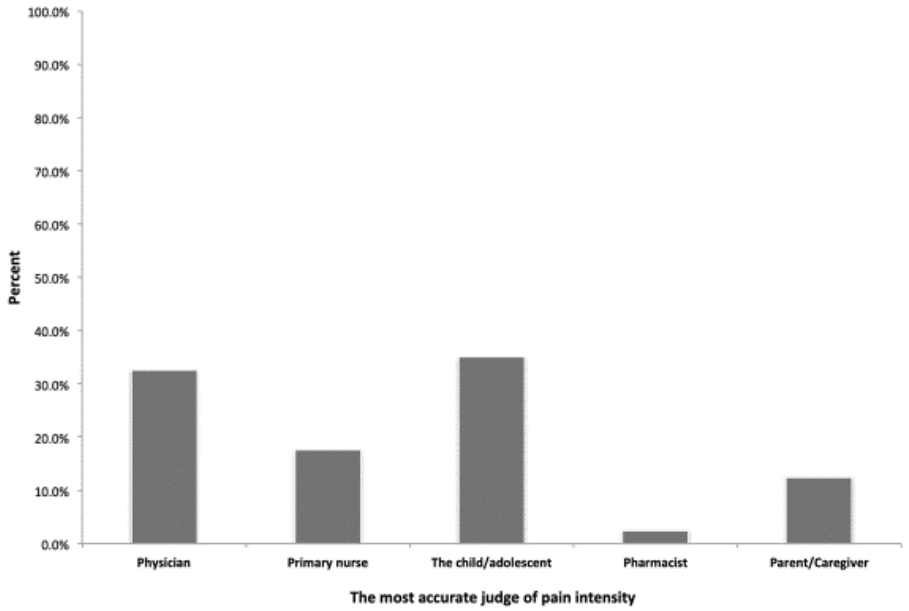
0.0%
Percent
Enrolled
Registered
Registered Paediatric
Nursing grade

Most accurate person to judge pain intensity:



Most accurate person to judge pain intensity, answers by nursing grade:

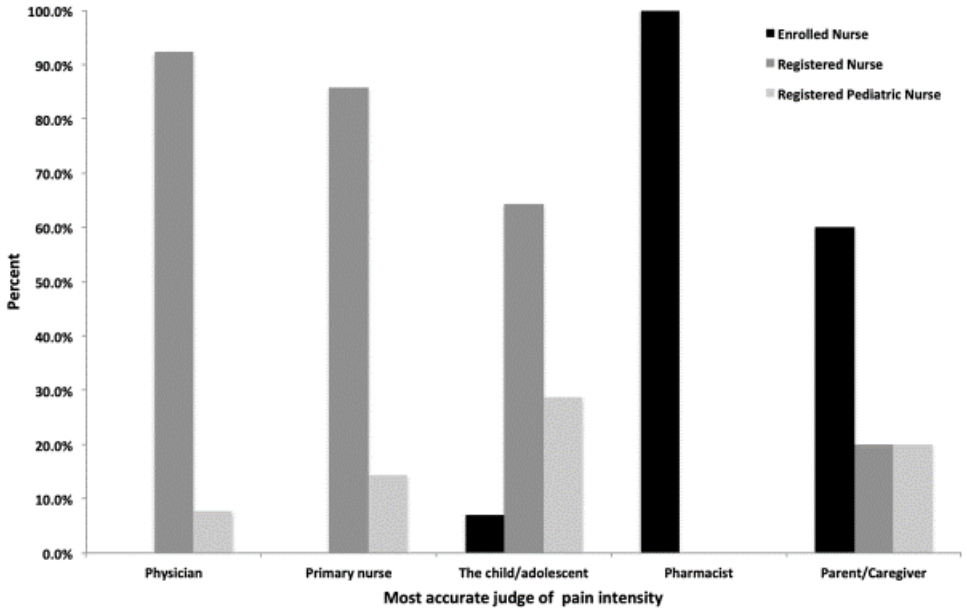


Table 14: Formal training in pain management

Formal training	Frequency	Percentage
No	35	87.5
Yes	5	12.5
Total	**40**	**100**

Table 15: Informal training in pain management

Informal training	Frequency	Percentage
No	33	82.5
Yes	7	17.5
Total	**40**	**100**

Overall, the majority of the respondents had neither formal nor informal training in pain management. The table above shows that 82.5% (33) had not attended any informal training in pain management

2.1.2 Nurses' Attitudes and practices on Pediatric pain

The P- NKAS questionnaire had case studies that exposed the nurses' attitudes and practices on pediatric pain. The results showed that nurses had bad attitudes and showed some beliefs and practices which were not consistent with appropriate pain management in children.

Table 16: Section D: Case studies

Patient A: Andrew is 15 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to10 (0 = no pain/discomfort, 10 = worst pain/discomfort), he rates his pain as 8. A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain.	Assessment	**Frequency**	**Percentage**
	0	3	7.5
	1	1	2.5
	2	3	7.5
	3	14	35.0
	4	4	10.0
	5	5	12.5
	6	4	10.0
	8	6	15.0
	Total	**40**	**100.0**

Following the case study given in table 16 above, only 15% (n=6) correctly assessed the pain rating of the patient as 8. The rest of the respondents 85% (n=34) wrongly assessed

it. 35% (n=14) gave the wrong pain rating of 3, 12.5% (n=5) gave the wrong rating of 5, 10% (n=4) gave the wrong rating of 4, another 10% (n=4) gave the wrong rating of 6, 7.5%(n=3) gave the wrong rating of 2, another 7.5%(n=3) gave the wrong rating of 0 and 2.5% (n=1) of the respondents gave the wrong pain rating assessment of 1.

Table 17: Grading the child's pain

Your assessment, above, is made two hours after he received morphine 2mg IV. After he received the morphine, his pain ratings every half hour ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time:	**Action**	**Frequency**	**Percentage**
	Administer no morphine at this time	19	47.5
	Administer morphine 1mg IV now	12	30.0
	Administer morphine 2mg IV now	6	15.0
	Administer morphine 3mg IV now	3	7.5
	Total	**40**	**100.0**

From table 17, only 7.5% (n=3) of the respondents answered with the correct action of 'Administer morphine 3mg IV now' while 47.5% (n=19) of the respondents answered with the wrong action of 'Administer no morphine at this time', 30% (n=12) answered with the wrong action of 'Administer morphine 1mg IV now' and 15%(n=6) of the respondents answered with the wrong action of 'Administer morphine 2mg now'.

Table 18: Ranking the child's pain

Robert is 15 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.	Assessment	**Frequency**	**Percentage**
	0	1	2.5
	3	1	2.5
	4	9	22.5
	5	1	2.5
	6	2	5.0
	7	6	15.0
	8	16	40.0
	9	1	2.5
	10	3	7.5

A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain:	**Total**	**40**	**100.0**

From table 18 above 40% (n=16) correctly assessed the pain rating of the patient as 8 while 60% (n=24) collectively had a wrong rating of the child's pain. 22.5% (n=9) gave the wrong pain rating of 4, 15% (n=15) gave the wrong rating of 7, 7.5% (n=3) gave the wrong rating of 10, 5% (n=2) gave the wrong rating of 6, 2.5%(n=1) gave the wrong rating of 9, another 2.5% (n=1) gave the wrong rating of 5, another 2.5% (n=1) gave the wrong rating of 3 and another 2.5% (n=1) of the respondents gave the wrong pain rating assessment of 0.

Table 19: Re-grading the child's pain

	Action	**Frequency**	**Percentage**
The assessment, above, is made two hours after he received morphine 2mg IV. After he received the morphine, his pain ratings every half hour ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time:	Administer no morphine at this time	10	25.0
	Administer morphine 1mg IV now	13	32.5
	Administer morphine 2mg IV now	7	17.5
	Administer morphine 3mg IV now	10	25.0
	Total	**40**	**100.0**

Table 19 indicates that only, 25% (n=10) of the respondents answered with the correct action of 'Administer morphine 3mg IV now' while 75% (n=30) responded with the wrong answers collectively. 32.5% (n=32), of the respondents, answered with the wrong action of 'Administer morphine 1mg at this time', 25% (n=10) answered with the wrong action of 'Administer no morphine at this time' and 17.5% (n=7) of the respondents answered with the wrong action of 'Administer morphine 2mg now'.

9.0 The resources available for managing pain at Lusaka Children Hospital

Resources to ensure that pain management is optimum include the assessment tools, protocols, and guidelines on pain management (Fortinguerra *et al*., 2010). Pain assessment tools are available which can be used according to the child's age and mental ability such as the FLAAC (Face, Legs, Activity, Cry, and Consolability) for children from 2 years old to about 12 years old. For neonates, the Neonatal Infant Pain Scale (NIPS) can be used, and the Children's Hospital of Eastern Ontario Pain Scale (CHEOPS) can be applied to children in general.

According to the World Health Organization guidelines, pain in children should be regularly assessed and, where appropriate, non-pharmacological techniques should be used in combination with local or systemic analgesics; the choice of analgesic was determined by the nature and severity of the child's pain: paracetamol and non-steroidal anti-inflammatory drugs are considered the preferred treatment of acute/chronic mild and moderate pain, and opioids (morphine or fentanyl) and local anesthetics (such as lidocaine for regional nerve block) are recommended for severe acute or chronic pain (Fortinguerra *et al*., 2010).

Table 20: Frequency use of pain assessment tool

Use of pain tool	**Frequency**	**Percentage**
Always	3	7.5
Frequently	2	5.0
Occasionally	11	27.5
Rarely	19	47.5
Never	5	12.5
Total	**40**	**100**

In terms of frequency of use of the pain management tool, 47.5% of the respondents said they used it rarely, 27.5% said they used it occasionally, 12.5% said they never used the

tool at all, 7.5% said they used the tool always, while 5.0% of the respondents said they used the tool frequently**.** The hospital has no resources to help with pain management.

10.0 Qualitative Results

The results came mainly from three (3) focus group discussions. According to Guest *et al*. (2016), at least three focus groups are needed to get to almost ninety percent (90%) or more of the relevant domains being explored in the research. The focus groups were broken down by years of nursing training with the first focus group consisting of postgraduate nurses (RPN, RCCN, and RM); the second focus group discussion consisted of Registered Nurses (RN), and the third focus group was made up of Enrolled Nurses (EN). The results will be presented first on the demographic data then the themes which came up in the study.

Table 11 shows the work experience of the respondents who participated in the focus group. The table indicates how long the respondents had worked in the children's hospital

Table 21: Working experience for FGD participants

Years of work	**RPM/RM/Degree Holders**	**Registered Nurses**	**Enrolled Nurses**	**TOTAL**
< 1 year		1 (14%)		**1 (5%)**
1-5 years	1 (17%)	2 (29%)		**3 (16%)**
6-10 years	5 (83%)	4 (57%)	3 (50%)	**12 (63%)**
11-15 years			3(50%)	**3 (16%)**
TOTAL	**6 (100%)**	**7 (100%)**	**6 (100%)**	**19 (100%)**

The enrolled nurses had stayed the longest in the children's hospital. 50% (n=3) of them had worked for 11 to 15 years and the other 50% (n=3) had worked for at least 6 years.

The qualitative results complemented the findings in the quantitative results. These results mainly addressed the second and the third objectives of the study which were

exploring the attitudes, beliefs, and practices of nurses as well as finding out the resources available for pain management in children at the hospital. The following themes: nurses' attitude toward pain management, family involvement in pain management, nurses' knowledge, and influencers for deciding on management of pain in children and barriers to pain assessment.

Table 22: Summary of the themes

No.	Themes
1.	Nurses limited knowledge of pain management
2.	Nurses attitude towards pain management
3.	Family involvement in pain management
4.	Influencers for deciding on management of pain in children
5.	Barriers to pain assessment

Pain is defined as a subjective feeling by a patient; it is what the patients say it is (WHO, 2012). This is easy when dealing with a patient who can fully verbalize their pain. This means that what the patient says is to be taken seriously as a final situation regarding their pain. In children, it is difficult to know more about the pain they are feeling when the patient is too young to talk. In this case, the next of kin who in most cases is the mother who is on the bedside of the child holds insights on the child's pain which may not be very apparent to health workers or others. Expression of pain is a behavior thatencompasses past experiences and how the child perceives the environment. Hence the family must be involved in pain management is to be effective. Nurses need to trust the patient and the mothers when it comes to judging the presence of pain, the intensity, and the duration. Theme one showed that the health workers' attitude was bad and this was not good for effective pain management in children.

Theme one: nurses limited knowledge of pain management

Nurses' knowledge of pain management is the key to a successful running of any pain approach. The attitudes and practices nurses portray are linked to the level of knowledge they have on the topic. This study demonstrated that the nurses had limited knowledge of pain management and it was associated with a poor attitude towards pain management. For example, some nurses confessed that their lack of knowledge was the reason they could not assess a child.

"….someone cannot assess something they don't know about and how to go about it …..The knowledge the nurse has if the nurse is knowledgeable she is most likely to decide to assess the child…" FGD3 P1

The study showed that generally, nurses know what pain was. However, the knowledge they lacked was on how to assess the pain, manage it, and the options available for managing it. Some other nurses showed a lack of knowledge on pharmacological intervention options to use…

"We do not have any non-pharmacological intervention in the hospital mostly…..[…] but when asked anything they do to calm a crying child the same participant who said they did not have any non-pharmacological interventions said ……. *"We…ask the mother to breastfeed the baby, for older children we just ask them to watch TV or do some drawing which helps to deviate their attention from the pain"* FGD3 P3

Another participant also after rejecting that they do not have non-pharmacological pain management options, after further probing what they do to a crying baby other than giving pain killer, she said… *"We keep the child comfortable. Remove the wet linen, the nappy and the beddings…."* FGD3 P6.

Another participant mentioned bluntly this way …" *The pain intervention is giving drugs; ….No other therapies exist…"* but when further asked what can make the baby stop crying which she has used before she said …. "*Sometimes we just ask the mother to breastfeed the baby. Breastfeeding sometimes works. Sometimes Panadol would help the baby sleep"* FGD3 P5.

Statements as shown above indicate that the nurse's knowledge was lacking even on basic things as differentiating pharmacological from non-pharmacological interventions. They were using some non-pharmacological measures but they did not know that those were non-pharmacological measures for pain management.

Theme two: *nurses attitude towards pain management (parents are difficult, children exaggerate pain, placebo, pain is part of an illness, pain must be endured)*

This theme showed that the nurses' attitude was bad. They showed a wide range of attitudes. Sometimes led the patient to not receive sufficient treatment for their pain. The nurses attributed the presence of pain to something else and in many cases that which, they attributed the pain to did not justify managing the pain. Even when they decided to provide pain relief they were on the cautious side giving only the dose of pain which was optimum for fear of overdosing the patient or getting the patient addicted.

The nurses expressed sentiments exposed their inclination to ignoring the pain in a child and blaming it on the mother's behavior. Some nurses thought that the mothers are being lazy for asking nurses to help deal with the pain of their children. The nurses expected the mothers to be "on top of things" and make sure the child does not cry.

"It is the mother's responsibility to calm the child, after a painful procedure. She has to do something. It's her duty" FGD3 P1

Another participant from the same focus group mentioned that

"Parents are a problem. They overstate the child's problem so that they get pain drugs for their child…." FGD3 P4.

Another participant further said..,

*"Some parents are lazy. They can't calm the child down, all they want is drugs. If you listen to them, you can keep overdosing the child with pain killers needlessly …."*FGD1 P3.

Personal reporting of pain is very significant for patients. If the management of pain is to be of any value, verbalization of the pain and its intensity must be taken seriously. Still, the other participants showed a negative perception of the self-reporting for pain. *"Most times children especially boys overstate their pain. They are very naughty….We have no assessment tools, so it's difficult to be accurate at the level of pain…" FGD3 P5.*

Placebo has been in use by health workers for some time as a way of ascertaining the sincerity of the claim of the presence of pain in a patient. Many organizations have spoken on it and given direction on the matter. The American Pain Society talked about the issue and said that it was unethical and it should not be given at all. A placebo could be an injection of solutions like water, normal saline, or any such fluids meant to give relief for the pain. It is given in place of the pain injection and it deceives the pain thinking that they have received pain injection (Pasero, 2013). "The deceptive use of placebos and the misinterpretation of the placebo response to discredit patients' pain reports are unethical and should not be performed" (Pasero, 2013).

Because of the bad attitude towards management of pain in children, some participants were even willing to give a placebo because they never trusted the patient's self-reporting of the intensity of pain.

*"I can give water for injection. In fact I have given it before and it works. The patient even goes to sleep and the pain goes…..*FDG3 P2.

Theme three: family involvement in pain management

Almost all of the health workers admitted that parents or families have a significant role to play in the management of pain in children. What was not clear to the health workers was exactly what role the parents should play. One participant narrated that

*"There is limited involvement. They just report their pain and the intensity of the pain. The children indicate when the procedure is painful. They are not involved that much…."*FGD1 P1.

Despite acknowledging that the role parents play is limited, the health workers did not see themselves as being responsible for creating an environment conducive for parents to be involved. They blamed the hospital and the lack of guidelines …..

"We don't have the guidelines on pain management in this hospital. No patient gets admitted for pain. The guidelines we have are on the particular conditions and when we treat the condition I guess the pain will go too…." FGD2 P5.

The parents are usually left out in the management of pain. In fact most times the parents are asked not to be present when the children are to undergo a painful procedure. One participant said,

"Parents disturb when they are around. Children exaggerate the pain when the mother is nearby that is why we ask the mothers to leave when the painful procedure is being done….." FGD P3.

An opportunity is being lost in involving parents. They know their children very well and it is important to involve them for the benefit of the child. The nurses admitted that the parents are not recognized as equal partners with the health care team. They are not asked about their opinion on the level of the pain of the child and they are not given information which is timely if they are to involve the mothers by the bedside. The nurses mentioned that they just issue instructions to them. The rationale for the instructions is never given. When the mothers ask for clarification on an issue they are labelled as difficult, uncooperative, and boastful.

Theme number four: influencers for deciding on management of pain in children

The nurses were asked what they thought might influence a nurse on how she manages the child's pain in the hospital. One participant said,

"Nurse's cultural beliefs may influence her. A belief that boys should not cry……" FGD1 P2.

Another participant highlighted another belief which may influence the nurse as …

"The belief that pain is part of illness so it has to be endured may prevent the nurse from assessing and managing the pain" FGD1 P3.

Another one yet said,

"Nurse's background can influence the nurse's decision whether to assess the pain or not. If the nurse has a young child at home, or if she is a mother herself, she may be inclined to be compassionate about pain in children..." FDG1 P5.

The other influencers were mentioned as …

"The presence of the caretaker on the child's bedside may influence the nurse". FGD2 P2.

The other participant said,

"The attitude of the caretaker on the child's bedside can influence how the nurse decides what to do with the child's pain…" FGD1 P6.

The other participant explained the influencer this way:

"Some parents are difficult. They just want drugs for their children anytime and all the time which is not good for the child. If the parents are demanding, a placebo can be given to calm both the child and the parent..." FGD3 P6.

And yet the other nurse said,

"The rank of the nurses also will influence that decision of assessing the pain. Because if you are the junior there is nothing you will do even if you assess the pain if there is no order in the file for the pain management…" FD2 P7

Theme five: Barriers to pain assessment

Barriers to pain management need to be understood so that they can be addressed. Nurses in this study expressed their views as to what could be barriers to the management of pain in children. Some nurses mentioned that lack of orientation on pain management was the

biggest barrier they faced. The hospital has no orientation system for health workers. One participant said,

"There are no such things as guidelines on pain management. We have the guidelines on how to treat different conditions and on those protocols of conditions we have the pain treatment. But if you are talking about the independent plan of treating just pain, we don't have those guidelines. If they are there, no one has been oriented to them…" FGD1 P3.

And the other participant further said,

"Pain is never discussed as a topic. So it never gets to be among the things health workers are oriented in … FGD3 P5.

The other barrier identified was lack of tools to use for assessment of pain. The fact that there are no forms to be used made life very difficult. One participant said,

"No, we don't use any assessment tools. I saw one with faces and the child has to point at some pictures to indicate the level of pain. But we don't have it anymore" FGD2 P2.

Justifying as to why they do not use the assessment tools one participant said,

"We rely mainly on the visible features of the patient in deciding the pain in children. The disease tells us and the patient may say that the child is feeling pain …." FGD3 P1.

Painting a direr situation on the lack of assessment the other participant narrated that

"Assessing patients is not what we do well here. There are several tools that can be used. I know but we don't have any such tools at this hospital." FGD1 P6

On the issue of drugs, one of the participants said,

"The drugs are not available for treating pain. The only drugs available are Panadol and morphine ……"FGD2 P4.

And another barrier noted in the study was lack of legal protection and support from other health care teams. Not having support and lack of protection was also identified as an impediment for nurses not to assess for pain in children. The nurse's prescriber's formulary does not yet exist in the health facility. This situation is contrary to what the Nurses and Midwives Act indicates. The act indicates that nurses can prescribe drugs but this part of the act is not fully operationalized. Some nurses do not feel safe to prescribe especially those working in the tertiary health facilities.

"There is no legal protection for nurses to prescribe pain-relieving drugs …we are told we can prescribe but we are not given the prescriber's numbers like the other prescribers, the doctors and the clinical officers….so we don't feel safe to prescribe anything……."FGD3 P6.

And the other participant said the following;

"The supervisors do not support anyone who attempts to help a child in pain. If the drug is not prescribed on the drug chart, that's it……" FGD2 P5.

On the teamwork in pain management, the nurses said,

'The doctor decides what to prescribe for child pain. They don't consult us, the common drugs we use here are paracetamol, brufen, and morphine for sicklers and those patients with cancers. We have no guidelines exactly for pain management…" FGD 3 P2.

11.0 FILE CASE REVIEW

A file case review was done as part of data collection. Two files of two patients were reviewed. The review involved going through the notes looking for any prescription for pain and any evidence of assessment carried out for pain. This was done to validate retrospectively clinical practice of pain management. The files reviewed were those for patients who most likely presented with pain on admission and the presence of pain was confirmed by the caretaker at the time of signing a consent (Sarkar & Seshadri, 2014).

Table 23: File case review findings

ID	P/00990/18	P/00998/18
Consent signed	Yes	Yes
Date of admission	25/01/2018	25/01/2018
Admitting diagnosis	Hodgkin's Lymphoma	Sickle Cell Anemia/ Chronic Heart Disease
Date of birth	1/2/2010	31/05/2015
Gender of the child	Male	Male
Level of education of the guardian	High school	High school
Is the child in pain	Not now	Not now
Record of the assessment	None	None
Record of pain treatment	None	None
Date of review	31/01/2018	31/01/2018
File	One	Two

File case one: It was a patient of 8 years old, admitted to the ward on Thursday. He was a known patient with Hodgkin's Lymphoma in the late stages. The child was receiving chemotherapy. On admission, the doctor prescribed a stat dose of morphine 5mg and to continue with 10mg thereafter. The start dose was not given; the nurse explained that the child was not in pain at the time. The mother though reported that the child was in pain. In the file, the doctor indicated that the child was in pain as one of the complaints. Over the weekend the morphine was still not given because there was no RN allocated in the ward to handle the keys to the Controlled drug cupboard. On Monday there was no morphine given still. A new drug chart was written because there was a change in the regime for the child's chemotherapy. The old chart was filed away and the morphine was never given and it was not rewritten.

File case two. A three-year-old child with a diagnosis of sickle cell anemia with chronic heart disease was admitted about five days earlier before the review. There was no record of assessment and there was no prescription for any pain intervention in the file.

Table 23: Converging of Results

	Qualitative		Quantitative
	Themes	**Sub-theme**	
Theme five	Barriers to pain assessment	Lack of orientation on pain management	87.5% of the respondents were not formally oriented to pain management 82.5% had not received any informal training in pain management
		Lack of tools and drugs.	47.5% never used any pain assessment tool
		Lack of legal protection and support from other health care team	
Theme two	Nurses attitude toward pain management	Parents are difficult,	65% would allow the parents to be around during the painful procedure 3 out of 5 enrolled nurses indicated that the child or adolescent is the most accurate judge of the child's pain intensity The majority of the respondents (32.5%) said the physician is the most accurate judge of the child's intensity of pain
		Children Exaggerate pain,	72.5% would trust a child on pain assessment
		Placebo	67.5% can give a placebo
Theme three	Family involvement in pain management		65% correctly stated that the parents should not be asked to leave when performing painful procedures
Theme one	Nurses limited knowledge of pain management		Overall the nurses' scored poorly, with a median score of 40.7%,
Theme four	Influencers for deciding on the management of pain in children?		Poor median score on the 43 item survey of 40.7%, (mean 41.5% 95% CI 38.4%-44.6%). This mean score of 41.5% is well below the 80% passing score

12.0 Conclusion

Both the qualitative and quantitative results indicate that nurses had low knowledge about and poor attitude towards pain management. This low knowledge and poor attitude affected the nurses' practice and how they interacted with their mothers.

CHAPTER FIVE: DISCUSSION OF FINDINGS

13.0 Introduction

The chapter discusses the findings of the study to explore nurses' knowledge, attitudes, and practices towards pain in children at Lusaka Children Hospital. The tool used in this study to analyse and understand the nurse's knowledge, attitudes, and practices were the paediatric NKAS Tool, which was supplemented with the focus group discussions and the file review. The questions on the P-NKAS deal with several issues in children's pain management cascade. These include the pain assessment, knowledge in pharmacology, management of pain, and the giving of placebo. The categories are difficult to isolate as items that measure knowledge also measure attitude at the same time. Hence the most appropriate way of looking at the data is to consider analysing complete scores and individual items which were done in this study (Ferrell & McCaffery 2008).

14.0 Discussion

The majority of the respondents, about 82.5% were females while 17.5% were males. This was a reasonable ratio considering that females make up approximately 80% of practicing nurses at Lusaka Children Hospital. The nurses were relatively young. The majority of them (60%) were aged between 20 and 30 years, and only 7% were aged above 41years. Those aged over 41years were mainly enrolled nurses and the registered nurses made up the majority of those who were in the range of 20 to 30 years of age. The younger nurses were also relatively new in the profession as 50.0% of the respondents had only about 1-5 years of experience, and 20.0% reported having less than one year of service. This culminated in 70% of the respondents having less than five years of experience. Having this short experience in nursing, one would have expected that these nurses are fresh from school and have not yet been contaminated with bad practices in the clinical area. The expectation is that these nurses will be doing things according to standard practice which they learned at school and that the knowledge base must be good (Kholowa *et al.*, 2017). Unfortunately, that was not the case in this study because overall the nurses scored poorly, with a median score on the 43 item survey of 40.7%, (mean 41.5% 95% CI 38.4%-44.6%). This mean score of 41.5% is way too low. Other studies

for nurses using the same tool have reported scores way better. For instance in Ireland, a study by Mathews and Malcolm (2007) on nurse's knowledge, attitude, and practices in a children's hospital, revealed an accumulative mean score of 73.8%. These nurses were from developed countries and some other studies also have reported mean scores better than 70% on the P - NKAS (Lewthwaite *et al*.. 2011). Vickers (2011), in her study of nurses, reported an average score of 65.7% which was indicated as being very low as well. All these mean scores fall short of the established standard which is expected to be 80% or more. The implication of a low score below 80%, is that these nurses are unsafe and not able to provide quality health care to children under their care (Ung *et al*., 2016).

Nurses' experience of working in the pediatric hospital was similar to the experience in nursing as well. Most of the respondents were on the first appointment posted to work in the children's hospital. This is partly because the hospital is new as a standalone hospital. Registered nurses were the largest category of nurses that took part in this study. It is also true of the nurses working in the hospital. In the study 70.0% of the respondents were registered nurses, 17.5% were registered pediatric nurses and 12.5% were enrolled nurses (Lewthwaite *et al*.. 2011).

The education must be accompanied by adequate support from the clinical area in terms of guidelines. This study revealed that to begin with, the nurses did not have any formal training on pain in children. The lack of formal education was so alarming that 87.5% of the respondents reported never having any formal training. Those who reported some pain management training were mainly registered pediatric nurses, and they did their pain management as part of their curriculum training while at the school of nursing**.** The Registered nurses and enrolled nurses' curriculum also have a component of pain management in them (General Nursing Council, 2010; General Nursing Council, 2012). This study revealed that the component of pain is not given sufficient attention. It is usually discussed in line with the palliative care and not as a component of nursing all patients. This shows that these nurses are gravely deficient in different aspects. As indicated earlier they do not have enough clinical experience because they have been

working for a short time. They are poorly prepared for the task of taking care of children in pain and are also poorly supported in the clinical area.

Interestingly, despite not having formal training in pain by the majority of the nurses, they are aware of pain assessment tools. In the focus group discussions, they mentioned that they were aware of the existence of pain assessment tools through their readings, and in some instances, they were mentioned in passing by their supervisors. The majority of the respondents (47.5%) confessed that they had never used any assessment tool to evaluate the patient's pain. The interesting finding was that of the other 27.5% who mentioned that they occasionally use pain assessment tools. During the focus group, it was clarified that the hospital had no assessment tools so there is no way they could have used them. This finding revealed that sometimes health workers respond according to what they feel is correct as opposed to what is the reality. Furthermore, the assessment of two case files of patients in the ward also showed that it was not the common practice to use an assessment tool to assess pain for a patient. This discrepancy between what is said and the reality was also identified in the **s**elf-rating of pain knowledge (Hall & Anand, 2014). About 5% of the respondents rated their knowledge on pain management in children as excellent and it is the same percentage which indicated that they use the pain scale regularly. A cross-check of the responses with the nursing rank showed that those who rated their knowledge as excellent and that they had used a pain assessment tool were the junior-most nurses (Enrolled Nurses). Apparently, they are the ones who had worked the longest in nursing. They are hands-on and the closest to the patients.

This issue of saying one thing and doing the other is not alien to studies involving health workers. Vickers (2011) in her study sought to verify the data she collected from health workers using a questionnaire by doing two things. Firstly she observed the nurses as they were working in the clinical environment. Thereafter she carried out detailed interviews to supplement what was observed. During the interviews, the nurses explained that they did assess for pain and that they communicated with patients to ascertain the pain levels. However, on observation, their approach was totally at variance with what they explained. Their approach to the patients rarely led to a conversation about pain. The

questions they asked the patients did not materialize into a discussion on pain (Vickers, 2011). The overrated self-confidence is dangerous because it makes one think what they are doing is correct when in fact it is not. The interesting aspect of this finding is that it was the enrolled nurses with the least qualification who rated their knowledge that highly. This confidence however was not consistent with the scores they were getting. The study further revealed that they were also more likely to give a placebo to a child to find out if the child was in real pain. This indicated that self-reported pain knowledge does not mean someone knows as they say they do.

Personal reporting of pain is very significant for patients. If the management of pain is to be of any value, verbalization of the pain and its intensity must be taken seriously (Lewthwaite *et al*.. 2011). However, in this study, disappointingly, 82% of the respondents thought that they should only rely on observable signs to verify that the child is in severe pain. This view is mistaken because certainly, although these behavioral and physiologic indicators will show the presence of pain in patients who are not able to talk or those with cognitive problems, self-reporting is still sublime (Vickers, 2011). Patients must be asked direct questions to find out the presence, state, and the intensity of pain. Observable signs while useful are not the main indicators. There is a need to realize that recognition and assessment of a child's pain is the patient's right. Once the need for an initial assessment is identified, there is a need to perform a comprehensive pain assessment (Macintyre *et al*.. 2010). Pain assessment is 'the *5th vital sign'* and an appropriate pain tool must be used for assessment and evaluation of the patient's pain (Kholowa *et al.,* 2017).

Pain is defined as a subjective feeling by a patient; it is what the patient says it is (WHO, 2012). This is taken in combination with personal verbalization, the nurses need to trust what the patient says. The nurses in this study showed that they did not trust the patient. A total of about 65% did not trust the child to judge their pain. A good number of them would rather trust the treating physician to state the intensity of the child's pain than the child regardless of the age. Others would trust the child's primary nurse to ascertain the intensity of the child's pain and only 12.5% said they would trust the mother of the child.

The nurses also showed poor knowledge of pain in children. The majority of the respondents (70%) thought that when a child is distracted from his pain it means he has no pain. This mistaken view was followed by another similar wrong view that an infant who is sleeping means he does not have severe pain. This was also discussed during the focus group discussions. The nurses mentioned that they treated sleep as an opium for the child. Mothers with crying babies are encouraged to calm the child and if the child slept then the pain could have been treated. This view was held by 87.5% of the respondents. These answers show a very huge reliance on visible physical signs for noticing the pain. If they do not see the signs, they cannot admit that the patient is in pain. This is contrary to the stipulated fact that the pain is what the patients say it is (Vickers, 2011).

The respondents' knowledge of pharmacology was very poor too. This was demonstrated in that of the respondents who took part in the study, 50% of them did not know the action of Ibuprofen and 92% of them were not aware of how to use non-pharmacological intervention. When dealing with mild to severe pain, non-pharmacological interventions are not useful. However, 92% of the respondents still employed non-pharmacological actions in moderate pain. It is a fact that respiratory distress is a rare occurrence in children on opioids even if they are on that therapy for months. But the majority (57.5%) had the wrong concept and thought that the children can have respiratory depression as a side effect. This lack of knowledge and wrong idea can lead to withholding the necessary pain medications to children in need of this therapy for fear of side effects like respiratory depression which are neither here nor there. This lack of knowledge extended to not knowing which route of administration is ideal for the administration of opioids. The oral route is preferred because it is easy, cheap, and most convenient (Wang & Tsai 2010).

Codeine 32mg PO is almost the same as Acetaminophen 650mg PO in its pharmacological effect. But 75% of the respondents did not know that and 60% did not know what the WHO pain ladder says about how many analgesias to use. The knowledge was tested on the question which asked about morphine. The question asked the duration of intravenous morphine, and 87.5% did not know that it should be given over 4 – 5

hours. On the action of promethazine (Phenergan) as a reliable potentiator of opioids, only 47.5% knew what it was.

The respondents were at least knowledgeable on the interaction with the family of the child with pain. 65% correctly stated that parents should not be asked to leave when performing painful procedures. This was interesting because during the focus group discussions they mentioned that in practice they do ask the caretakers to leave the bedside when doing painful procedures. They mentioned that they do that because the doctors demand it. This kind of attitude is not plausible because despite knowing the correct thing to do they succumb to wrong acts when someone senior asks them to.

Pain alleviation is important for health workers to provide quality care. Like any other aspect of quality care component, it must be delivered in an ethically approved manner. Though Placebos are cheap and that they may have some psychological healing power, they should never be given unless the patient consent (Millum & Grady, 2013). In this study, 67.5% of the nurses agreed that they can give water for injection as a placebo to check if the child is really in pain. Most of the respondents who agreed to give a placebo were enrolled, nurses. They are hands-on kind of nurses and they are very close to the patient. Their desire to giving a placebo could be an indication that they feel compelled to do something when the patient reports to be in pain. They are covering up the lack of guidelines of what to do with a patient who is in pain by the willingness to give a placebo. Almost all of them are trained from mission run health institutions whose caring ethic while on training may include always doing something even if that means giving a placebo. During the focus group discussions, the respondents shared several experiences about when they used placebos and how they thought it worked.

The scenario given in the case studies revealed the nurses' mistrust of the patient assessment of pain. In one case study, the child had indicated the pain using a pain scale to be at 8. However, only 15% of the respondents agreed with the patient. The rest of the respondents (85%) downgraded the pain to less than 5. The patient rated his pain as

severe but, interestingly, 7.5% of the respondents, in fact, rated the patient at zero, meaning there was no pain at all. The tendency by the nurses to underrate patients' pain was demonstrated in a another study, who compared the self-rating of patients by the patients and compared it with the assessment of the patients' pain as observed. Findings revealed that almost always, nurses underrated the patient's pain. In almost all the cases the rating never agreed (Vickers, 2011). In the focus group discussions, the respondents clarified that most of them downgraded the rating of pain by the patient because they thought the child erred and did not understand what he was doing.

The case study had further instructions on when to administer medication. The case study indicated that in pain above 5 the patient should receive morphine 3mg IV. Interestingly, in this study, the conservative nature of nurses to manage pain was exposed. 47.5% administered no morphine at all at this time, and 30% administered some morphine but reduced the dose to 1mg IV and 15% also reduced the morphine to 2mg. This gives a total of 92.5% of the nurses who will mismanage the patient despite being given clear instructions and the patient had indicated the correct pain level. This is alarming but not surprising. This is what was found when the case files were reviewed. A child who was a known patient with cancer had a pain medication prescribed Pro-re Nata (PRN) basis. The caretaker reported that when they arrived, the child was in severe pain but was not given the drug. Till the time of the case file review which was about 5 days later the PRN pain medication was not given. The nurses did not see the necessity of giving pain medication. The caretaker was not even communicated to that if the child was in pain she should report to the nurse so that the prescribed medication can be given. This is ironic because PRN prescribing allows for individualized management. But this also reveals that nurses are conservative when it comes to prescribing drugs for pain (Vickers, 2011). All the 7 pediatric nurses who answered the question knew that a child under 2 years of age has a memory of painful experiences and is pain-sensitive. However, of the 28 Registered Nurses who answered the question, 17(61%) erroneously believed that children have no memory of painful experiences. Three out of the six enrolled nurses answered wrongly the question of whether the WHO suggests using single analgesia and

more registered nurses (20) out of the 28 also got this question wrong. The registered pediatric nurses answered this question well because 6 out of the 7 answered it correctly.

The focus group discussion also brought the issues of what challenges the nurses are faced with in prescribing pain medication. The issues which came up in all the three groups were that the nurses feel deskilled in pharmacology. There is a new policy at the hospital that all the drugs must be dispensed by the drug chart. The attending physician prescribes the drug on the drug chart and the nurse carries the drug chart to the pharmacy to collect the dose for the patient. The nurse has to administer the drug. The nurses feel that they have no control of the drugs in the ward because the ward stocks have been removed as well.

The other barriers mentioned other than a lack of guidelines and protocols was the idea of working with colleagues who are not oriented in pain management like pharmacists and doctors. When the other team members in the health care system are not abreast of the need to address the pain in children, it can be frustrating for those who are oriented. This underscores the need to address the issue of pain management as a team as opposed to one health care cadre. Other barriers are the nurse's cultural understanding of pain (Twycross, 2010), the nurse's cultural and personal judgments, personal preconceived ideas such as that pain is part of the illness, and as such, the children must experience it to some degree. Some nurse's lack of knowledge on the therapies to give the child in pain and the fear of overdosing the children prevent some nurses from helping the children in pain (Subhashini, Vatsa & Lodha, 2009).

15.0 Conclusion

Overall, the findings suggest that nurses at a pediatric specialty hospital in Zambia were lacking in knowledge and practice for providing appropriate pain management to children. Ministry of Health through the General Nursing Council of Zambia (GNCZ) should emphasize guidelines on pediatric pain management in pre-service curriculum and in-service training, and explore forming hospital pediatric pain management teams to address in-facility needs until there is improved practice and knowledge in staff. The

quantitative data showed that there was a big knowledge gap among the nurses while the qualitative data showed that some attitudes were bad towards pain assessment and management and the file review exposed the poor practices on management of pain in children.

Quality-improvement programmes or nurse-led pain training programmes should be instituted (Vickers, 2011) at Lusaka Children's Hospital. These programmes should aim at improving the nurses' knowledge and practices of pain management. A brief nurse-driven pain education can improve nurses' knowledge and attitude towards pain management (Abozeid, Al Kalaldeh & Tarawneh, 2015). Sick children may still be experiencing pain when they should not (Mattsson *et al.*, 2012). Therefore there is a need to enhance curriculum content on pain for nurses dealing with pain in children to include assessment and management. There is also a need to develop protocols and guidelines on pain management (Vickers, 2011). Hospital pain teams should also be developed to provide support and guidance to the development of guidelines. Lastly, pain assessment charts should be included among the observation charts, making it the fifth vital sign as it were (Shalabia, Mahmoud, & Omar, 2015).

16.0 RECOMMENDATIONS

Pain management in children is difficult and complicated compared to adult patients (Editorial, 2011). It is difficult to assess and treat pain in children. This study explored the health worker's knowledge, attitude, and practices on pain management of children. Several salient issues came up from the narration of the health workers which have an implication on nursing education and clinical practice.

Clinical practice

- Healthcare facilities should establish pediatrics pain control programmes and teams to help standardize the management of pain in children (Kahsay, 2017). The team should consist of multidisciplinary team member who could be drawn from among

the anesthetists, doctors, nurses, and psychologists. This team should be specifically trained on children's pain management, and be responsible for developing and reviewing the hospital-based protocols on pain.

- The healthcare facilities should establish an atraumatic principle in all its management of children conditions. The pain must be anticipated and prevented. Painful procedures like inserting a cannulae must never be done without an EMLA cream. Intramuscular injections must be avoided as much as possible. The use of central venous lines must be encouraged
- Multidisciplinary clinical meetings must be held on pain management, to update staff on the new developments and accept the recommendations made by the pain team
- The healthcare facilities to adopt a tool to be used and adjust the patient's files to include the fifth vital sign which is pain assessment. The attending clinician should take note of the patient's level of pain when reviewing the patient.

Nursing Education

- Nurse curriculum for both preservice and in-service should include in more explicit detail the management of pain. The curriculum must guide the students on how to assess and treat the pain
- The curriculum should detail the non-pharmacological management of pain available in our setting. must include ethical issues in pain management, including showing that giving of a placebo is unethical in pain management

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APPENDICES

6.1 APPENDIX 1: INFORMATION LEAFLET

Title: NURSES' EXPERIENCES REGARDING PAIN IN CHILDREN AT LUSAKA CHILDREN'S HOSPITAL

Dear Participant,

My name is Eric Chisupa and I work at Lusaka School of Pediatrics and Child Health Nursing. I would like to invite you to take part in a study I am conducting at the children's hospital. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in the study, you should fully understand what is involved. If you have any questions which are not fully explained in this leaflet, do not hesitate to phone me, Eric Chisupa at +260 0978492699 during working hours. You should only agree to take part if you are completely satisfied with all the procedures involved.

WHAT IS THE STUDY ALL ABOUT?

The purpose of the study is to explore the experiences of Nurses Regarding Pain in Children at Lusaka Children's Hospital.

WHAT WILL YOU NEED TO DO IN THE STUDY?

If you want to join the study, I will first ask you to sign a consent form. I will ask you if you prefer to join the focus group discussion or if you just want to complete a self-administered questionnaire. If you do not want me to make a tape recording of what you say, I will only write down what you say.

I will invite you to tell me a little bit about yourself and for how long you have been working with children and how much you know about the assessment and management of pain in children.

WHAT ARE THE POTENTIAL BENEFITS THAT MAY COME FROM THE STUDY?

By taking part in this study you will help to improve knowledge of health care workers regarding the assessment and management of pain in children. There are, however, no financial or direct benefits for you personally.

WHAT ARE YOUR RIGHTS AS A PARTICIPANT IN THIS STUDY?

You can choose to take part in the study or not. You can also, during the interview, or focus group discussion say that you do not want to take part anymore. You can even tell me that I cannot use the information after you have talked to me without any real or perceived negative consequence on you.

HOW WILL CONFIDENTIALITY BE ENSURED FOR THE STUDY?

What you say is confidential and only I and my research supervisors would have access to the information. The tapes with your voice will be locked up in a safe place and destroyed two years after the findings of the study have been published. The information will not be linked to you because codes will be used instead of your name

HAS THE STUDY RECEIVED ETHICAL APPROVAL?

The research was approved by the University of Malawi and the University of Zambia Biomedical Research Ethics Committee. If you have any further questions, please contact:

Eric Chisupa Lusaka School of Pediatrics and Child Health Nursing, University Teaching Hospital, Lusaka, Mobile: 0978492699

6.2 APPENDIX 2: Participant declaration

I have read and understood the purpose, aims, and benefits of the study and I have decided to take part voluntarily. The aims and the objectives have been explained to me, and that I can discontinue the interview or my participation in the focus group at any time I feel like without any repercussions what so ever. I understand that the findings in this research can be published in any journal and can be discussed at a professional fora.

Sign……Date ……

6.3 APPENDIX 3: Consent form.

Participant declaration

I have read and understood the purpose, aims, and benefits of the study and I have decided to take part voluntarily. I have authorized that our discussion can be tape-recorded.

Sign…… Date ……

6.4 APPENDIX 4: Focus Group Activity / Interview Guide

- ✓ How long have you worked in a children's hospital?
- ✓ What pain assessment tools are available for use at the moment?
- ✓ Are there guidelines on pain management at the hospital?
- ✓ What pain-relieving interventions do nurses use in practice? (pain medications and non-pharmacologic methods)
- ✓ What involvement do children have in their pain management?
- ✓ What do you think influences nurses in deciding when to assess and manage pain?
- ✓ Are there factors that make it difficult to effectively manage the pain of children in the hospital?
- ✓ Clarifying some questions from the Knowledge and Attitudes Survey Regarding Pain

6.5 APENDIX 5: Pediatric Nurses' Knowledge and Attitudes Survey Regarding Pain

Please place an X beside the answer which applies to you:

Gender:

Male [ ]

Female [ ]

Age:

20-30 [ ]

31-40 [ ]

41-50 [ ]

51-65 [ ]

Level of Education:

Certificate [ ]

Diploma [ ]

Advanced Diploma [ ]

Degree [ ]

Masters [ ]

Other (please specify) [ ]

_____

Years of Nursing Experience:

Less than 1 year [ ]

1-5 years [ ]

5-10 years [ ]

10-15 years [ ]

15-20 years [ ]

More than 20 years [ ]

Years of Paediatric Nursing Experience:

Less than 1 year [ ]

1-5 years [ ]

5-10 years [ ]

10-15 years [ ]

15-20 years [ ]

More than 20 years [ ]

Nursing Grade:

Enrolled Nurse [ ]

Registered Nurse [ ]

Registered Midwife [ ]

Registered Critical Care Nurse [ ]

Registered Paediatric Nurse [ ]

_____

Have you had any formal training in Pain Management?

No **[ ]**

Yes (please specify) **[ ]**

_____

Have you had any informal training in Pain Management?

No **[ ]**

Yes (please specify) **[ ]**

_____

How often do you use a pain Assessment tool in the assessment of in patients?

Always **[ ]**

Frequently **[ ]**

Occasionally **[ ]**

Rarely **[ ]**

Never **[ ]**

How would you rate your level of knowledge in the intensity of pain Area of pain management?

Excellent **[ ]**

Good **[ ]**

Average **[ ]**

Fair **[ ]**

Poor **[ ]**

6.6 APPENDIX 6: Consent Form for Caregivers for File Review (English)

Title: EXPERIENCES OF NURSES REGARDING PAIN IN CHILDREN AT LUSAKA CHILDREN'S HOSPITAL

INVESTIGATORS:

Eric Chisupa [1,2] Elizabeth Glasser[1] Miriam Simbota[1]

1 Kamuzu College of Nursing, University of Malawi, Blantyre, Malawi

2 Lusaka School of Pediatrics and Child Health Nursing, Lusaka Schools of Nursing and Midwifery

Patient Consent Form, English (updated 06.09.2017)

What is this project about?

Eric Chisupa is conducting a research study entitled "Knowledge, attitudes and practices of nurses regarding pain in children at Lusaka Children Hospital" The general objective of the study is to assess the nurses' knowledge, attitudes, and practices towards pain in children at Lusaka Children's Hospital. First, we will assess the nurses' knowledge of assessment and management of pain in children at Lusaka Children's Hospital. Second, we will explore the attitudes and beliefs of nurses regarding pain management. Third, we will identify the resources available for managing pain at Lusaka Children Hospital. Fourth, we will explore the practices of nurses regarding pain. The findings of this study can help inform health policy in Zambia so the government, health care provider training programmes, and health care providers can better understand how pain is currently treated, the gaps in knowledge, and how to implement the most appropriate strategies for pediatric pain management. For us to learn about how you or your child's pain is being assessed and treated during the hospital stay, we ask that you agree to allow us to review your child's hospital records since admission to today. There are no experimental procedures associated with this study.

You will benefit by knowing that your information is contributing to our understanding of pain management and the need for better strategies to address pediatric pain. While there are no physical risks to participating, it is conceivable that you might be upset by our reviewing your records. Your participation is voluntary and will not have any impact on your medical care or charges. All information you provide will be kept confidential. You are free to terminate/ revoke your consent at any time.

All study participants will receive a unique number so that the patient and caregiver name, or that of the family, will not be linked to the study information. Statements may be used in documents to illustrate certain parts of your or your family's experience of pediatric pain management; however, we would only provide age, gender, and aspects of your pain management but no names, villages, or other identifying information.

What are my rights?

If you have questions concerning your participation in this project or feel that you have been harmed in being a part of this study, you should contact the Principal Investigator, Eric Chisupa, at the email ericchisupa@yahoo.com or you may call or text him at +260978492699: If you have any questions about your rights as a participant or if you want to speak with someone who is not part of this project, please contact WHO?: If you are sick, do not call these numbers, please go to the nearest health facility.

Do you agree to participate?

We welcome your questions and would appreciate written agreement to participate in the study.

By signing the lines below, I voluntarily agree to participate in this research project as described above.

_____Please print patient's name

_____Please print caregiver's name and relationship to patient

6.7 APPENDIX 7: ICHAKUSUMINISHA (BEMBA)

UMUTWE: AMANO, IMISANGO NEMICHITILE YABA NURSE KUBANA ABAKWETE UBUKALI PACHIPATALA CHABANA CHA LUSAKA CHILDREN'S HOSPITAL

BAKAFWAILIKISHA:

Eric Chisupa [1,2] Elizabeth Glasser[1] Miriam Simbota[1]

1 Kamuzu College of Nursing, University of Malawi, Blantyre, Malawi 2 Lusaka School of Pediatrics and Child Health Nursing, Lusaka Schools of Nursing and Midwifery

Patient Consent Form, Bemba (updated 06.09.2017)

Uku ukufwailikisha kulolekesha panshi?

Ba Eric Chisupa balebombela pakufwailikisha kwamuchipatala. Umutwe uwa uku kufwailikisa uleti "Amano , Imisango ne nemichitile yaba nasi kubana abakwete ubukali muchipatala cha bana pa Lusaka Children's Hospital". Balefwaya ukusanga ifinshinka Pali ba nasi efyo baishiba pabana abakwete ubukali.

Ichakwambilapo balefwaya ukwishiba amano yaba nasi pabana abakwete ubukali nefyo babebeta abana abakwete ubukali. Ichabubili, bakafwailikisha imisangasango nefyo basumina ba nasi pakabana abakwete ubukali nefyo bengabundapa abana. Ichabutatu, bakafwailikisha ngakwaliba ifisolobelo nefyalembwa ifyapusana pusana efyo bengabofya pakufwailikisha ubukali nokundapa abana muchipatala abakwete ubukali. Efyo bakasanga muli uku ukufwailikisha kukalenga ubuteko wamu chalo cha Zambia ukuyamyako ifyo banasi bengaondapa abana abakwete ubukali. Kabili uku ukufwailikisha kukalenga ukuti twishibe ifintu banasi bafwile ukusambilishiwa pakweba ati bengo ndapa abana muchipatala mukufikapo.

Pakweba ati twishibe fyonse ifi, tulelomba uku tumoneko muli ifi ifwalembwa ifyamuchipatala ifya mwana wenu. Tulefwaya ukumona ngati muliko ifili fyonse balembamo ifingalanga ukuti umwana alipokelelako umuti ulionse uwalesha ukukalipa ukulikonse. Twala checheta ukufumafye epo umwali wamutekele muchipatala nokufika leleo.

Takuli ukwesha ukulikonse pamubili uwamwana. Twalaloleshafye mufyalembwa fyamuchipatala. Mwalatemwa ukwishiba ukuti efyo mwalatweba fikalenga ukuwamyako efyo ba nasi bondapa abana abana abelchuchuti nobukali. Ukusagwamo muli uku ukufwailikisha takwalete ukuchenwa ukulikonse kuli imwe nagula kumwana. Takuli amalipilo nangula ukulipila pakuti musangwe muli uku ukufailikisha. Ukusangwamo kwafye.

Kuti mwakana nangula ukushimika ukusangwa muli uku ukufwailikisaha, elyo takwabe ufwakufumamo ifilifonse nangu mwasumina nangu mwakana. Efyo twalasanga tukasunga munkama yamuchipatala. Kuti mwaleka inshita iliyonse tapali ifyalachitika kuli imwe nangula kumwana nga mulefwaya. Ulionse akakwata aka nambala. Amashina yenu nayamwana tatwakayasende ukuli konse. Efyo twalasnaga mufyalembwa fikabafye elo tatwakalondolola ukuti fifuminekeo kumwana wenu..

Isambu mukwete?

Nganamukwata amepusho alionse, nangula namukwata ukuilishana ukulikonse kuti mwatuma lamya kuba kalamba aba uku ukufwailikisha, Eric Chisupa, pali email ericchisupa@yahoo.com nangu sms pali +260978492699: nga namukwata ukuilishanya pa sambu shenu tumeni lamya.

Namusumina ukusangwamo?

We welcome your questions and would appreciate written agreement to participate in the study.

By signing the lines below, I voluntarily agree to participate in this research project as described above.

_____

Ishina Lyenu lembeni busakabusaka

_____

Please print the caregiver's name and relationship to patient

_____Please sign (caregiver signs if patient less than18 years) Date

6.8 APPENDIX 8: File Review Data Collection Tool

Title: EXPERIENCES OF NURSES REGARDING PAIN IN CHILDREN AT LUSAKA CHILDREN'S HOSPITAL

ID									
Consent signed									
Date of review									
Date of admission									
Admitting diagnosis									
Date of birth									
Gender									
Level of education of the guardian									
Is the child in pain?									
Record of assessment for pain									
Record of pain treatment									

(2017)

6.9 Appendix 10: Focus Group form (Post Graduate Nurses)

Eric Chisupa is conducting a research study entitled "Experiences of nurses regarding pain in children at Lusaka Children Hospital" The general objective of the study is to assess the nurses' knowledge, attitude, and practices towards pain in children at Lusaka Children Hospital.

A focus group discussion will be held on a date to be discussed later. If you are willing to take part in the focus group discussions please indicate your name and phone number on the space provided. If you don't mind being added to a WhatsApp group please indicate that as well. Indicate your details on sheet one if you have a post-graduate training, two if you are a registered nurse, and sheet three if you are an enrolled nurse. At least six nurses will be needed for each focus group.

SHEET ONE: POSTGRADUATE NURSE

NO.	**Name**	**Rank**	**Phone No.**	**Tick here if you don't mind being added to a WhatsApp group**

6.10 Appendix 11: Focus Group form (Registered Nurses)

Eric Chisupa is conducting a research study entitled "Experiences of nurses regarding pain in children at Lusaka Children Hospital" The general objective of the study is to assess the nurse's knowledge attitude and practices towards pain in children at Lusaka Children Hospital.

A focus group discussion will be held on a date to be discussed later. If you are willing to take part in the focus group discussion please indicate your name and phone number on the space provided. If you don't mind being added to a WhatsApp group please indicate that as well. Indicate your details on sheet one if you have a post-graduate training, two if you are a registered nurse, and sheet three if you are an enrolled nurse. At least six nurses will be needed for each focus group

SHEET TWO: POST REGISTERED NURSES

NO.	**Name**	**Rank**	**Phone No.**	**Tick here if you don't mind being added to a WhatsApp group**

6.11 Appendix 12: Focus Group form (Enrolled Nurses)

Eric Chisupa is conducting a research study entitled "Experiences of nurses regarding pain in children at Lusaka Children Hospital" The general objective of the study is to assess the nurse's knowledge attitude and practices towards pain in children at Lusaka Children Hospital.

A focus group discussion will be held on a date to be discussed later. If you are willing to take part in the focus group discussion please indicate your name and your phone number on the space provided. If you don't mind being added to a WhatsApp group please indicate that as well. Indicate your details on sheet one if you have a post-graduate training, two if you are a registered nurse, and sheet three if you are an enrolled nurse. At least six nurses will be needed for each focus group

SHEET THREE ENROLLED NURSES

NO.	**Name**	**Rank**	**Phone No.**	**Tick here if you don't mind being added to a WhatsApp group**

6.12 APPENDIX 13. ADDITIONAL QUANTITATIVE DATA

Section B: True/False Questions

Observable signs

Q1. Observable changes in vital signs must be relied upon to verify a child's statement that he has severe pain

	Frequency	**Percentage**
True	33	82.5
False	7	17.5
Total	**40**	**100**

The frequency tabulation on whether observable changes in vital signs must be relied upon to verify a child's statement that he has severe pain revealed that the majority of the respondents (82.5%) got the answer wrong while 17.5% gave the correct answer of false.

Degree of pain sensitivity in under 2 years

Q2. Because of an underdeveloped neurological system, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences.

	Frequency	**Percentage**
True	19	47.5
False	21	52.5
Total	**40**	**100**

To the statement that children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences because of an underdeveloped neurological system, 52.5% of the respondents gave the correct answer (False) while 47.5% got it wrong by saying it is true.

If an infant can be distracted then it means the pain is not severe

Q3. If the infant/ child/ adolescent can be distracted from his pain this usually means that he is not experiencing a high level of pain.		**Frequency**	**Percentage**
	True	28	70.0
	False	12	30.0
	Total	**40**	**100.0**

Most respondents (70%) answered wrongly to the statement that if the infant/ child/ adolescent can be distracted from his pain this usually means that he is not experiencing a high level of pain by saying the statement is true. The correct answer to false was given by 30% of the respondents.

A Child may sleep in spite of the pain

Q4. Infants/ children/ adolescents may sleep in spite of severe pain.		**Frequency**	**Percentage**
	True	5	12.5
	False	35	87.5
	Total	**40**	**100.0**

The frequency tabulation on whether infants/ children/ adolescents may sleep in spite of severe pain revealed that most respondents (87.5%) gave the wrong answer implying that only 12.5% got it right.

Comparable stimuli in different people produce the same intensity of pain

Q5. Comparable stimuli in different people produce the same intensity of pain.		**Frequency**	**Percentage**
	True	8	20.0
	False	32	80.0
	Total	**40**	**100.0**

The majority of the respondents (80%) gave the correct answer (false) to the statement that comparable stimuli in different people produce the same intensity of pain, while 20% of the respondents gave the wrong answer of true.

Ibuprofen and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for bone pain caused by metastases.

Q6. Ibuprofen and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for bone pain caused by metastases.		**Frequency**	**Percentage**
	True	21	52.5
	False	19	47.5
	Total	**40**	**100.0**

To the statement that Ibuprofen and other nonsteroidal anti-inflammatory agents are not effective analgesics for bone pain caused by metastases, 52.5% of the respondents gave the wrong answer of true while 47.5% got it correct.

Non-drug interventions are very effective for mild-moderate pain control but are rarely helpful for more severe pain.

Q7. Non-drug interventions are very effective for mild-moderate pain control but are rarely helpful for more severe pain.		**Frequency**	**Percentage**
	True	37	92.5
	False	3	7.5
	Total	**40**	**100.0**

Similarly, the majority (92.5%) of the respondents gave the wrong answer (True) to the statement that non-drug interventions are very effective for mild-moderate pain control but are rarely helpful for more severe pain, implying that only 7.5% got it right.

Children who require repeated painful procedures should receive pain treatment.

Q8. Children who will require repeated painful procedures should receive maximum treatment for the pain and anxiety of the first procedure to minimize the development of anticipatory anxiety before subsequent procedures.		**Frequency**	**Percentage**
	True	30	75.0
	False	10	25.0
	Total	**40**	**100.0**

As to whether children who will require repeated painful procedures should receive maximum treatment for the pain and anxiety of the first procedure to minimize the development of anticipatory anxiety before subsequent procedures, 75% of the respondents answered correctly by saying it is true while 25% got it wrong.

Respiratory depression in children

Q9. Respiratory depression rarely occurs in children/ adolescents who have been receiving opioids for months.		**Frequency**	**Percentage**
	True	17	42.5
	False	23	57.5
	Total	**40**	**100.0**

To the statement that respiratory depression rarely occurs in children/ adolescents who have been receiving opioids for months, the majority of the respondents (57.5%) gave the wrong answer of false while 42.5% gave the right answer of true.

Acetaminophen

Q10. Acetaminophen 650 mg PO is approximately equal in analgesic effect to codeine 32 mg PO.		**Frequency**	**Percentage**
	True	10	25.0
	False	30	75.0
	Total	**40**	**100.0**

Most respondents (75%) gave the wrong answer of false while 25% gave the correct answer to the statement that Acetaminophen 650 mg PO is approximately equal in analgesic effect to codeine 32 mg PO.

World Health Organization Pain Ladder

Q11. The World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs.		**Frequency**	**Percentage**
	True	24	60.0
	False	16	40.0
	Total	**40**	**100.0**

As to whether the World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs, 60% of the respondents gave the wrong answer of true while 40% got it right.

Duration of analgesia for Morphine

Q12. The usual duration of analgesia of Morphine IV is 4-5 hours.		**Frequency**	**Percentage**
	True	35	87.5
	False	5	12.5
	Total	**40**	**100.0**

To the statement that the usual duration of analgesia of Morphine IV is 4-5 hours, 87.5% of the respondents gave the wrong answer of false while 12.5% got it correct.

Promethine

Q13. Research shows that promethazine (Phenergan) is a reliable potentiator of opioid analgesics.		**Frequency**	**Percentage**
	True	21	52.5
	False	19	47.5
	Total	**40**	**100.0**

As to whether research shows that promethazine (Phenergan) is a reliable potentiator of opioid analgesics, 52.5% of the respondents gave the wrong answer of true while 47.5% got it right.

Presence of parents during Painful procedures

Q14. Parents should not be present during painful procedures.		**Frequency**	**Percentage**
	True	14	35.0
	False	26	65.0
	Total	**40**	**100.0**

Most respondents (65%) gave the right answer of false while 35% gave the wrong answer to the statement that parents should not be present during painful procedures.

Substance abuse in children

Q15. Adolescents with a history of substance abuse should not be given opioids for pain because they are at high risk for repeated addiction.		**Frequency**	**Percentage**
	True	29	72.5
	False	11	27.5
	Total	**40**	**100.0**

The frequency tabulation on whether adolescents with a history of substance abuse should not be given opioids for pain because they are at high risk for repeated addiction shows that most respondents (72.5%) got it wrong by agreeing while 27.5% gave the right answer of false.

Dosage of Morphine

Q16. Beyond a certain dosage of morphine, increases in dosage will NOT provide increased pain relief.		**Frequency**	**Percentage**
	True	21	52.5
	False	19	47.5
	Total	**40**	**100.0**

Similarly, 52.5% of the respondents gave the wrong answer of true to the statement that beyond a certain dosage of morphine, increases in dosage will not provide increased pain relief while 47.5% gave the correct answer of false.

Opioid in infants less than 6 months

Q17. Young infants, less than 6 months of age, cannot tolerate opioids for pain relief.		**Frequency**	**Percentage**
	True	18	45.0
	False	22	55.0
	True	**18**	**45.0**

On whether young infants, less than 6 months of age, cannot tolerate opioids for pain relief, 55% of the respondents gave the correct answer of false while 45% got it wrong.

Children with pain should be encouraged to endure the pain

Q18. The child/ adolescent with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.		**Frequency**	**Percentage**
	True	4	10.0
	False	36	90.0
	Total	**40**	**100.0**

To the statement that the child/ adolescent with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure, 90% of the respondents gave the correct answer of false while 10% got it wrong.

Rely on parents for pain intensity in children less than 8 years

Q19. Children less than 8 years cannot reliably report pain intensity and therefore, the nurse should rely on the parents' assessment of the child's pain intensity.		**Frequency**	**Percentage**
	True	11	27.5
	False	29	72.5
	Total	**40**	**100.0**

Similarly, 72.5% of the respondents gave the correct answer of false to the statement that children less than 8 years cannot reliably report pain intensity and therefore, the nurse should rely on the parents' assessment of the child's pain intensity while 27.5% got it wrong.

Pain is necessary

Q20. Based on one's religious beliefs a child/ adolescent may think that pain and suffering are necessary.		**Frequency**	**Percentage**
	True	26	65.0
	False	14	35.0
	Total	**40**	**100.0**

The majority (65%) of the respondents answered correctly (true) to the statement that based on one's religious beliefs a child/ adolescent may think that pain and suffering are necessary while 35% got it wrong.

Use of Anxiolytics, sedatives, and barbiturates for pain

Q21. Anxiolytics, sedatives, and barbiturates are appropriate medications for the relief of pain during painful procedures.		**Frequency**	**Percentage**
	True	34	85.0
	False	6	15.0
	Total	**40**	**100.0**

To the statement that Anxiolytics, sedatives, and barbiturates are appropriate medications for the relief of pain during painful procedures, 85% of the respondents gave the wrong answer of true while 15% got it right.

Subsequent doses of opioid analgesia

Q22. After the initial recommended dose of the opioid analgesic, subsequent doses should be adjusted following the individual patient's response.		**Frequency**	**Percentage**
	True	36	90.0
	False	4	10.0
	Total	**40**	**100.0**

Most respondents (90%) gave the correct answer (True) to the statement that after the initial recommended dose of the opioid analgesic, subsequent doses should be adjusted following the individual patient's response while 10% got it wrong.

Use of non-drug technique with pain medication

Q23. The child/ adolescent should be advised to use non-drug techniques alone rather than concurrently with pain medications.		**Frequency**	**Percentage**
	True	27	67.5
	False	13	32.5
	Total	**40**	**100.0**

On whether the child/ adolescent should be advised to use non-drug techniques alone rather than concurrently with pain medications, 67.5% of the respondents gave the wrong answer of true, while 32.5% got it right.

Giving of placebo

Q24. Giving children/ adolescents sterile water by injection (placebo) is often a useful test to determine if the pain is real.		**Frequency**	**Percentage**
	True	27	67.5
	False	13	32.5
	Total	**40**	**100.0**

Similarly, 67.5% of the respondents gave the wrong answer of true while 32.5% gave the correct answer to the statement that giving children/ adolescents sterile water by injection (placebo) is often a useful test to determine if the pain is real.

Applying heat and cold on painful areas

Q25. To be effective, heat and cold should be applied directly to the painful area.		**Frequency**	**Percentage**
	True	24	60.0
	False	16	40.0
	Total	**40**	**100.0**

Most respondents (60%) gave the wrong answer of true to the statement that to be effective, heat and cold should be applied directly to the painful area while 40% got it right.

Route of administration of opioid with prolonged cancer-related pain

Section C: Multiple Choice Questions

Q26. The recommended route of administration of opioid analgesics to children with prolonged cancer-related pain is		**Frequency**	**Percentage**
	Intravenous	15	37.5
	Intramuscular	5	12.5
	Oral	16	40.0
	Rectal	2	5.0
	I don't know	2	5.0
	Intravenous	15	37.5
	Total	**40**	**100**

The frequency tabulation on the recommended route of administration of opioid analgesics to children with prolonged cancer-related pain shows that 40% of the respondents gave the right answer (oral) while 60% gave wrong answers. These answers were intravenous, given by 37.5% of the respondents, intramuscular (12.5%) rectal (5%) and I don’t know (5%).

Route of administration of opioid in children with brief severe pain of sudden onset

Q27. The recommended route of administration of opioid analgesics to children with brief, severe pain of sudden onset, e.g. trauma or postoperative pain, is		**Frequency**	**Percentage**
	Intravenous	24	60.0
	intramuscular	12	30.0
	Oral	3	7.5
	I don't know	1	2.5
	Total	**40**	**100.0**

On the recommended route of administration of opioid analgesics to children with brief, severe pain of sudden onset, e.g. trauma or postoperative pain, the majority (60%) of the respondents gave the correct answer of intravenous while 30% gave the wrong answer of intramuscular, 7.5% gave the wrong answer of oral and 2.5% of the respondents did not know.

Treatment of prolonged moderate-severe pain for children with cancer

Q28. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for children with cancer?		**Frequency**	**Percentage**
	Codeine	2	5.0
	Morphine	29	72.5
	meperidine (Demerol)	2	5.0
	I don't know	7	17.5
	Total	**40**	**100.0**

Concerning which analgesic medication is considered the drug of choice for the treatment of prolonged moderate to severe pain for children with cancer, 72.5% of the respondents gave the correct answer of morphine while 17.5% did not know, 5% gave the wrong answer of codeine and another 5% of the respondents gave the wrong answer of meperidine (Demerol).

Intravenous Morphine

Q29. Which of the following IV doses of morphine administered would be equivalent to 15 mg of oral morphine.		**Frequency**	**Percentage**
	Morphine 3mg IV	12	30.0
	Morphine 5mg IV	15	37.5
	Morphine 10mg IV	4	10.0
	Morphine 15mg IV	9	22.5
	Total	**40**	**100.0**

The frequency tabulation on which IV dose of morphine administered would be equivalent to 15mg of oral morphine shows that 37.5% of the respondents gave the right answer of Morphine 5mg IV while 30% gave the wrong answer of Morphine 3mg IV, 22.5% gave the wrong answer of Morphine 15mg IV and 10% of the respondents gave the wrong answer of Morphine 10mg IV.

Analgesia in post-operative pain

Q30. Analgesics for postoperative pain should initially be given		**Frequency**	**Percentage**
	around the clock on a fixed schedule	25	62.5
	only when the child/adolescent asks for medication	4	10.0
	only when the nurse determines that the child/adolescent has moderate or greater discomfort	11	27.5
	Total	**40**	**100.0**

As to when Analgesics for postoperative pain should initially be given, the majority of the respondents (62.5%) of the respondents gave the correct answer of around the clock on a fixed schedule while 27.5% gave the wrong answer of 'only when the nurse determines that the child/adolescent has moderate or greater discomfort' and 10% of the respondents gave the wrong answer of 'only when the child/adolescent asks for medication'.

Opioid analgesia in a child with Cancer

Q31. A child with chronic cancer pain has been receiving daily opioid analgesics for 2 months. The doses increased during this time. Yesterday the child was receiving morphine 20 mg/hour intravenously. Today he has been receiving 25 mg/hour intravenously for 3 hours. The likelihood of the child developing clinically significant respiratory depression is		**Frequency**	**Percentage**
	less than 1%	7	17.5
	1-10%	12	30.0
	11-20%	10	25.0
	21-40%	3	7.5
	> 40%	8	20.0
	Total	**40**	**100.0**

On the likelihood of the child developing clinically significant respiratory depression following the scenario in question 31, 17.5% of the respondents gave the right answer of 'less than 1%' while 82.5% got it wrong. These constituted 30% who answered '1-10%', 25% who gave the answer of '11-20%), 20% who gave the answer of '> 40%' and 7.5% of the respondents who answered'21-40%). The practice of pediatric pain management has made great progress in the last decade with the development and validation of pain assessment tools specific to pediatric patients. Before that, adequate assessment and treatment of pediatric pain lagged behind that of adult analgesia due to a lack of clinical knowledge, insufficient pediatric research, and the fear of opioid side effects and addiction (Verghese, & Hannalla, 2010).

Analgesia for Chronic cancer pain

Q32. Analgesia for chronic cancer pain should be given		**Frequency**	**Percentage**
	around the clock on a fixed schedule	24	60.0
	only when the child/adolescent asks for medication	4	10.0
	only when the nurse determines that the child/adolescent has moderate or greater discomfort	12	30.0
	Total	**40**	**100.0**

On when Analgesia for chronic cancer pain should be given, 60% of the respondents gave the correct answer of around the clock on a fixed schedule while 30% gave the wrong answer of 'only when the nurse determines that the child/adolescent has moderate or greater discomfort' and 10% of the respondents gave the wrong answer of 'only when the child/adolescent asks for medication'.

Why a child would ask for increased pain medication

Q33. The most likely explanation for why a child/ adolescent with pain would request increased doses of pain medication is		**Frequency**	**Percentage**
	The child/adolescent is experiencing increased pain	22	55.0
	The child/adolescent is experiencing increased anxiety or depression	6	15.0
	The child/adolescent is requesting more staff attention	2	5.0
	The child/adolescent's requests are related to addiction	10	25.0
	Total	**40**	**100.0**

The frequency tabulation on the most likely explanation for why a child/ adolescent with pain would request increased doses of pain medication shows that 55% of the respondents answered correctly that it means the child/adolescent is experiencing increased pain while 25% wrongly said it means the child/adolescent's requests are related to addiction, 15% wrongly answered that it means the child/adolescent is experiencing increased anxiety or depression and 5% of the respondents wrongly answered that it means the child/adolescent is requesting more staff attention.

Drugs useful for the treatment of cancers

Q34. Which of the following drugs are useful for the treatment of cancer pain?		**Frequency**	**Percentage**
	Hydromorphine (Dilaudid)	18	45.0
	Amitriptyline (Elavil)	3	7.5
	All of the above	19	47.5
	Total	**40**	**100.0**

Asked about which drugs are useful for the treatment of cancer pain, 47.5% of the respondents gave the correct answer of 'all of the above' while 45% said it is Hydromorphine (Dilaudid), and 7.5% said it is Amitriptyline (Elavil).

Table 59: the most accurate judge for the intensity of pain

Q35. The most accurate judge for the intensity of the child's/ adolescent's pain is		**Frequency**	**Percentage**
	The treating physician	13	32.5
	The child/adolescent's primary nurse	7	17.5
	The child/adolescent	14	35.0
	The pharmacist	1	2.5
	The child/adolescent's parent	5	12.5
	Total	**40**	**100.0**

Asked on who the most accurate judge of the intensity of the child's/ adolescent's pain is, 35% of the respondents answered correctly that it is the child/adolescent while 32.5% said it is the treating physician, 17.5% said it is the child/adolescent's primary nurse, 12.5% said it is the child/adolescent's parent and 2.5% said it is the pharmacist.

Cultural consideration of pain.

Q36. Which of the following describes the best approach for cultural considerations in caring for child/ adolescent in pain		**Frequency**	**Percentage**
	Because of the diverse & mixed cultures in Zambia, there are no longer cultural influences on pain experience	4	10.0
	Nurses should use the knowledge that has defined clearly the influence of pain on culture	15	37.5
	Children/adolescents should be individually assessed to determine cultural influences on pain	21	52.5
	Total	**40**	**100.0**

what constituted the best approach for cultural considerations in caring for children/adolescents in pain, 52.5% of the respondents answered correctly that Children/adolescents should be individually assessed to determine cultural influences on pain, while 37.5% wrongly answered that Nurses should use the knowledge that has defined clearly the influence of pain on culture and 10% of the respondents answered wrongly that because of the diverse & mixed cultures in Zambia, there are no longer cultural influences on pain experience.

Over reporting of the amount of pain

Q37. What do you think is the percentage of patients who over-report the amount of pain they have?		**Frequency**	**Percentage**
	10	5	12.5
	20	2	5.0
	30	1	2.5
	40	4	10.0
	50	11	27.5
	60	6	15.0
	70	4	10.0
	80	5	12.5
	90	2	5.0
	Total	**40**	**100.0**

Asked what they thought was the percentage of patients who over-reported the amount of pain they had, 12.5% of the respondents gave the correct answer of 10% while the majority gave wrong answers.

Opioid Addiction

38. Narcotic/opioid addiction is defined as psychological dependence accompanied by an overwhelming concern with obtaining and using narcotics for psychic effects, not for medical reasons. It may occur with or without the physiological changes of tolerance to analgesia and physical dependence (withdrawal). Using this definition, how likely is it that opioid addiction will occur as a result if treating pain with opioid analgesics?		**Frequency**	**Percentage**
	< 1%	1	2.5
	5%	1	2.5
	25%	17	42.5
	50%	12	30.0
	75%	8	20.0
	100%	1	2.5
	Total	**40**	**100.0**

On the likelihood of pain addiction occurring as a result of treating pain with opioid analgesics using the definition in question 38, only 2.5% (n=1) of the respondents gave the correct answer of < 1% while the rest gave wrong answers.

Nursing grade vs. pain sensitivity in under 2 years

CROSS TABULATION

Q2. Because of an underdeveloped neurological system, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences	**Nursing Grade**			Total
	Enrolled Nurse	Registered Nurse	Registered Pediatric Nurse	
Q2. True	2 (10.5%)	17(89.5%)	0(0%)	19 (100%)
Q2. False	3 (14.3%)	11 (52.4%)	7(33.3%)	21 (100.0%)
Total	5 (12.5%)	28 (70%)	7 (17.5%)	**40 (100%)**

All the 7 pediatric nurses who answered the question knew that a child under 2 years of age has a memory of painful experiences and is pain-sensitive. However, of the 28 Registered nurses who answered the question, 17 (61%) erroneously believed that children have no memory of painful experiences.

Nursing grade vs. World Health Organization pain ladder

The World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs (e.g. combining an opioid with a non-steroidal agent)	Nursing Grade			Total
	Enrolled Nurse	Registered Nurse	Registered Pediatric Nurse	
Q11 True	3 (12.5%)	20 (83.3%)	1(4.2%)	24(100.0%)
False	2(12.5%)	8 (50.0%)	6 (37.5%)	16 (100%)
Total	5 (12.5%)	28 (70%)	7 (17.5%)	**40 (100%)**

Three out of the six enrolled nurses answered wrongly this question of whether the WHO suggests using single analgesia and more registered nurses (20) out of the 28 also got this question wrong. The registered pediatric nurses answered this question well because 6 out of the 7 answered this question correctly.

Nursing grade vs. placebo

Giving children/ adolescents sterile water by injection (placebo) is often a useful test to determine if the pain is real.		Nursing Grade			Total
		Enrolled Nurse	Registered Nurse	Registered Paediatric Nurse	
Q24.	True	3 (11.1%)	22 (81.5%)	2 (7.4%)	27 (100%)
	False	2 (15.4%)	6 (46.2%)	5 (38.5%)	13 (100%)
Total		5 (12.5%)	28 (70%)	7 (17.5%)	**40(100%)**

Registered nurses were more likely to give a placebo with 22 out the 28 agreeing erroneously that children should be given a placebo to determine if the pain is real. While the enrolled nurses were almost divided by half on giving the placebo, 3 out of 5 and the registered pediatric nurses 5 out of 7 refused to give a placebo of water for injection to ascertain the pain level.

Level of education vs. placebo giving

Giving children/ adolescents sterile water by injection (placebo) is often a useful test to determine if the pain is real.	Level of Education				Total
	Certificate	Diploma	Advanced Diploma	Degree	
True	3(11.1%)	21(77.8%)	2(7.4%)	1(3.7%)	27(100.0%)
False	1(7.7%)	7 (53.8%)	5(38.5%)	0(0.0%)	13(100.0%)
Total	4 (10.0%)	28(70.0%)	7(17.5%)	1 (2.5%)	**40(100%)**

The level of education did not seem to help in the matter of giving the placebo. The majority of the respondents with certificates (3 out 4) said they could give a placebo, so did the majority of those with a diploma (21 out the 28). Only those with advanced diploma had the majority indicating that they may not give a placebo (5 out 7).

Nursing grade Vs. the most accurate judge of pain intensity

The most accurate judge of the intensity of the child's/ adolescent's pain is		**Nursing Grade**			**Total**
		Enrolled Nurse	**Registered Nurse**	**Registered Pediatric Nurse**	
Q35.	The treating physician	0 (0.0%)	12 (92.3%)	1 (7.7%)	13 (100%)
	The child/adolescent's primary nurse	0(0.0%)	6(85.7%)	1(14.3%)	7(100.0%)
	The child/adolescent	1(7.1%)	9(64.3%)	4(28.6%)	14(100.0%)
	The pharmacist	1(100.0%)	0(0%)	0(0%)	1(100.0%)
	The child/adolescent's parent	3(60.0%)	1(20.0%)	1(20,0%)	5(100%)
Total		5(12.5%)	28(70%)	7(17.5%)	**40(100%)**

3 out of 5 enrolled nurses indicated that the child or adolescent parent are the most accurate judge of the child's pain intensity, and the only one said the child himself. For the registered nurses, the majority of the 12 (43%) out of the 28, thought the treating physician would be the best judge of the child's pain, and only 9 (32%) thought the child was the best judge of his pain. On the other hand, the majority of the pediatric nurses (4 out of 7), indicated that the child is the best judge of their pain intensity.

ANALYSIS RESULTS USING FISSURE EXACT

QUESTION No.	Question Topic	Level of education	Years of experience	Nursing Grade	Note
1	Observable changes	NS	NS	NS	
2	Neurodevelopment	0.0030	NS	0.0090	Ed: Nurses with diplomas were more likely to be incorrect than nurses with other types of education, Grade: Significant difference between Registered Paediatric Nurses, who had correct responses, and other nurses
3	Distracted	NS	NS	NS	
4	Sleep with pain	NS	NS	NS	
5	Comparable stimuli	NS	NS	NS	
6	NSAIDS not effective	NS	NS	NS	
7	Non-drug interventions effective	NS	NS	NS	
8	Repeated painful procedures	NS	NS	NS	
9	Respiratory depression rare	NS	NS	NS	
10	Acetaminophen equal codeine	NS	0.0280	NS	Nurses with < 1 year of experience were more likely to be incorrect than nurses with more years of

QUESTION No.	Question Topic	Level of education	Years of experience	Nursing Grade	Note
					experience
11	WHO single analgesic	NS	NS	0.0220	A significant difference between Registered Paediatric Nurses, who had correct responses, and other nurses
12	Duration of Morphine IV	NS	NS	NS	
13	Promethazine opioid potentiator	NS	NS	NS	
14	Parents should not be present	NS	NS	NS	
15	Adolescents opioids	NS	NS	0.0000	A significant difference between Registered Paediatric Nurses, who had correct responses, and other nurses
16	Morphine ceiling	NS	NS	NS	
17	Infants cannot tolerate opioids	NS	NS	NS	
18	Adolescents should endure pain	NS	NS	NS	
19	Children < 8 years unreliable	NS	NS	NS	
20	Religious beliefs	NS	NS	NS	
21	Use of Anxiolytics, sedatives,	NS	NS	NS	

QUESTION No.	Question Topic	Level of education	Years of experience	Nursing Grade	Note
	barbiturates				
22	Subsequent doses of opioids	NS	NS	NS	
23	Should use non-drug techniques	NS	NS	NS	
24	Giving placebo is effective	NS	NS	0.0310	A significant difference between Registered Paediatric Nurses, who largely had correct responses, and other nurses
25	Use of heat and cold	NS	NS	NS	
26	Administration route, continuous pain	NS	NS	0.0070	A significant difference between Registered Paediatric Nurses, who largely had correct responses, and other nurses
27	Administration route, acute pain	NS	NS	NS	
28	Drug of choice moderate/severe pain	NS	NS	NS	
29	Morphine IV vs oral dose equivalent	NS	NS	NS	
30	Analgesia for post-op pain	NS	NS	NS	
31	Risk of resp depression	NS	NS	NS	

QUESTION No.	Question Topic	Level of education	Years of experience	Nursing Grade	Note
32	Analgesia for chronic cancer pain	NS	NS	NS	
33	Why need increased medication	NS	NS	NS	
34	Useful drugs for cancer pain	NS	NS	NS	
35	The most accurate judge of pain	NS	NS	0.0060	A significant difference between Registered Paediatric Nurses, who largely had correct responses, and other nurses
36	Cultural consideration	NS	NS	NS	
37	% over-report pain	NS	0.0020	NS	Nurses with 1-5 years of experience 0r 11-15 years were more likely to be correct than nurses with < 1 year, 6-10 years, > 15 years of experience
38	% likely addiction	NS	NS	NS	
39A	Case 1, pain rating	NS	NS	NS	
39B.	Case 1, Dose	0.040	NS	NS	25% of nurses with certificates got this question correct as compared to 3.5% of those with a Diploma, 14 % of those with an advanced diploma, and 0% of nurses with

QUESTION No.	Question Topic	Level of education	Years of experience	Nursing Grade	Note
					a degree
40A.	Case 2, pain rating	NS	NS	NS	
40B.	Case 2, Dose	NS	NS	NS	

NOTE: NS = Not significant