

# **SURVEY OF PEDIATRIC NURSES' KNOWLEDGE AND ATTITUDES REGARDING PAIN**

**Dissertation submitted in part fulfillment of the requirement of the  
award of the degree of Master of Medicine in Anaesthesiology of the  
University of Nairobi**

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Dr. Gathuya for your inspiration and guidance.

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The Ethics and Research Committee at the Kenyatta National Hospital for allowing me to carry out this study.

## **DEDICATION**

This thesis is dedicated to my parents, Mr. and Mrs. John Mwangi.

*In this fast evolving world, you have been my stable force.*

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## DECLARATION

This dissertation is my original work and has not been presented for any award in any university.

*Q. Sumbui*

Date. *25/09/09.*

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This dissertation has been submitted for the degree of master of medicine in anaesthesia with my approval as the university supervisor.

*[Signature]*

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## **LIST OF ABBREVIATIONS**

APS.....American Pain Society

IASP.....International Association for the Study of Pain

VAS.....Visual Analogue Scale

PPP.....Pediatric Pain Profile

FLACC.....Face, Legs, Activity, Crying and Consolability

CHEOPS.....Children's Hospital of Eastern Ontario Pain Scale

PNKAS.....Pediatric Nurses Knowledge and Attitude Survey  
regarding pain

NKAS.....Nurses Knowledge and Attitudes Survey  
regarding pain

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## **KEY DEFINITIONS**

### **Pediatric age group**

The pediatric age group encompasses infants, children and adolescents. In literature, infants are generally classified as being under one year, with children being one to twelve years, and adolescents being over the age of twelve years. According to the Kenyan law, a child is an individual less than eighteen years of age. At the Kenyatta National Hospital, admission to the pediatric wards is for patients aged twelve and below.

### **Pediatric nurse**

In Kenya, there is no graduate education specific to pediatric nursing. The term pediatric nurse usually refers to a qualified diploma or degree educated nurse working in a pediatric setting. In this thesis, the term pediatric nurse refers to nurses working with infants and children in pediatric hospital setting.

## SUMMARY

**Background:** Children commonly experience pain resulting from injury, illness or medical procedures. The pediatric pain experience involves the interaction of physiological, behavioral, developmental, and situational factors. It is often associated with anxiety, fear, stress and distress. Since children are developmentally, physiologically and pharmaco-dynamically different from adults, the assessment and management of children's pain is a particular challenge for healthcare professionals.

**Objective:** To evaluate current knowledge and attitudes in pediatric pain management among pediatric nurses and also to identify gaps in knowledge and attitudinal barriers that warrant further education.

**Methods:** A modified version of Manworren's Pediatric Nurses' Knowledge and Attitudes Survey Regarding Pain tool was used for this study. The questionnaire was distributed to pediatric nurses by research assistants. The data collected was analyzed by use of Microsoft Excel spreadsheet and Statistical Package for Social Sciences. PNKAS scores were expressed as percent (%) correct responses. Differences in PNKAS scores between groups were determined by analysis of variance (ANOVA). Statistical significance was established at  $p < 0.05$ .

**Results:** Data collection was completed between March 20, 2009 and May 19, 2009. The response rate was 54.9%. Education qualifications included Hospital Certificate ( $n=7$ , 14%), Diploma ( $n=28$ , 56%), Bachelor's Degree ( $n=6$ , 12%), and Post Graduate ( $n=7$ , 14%). Most respondents were between 30-34 years of age. More than 60% of the nurses had worked in the pediatric unit for 5 years or less.

32% of respondents had not received any education in any aspect of pain management either before or since commencing work in the pediatric setting. 28% occasionally attended in service sessions on pain and 18% frequently read journal articles on pain.

66% of respondents felt comfortable in basic pain assessment. Most respondents reported that they are greatly influenced by facial expressions (n=45), vital signs (n=42), family report of an infant's or child's discomfort (n=39) or the child's own report of pain using a pain rating tool (n=33).

Nurses' individual scores on the PNKAS ranged from 8.7-82.6 % with a mean of 49.6%. Overall, no significant differences in PNKAS scores were found among the groups formed by age ( $F= 1.096$ ,  $p= 0.379$ ), among the groups by years of nursing experience ( $F=0.513$ ,  $p= 0.726$ ), among groups formed by years of pediatric nursing experience ( $F=1.16$ ,  $p=0.334$ ) and among groups formed by highest level of education ( $F=0.214$ ,  $p=0.886$ ).

**Conclusion:** Areas of weakness identified by this study centered on pharmacology, the potential side effect of respiratory depression and pain assessment. Areas of weakness can be used to structure educational programs for improving nurses' knowledge, attitudes and subsequent practice of pediatric pain management.

## INTRODUCTION

The importance of effective pain management cannot be overemphasized, given that pain left untreated, under or over treated can have long lasting psychological and physical effects.<sup>1</sup>

In 1996, the American Pain Society (APS) introduced the phrase “Pain is the fifth vital sign”.<sup>2</sup> This initiative emphasized that pain assessment is as important as assessment of the standard four vital signs and that clinicians need to take action when the patient reports pain.

Effective management of pain in children is a major priority for patients, parents and health care providers<sup>3</sup>. Despite this, pain in children is often inadequately assessed, managed and treated.

Until recently, traditional medical teaching suggested that since the nervous system is not fully developed and most children have no memory of their early years, that they do not experience as much pain as adults. Recent animal and human studies have shown that the opposite is true. Due to a more robust inflammatory response and the lack of a central inhibitory influence, infants and young children most likely experience more pain than adults do.<sup>6,7</sup> Early painful experiences can have long term effects, actually lowering pain tolerance for months after the procedure.<sup>8</sup>

Many pediatric treatments and guidelines were empirically based on data from adults.<sup>4</sup> In the first edition of *Acute Pain Medicine: Scientific Evidence* in 1999, only 8% of pediatric citations were based on Levels 1 & 2 evidence (in contrast to 67% of adult citations) increasing to 50% in 2005. Although more is now known about pain management in children, it has not been widely or effectively translated into clinical practice.<sup>5</sup>

‘Children’ encompasses an extremely broad group from premature neonates to adolescents. There are marked age-related changes affecting all aspects of pain

management including assessment, physiological and pharmacological responses.<sup>3</sup> Their ability to communicate the source and severity of their pain also varies. As a result, children are often given minimal or no analgesia for procedures that would routinely be aggressively treated in adults.<sup>8,9</sup>

The American Academy of Pediatrics and the American Pain Society have issued a joint statement recommending that pain be recognized and treated more aggressively in children.<sup>10</sup> They point to several misconceptions that can lead to under treatment of pain in children;

- The myth that infants and children do not feel pain, or suffer less from it than adults
- Lack of routine pain assessment in children
- Lack of knowledge regarding newer modalities and proper dosing strategies for the use of analgesics in children
- Fear of respiratory depression or other adverse effects of analgesic medications
- The belief that preventing pain takes too much time and effort.

They recommended the following strategies by clinicians to improve pediatric pain management;

- Expand knowledge about pediatric pain and pediatric pain management principles and techniques.
- Provide a calm environment for procedures that reduces distress-producing stimulation
- Use appropriate pain assessment tools and techniques
- Anticipate predictable painful experiences, intervene and monitor accordingly
- Use a multimodal (pharmacologic, cognitive, behavioral, and physical) approach to pain management and use a multidisciplinary approach when possible
- Involve families and tailor interventions to the individual child
- Advocate for child specific research in pain management and Food and Drug Administration evaluation of analgesics for children
- Advocate for the effective use of pain medication for children to ensure compassionate and competent management of their pain.

## LITERATURE REVIEW

Knowledge related to pain is continuously expanding and developing. However, understanding the basic pain concept and the multi-dimensional nature of pain forms the basis upon which pain is assessed and managed.

### **Definition of pain.**

The word 'pain' comes from the Latin word '*poena*' which means penalty, punishment, grief and the Greek word '*poine*' meaning penalty.<sup>11-12</sup> Most dictionary definitions are very similar defining pain as either an unpleasant physical sensation, or a feeling of discomfort, or an emotional distress.

The first major scientific meeting on pain (May 1972), established the International Association for the Study of Pain (IASP). The IASP Subcommittee on Taxonomy defined pain in 1986 as 'an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage'.

Shortly after this McCaffery proposed another definition of pain, stating that 'pain is what the experiencing person says it is, existing whenever and wherever he says it does'.<sup>13</sup> This definition stresses the subjective nature of pain and identifies the patient as the expert.

### **Pain theories.**

Aristotle believed that pain was an emotion that grew in the head and as such was the opposite of pleasure.<sup>14</sup> 17<sup>th</sup> century French philosopher, Descartes, proposed that mind and body were two separate entities and therefore, pain was either in the mind or body. Descartes also proposed that there was a direct relationship between the severity of injury and the amount of pain felt.<sup>15</sup>

Following Descartes' concept, the traditional theory of pain, as it was known, became identified as the *specificity theory*<sup>15</sup>. The theory proposed that pain is a specific sensation and that the intensity of pain is proportional to the extent of tissue damage. Muller

contributed to the understanding of the sensory process when he recognized that the brain receives information about external objects by way of five sensory systems; seeing, taste, hearing, smell and touch. Von Frey expanded this and deduced that the skin was comprised of sensory spots that responded to specific sensations.<sup>15</sup>

Various other theories followed this and are classified in literature as *pattern theories*.<sup>15</sup> Goldscheider for example, was the first to propose that the intensity and frequency of the stimuli (known as pattern of stimulation), and the brain's interpretation of this, are the critical determinants of pain. All pattern theories developed from the premise that stimuli produced a pattern of impulses in neurons that are transmitted as pain.

In 1965, psychologists Melzack and Hall proposed their theory of '*The Gate control Theory of pain*'. They suggested that a 'gating system' in the central nervous system opens and closes pain pathways. The gates can be opened to let pain proceed through the afferent and efferent pathways to and from the brain, or the gates can be closed to block these pathways. The gate control mechanism can be influenced by nerve impulses in the efferent pathways, and the latter affected by various psychological factors.<sup>12</sup> This pain theory integrates the physiological, psychological, cognitive and emotional components that regulate the perception of pain.<sup>15</sup> It is this theory that governs current pain assessment and management pediatric settings.

### **Psychological aspects of pain**

The gate control theory of pain emphasizes the tremendous interplay of psychological and neuro-physiological variables in pain perception.<sup>15, 16</sup> However, physiological and psychological components of pain are impossible to separate. Past experience, spiritual underpinnings, social structure and cultural background has an effect on pain perception and pain tolerance of an individual.<sup>17</sup>

### **Cultural aspects and expression of pain**

Culture plays an enormous role in the assessment and management of pain. Theories of pain themselves can be culturally determined. Children requiring pain management bring

their own cultural perspective, as both their understanding of, and response to pain may be culturally determined.<sup>18</sup> For some children and their families the verbal expression of pain is an acceptable cultural behavior. In others, silence from their cultural perspective is a more acceptable form of behavior.<sup>18</sup>

Like the experience of pain, the expression of pain is also very individual. Pain can be expressed in behavior, body language, verbal and non verbal expressions, and as a physiological response, all of which vary for each individual child. Language is defined by Waddie as 'part of the cultural expression of individuals' and that 'culture is transmitted through language'.<sup>19</sup> The words children and parents use for identifying pain varies.

### **Pain Assessment in Children**

Children have a limited range of experience and may be unable to use words that adequately express their discomfort. Determining, therefore, just how much pain a child is in can be difficult. Cognitive, behavioral, emotional and psychosocial factors play a role in a child's pain experience, with children responding to noxious experiences differently at different developmental stages.<sup>10</sup>

To treat pain adequately, ongoing assessment of the presence and severity of pain and the child's response to treatment is essential.<sup>10</sup> Ideal pain assessment necessitates a multi-dimensional and comprehensive approach, which is outcome based.<sup>20</sup> The assessment requires consideration of children's developmental level, type of pain experienced, history and context of pain, family influences and interaction with the health care team.<sup>21</sup> Pain assessment should be regular and using validated age appropriate tools.

Pain measurement, with pain tools or scores, is an aid to the more complex holistic assessment process. Reliable, valid and clinically sensitive assessment tools are available for neonates through adolescents.<sup>23</sup> No pain assessment tool, however, is judged to be globally valid, but must be judged in relation to its specific purpose<sup>21</sup>.



## Pain Assessment Tools

The three methods for measuring pain in children are: self-report techniques (what children say), behavioral observation (what children do), and physiological measurements (how their bodies react).<sup>22</sup>

It is possible for children down to the age of three years to self report the location and severity of pain using developmentally appropriate terms but younger children cannot do so readily.<sup>24</sup> The younger the child, the more behavioral cues and physiological values are used to pick up the signs and symptoms of pain. These are open to misinterpretation and can be affected by symptoms and other events other than pain.<sup>25</sup>

Self report techniques address the experience of pain and are considered to the gold standard against which all pain assessment tools are judged.<sup>10</sup> These include Wong-Baker Faces scale, Visual analogue scale (VAS), Color scale, and Numerical rating and Poker-chip tool.

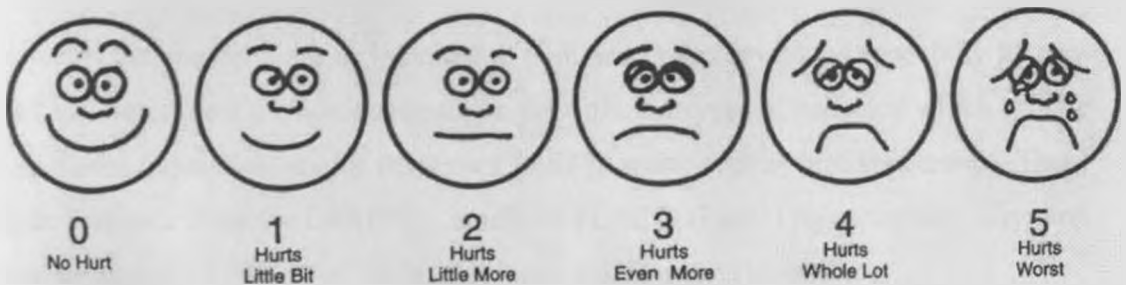


Figure 1

Wong-Baker Faces scale

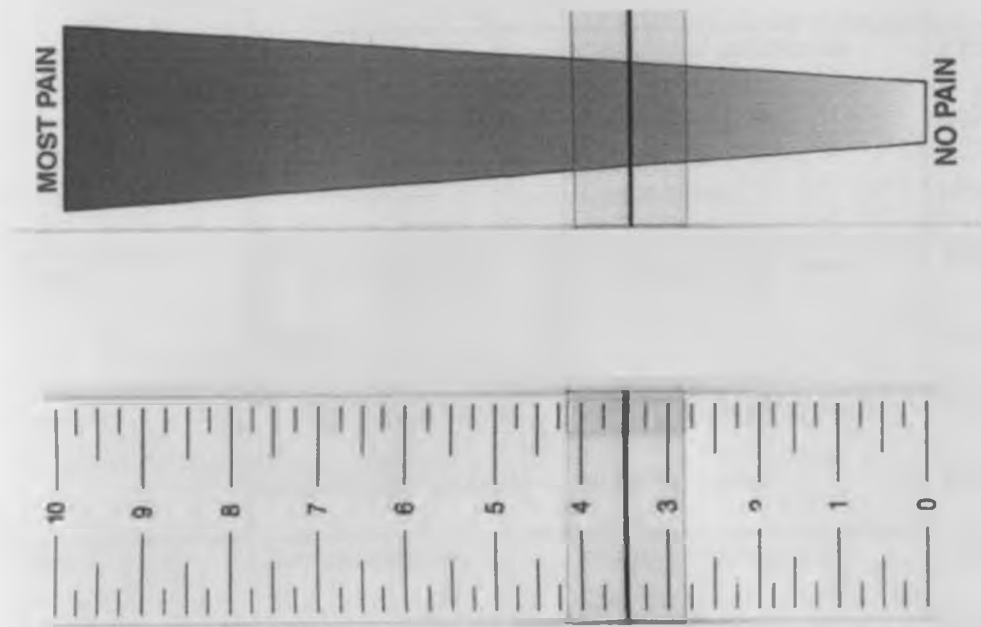


Figure 2

VAS: Colored Analogue Scale

Pain scales that use behavior as indicator of pain have been developed especially for pre-verbal children. These tools concentrate on the different types of behavior which include crying, facial expression, motor responses, body posture, activity and appearance. These include Pediatric Pain Profile (PPP), modified FLACC (Face, Legs, Activity, Cry, and Consolability) and CHEOPS (Children's Hospital of Eastern Ontario).

CATEGORIES	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort
Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten.			

Table 1

FLACC

(Adapted from the City of Hope Pain Online Resource Centre)

Physiological methods for assessing acute pain in children propose to indicate the presence and intensity of pain through changes in variables that can be associated with pain. These include heart and respiratory rate, blood pressure, oxygen saturation, palmer sweating and metabolic and endocrine variables.<sup>22</sup> Most physiological measures of pain focus on the presence or absence of pain rather than the severity, intensity or magnitude of pain. Therefore, they are best used in combination with other forms of pain assessment.<sup>10, 22</sup>

## **Inadequate Pain Management in Children**

Studies have shown that children receive insufficient pain relieving strategies when compared to adults in similar circumstances.<sup>27</sup> Unrelieved or poorly managed pain delays recovery from illness, alters immune functions and increases the levels of stress and anxiety of the child and their family resulting in increased complications and prolonged hospital stay. Poorly managed pain can also have profound long lasting consequences and may alter emotional and behavioral responses during future painful experiences.<sup>1,8</sup>

Because nurses administer analgesics to pediatric patients, factors that influence their decisions to medicate for pain play a crucial role in the effectiveness of pain relief.

Several studies have been carried out to identify nursing attitudes and practices with regard to pain assessment and management in children. In one such study, nurses indicated that infants feel exactly the same or even less as adults and that infant cannot anticipate pain. Many nurses indicated that pain medications were only used during the postoperative period. Pain medications were not routinely given before invasive procedures, in dying infants or those who were paralyzed.<sup>28</sup> In a similar study, 228 nurses (65% return rate) at a pediatric hospital were surveyed. Barriers to effective pain management were identified and grouped into four categories as the need for; (a) more education of physicians about pain management, (b) increased collaboration between nurses and physicians, (c) more education on neonatal/infant pain management, and (d) increased support for nurses to modify pain management.<sup>32</sup>

Other studies have established that the nurses' ability to accurately assess the level of pain intensity can affect their management of a child's pain. In most studies, vital signs were ranked as the primary tool for pain assessment with occasional consideration of non verbal behaviors.<sup>27,28,30,31.</sup>

Nurses' beliefs, knowledge and comfort regarding opiates have been extensively investigated. The nurses' decisions to provide analgesics for pain were related to their knowledge of opioids, the amount of pain displayed by the patient, the age of the child,

and the seriousness of the child's condition.<sup>29,30,31</sup> Nurses chose more nonopiates and lower doses of opiates for younger children. In addition, most nurses had frequent concerns for addiction and respiratory depression.

Schmidt and colleagues reported that nurses lacked knowledge regarding pain medications; and that they did not recognize the value of pharmacological and non-pharmacological combination therapies.<sup>33</sup> In Margolius study, many nurses reported that they were not aware of the pain interventions guidelines (Acute Pain Management Guideline, 1992).<sup>32</sup>

Others have studied barriers to research utilization in the area of pediatric pain management. Clinicians' knowledge relating to pain management and their ability to incorporate theory into practice is dependent on the education they receive, in both academic and clinical setting, a view held by many workers.<sup>18,34,35,36</sup> Also, lack of cooperation from physicians, administrators, nurse colleagues, and family members was a barrier identified in one study.<sup>36</sup>

## **Study Justification**

Pain management is a concern and challenge to healthcare professionals in all parts of the world. Successful pain management is crucial to achieving the patient's expectations and the objectives sanctioned by international health care organizations.

It has been suggested that healthcare providers' knowledge, attitude, practice and beliefs contribute to and affect the overall outcome of patient care.

Pain management is important to anaesthetic and surgical outcomes as well as management of other clinicopathological scenarios.

Pain assessment is not routinely done in Kenyatta National Hospital, no study has been undertaken to understate this. No study has been undertaken to in the institution to evaluate knowledge, attitudes and practices of nurses towards pediatric pain.

## **GOALS AND OBJECTIVES**

### **Goal**

To improve pediatric pain management in the Kenyatta National Hospital.

### **Objective**

To assess nurses' knowledge, attitude and practice of pediatric pain management

### **Specific Objectives**

1. Evaluate nurses' knowledge of pediatric pain experience and pain management.
2. Identify how nurses working with children obtain and update their pediatric pain management knowledge.
3. Identify barriers to adequate pediatric pain management by nurses.
4. Identify nursing attitudes and practices with regard to assessment and management of pain in children.

## STUDY DESIGN AND METHODOLOGY

### **Study Design**

A prospective, descriptive study.

### **Setting**

The research was undertaken at the Kenyatta National Hospital, a tertiary referral and teaching hospital in Nairobi.

### **Study Population**

The target population for this research was hospital-based qualified nurses who regularly work with children. The study targeted those nurses working in the pediatric medical and surgical wards.

### **Sample size**

The sample size was calculated using the formula;

$$n = \frac{z^2 pq}{d^2}$$

where;

$n$  is sample size (if the target population is more than 10,000)

$z$  is the standard normal deviation at the required confidence level (1.96)

$p$  is the proportion in the target population estimated to have the characteristics being measured. Since the proportion is unknown 50% was used.

$q$  is  $1-p=0.5$

$d$  is the level of statistical significance set (0.05)

$$\begin{aligned} n &= \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} \\ &= 384.16 \end{aligned}$$

Since the study population in this study is less than 10 000, the sample size was calculated as follows;

$$nf = n / (1 + n/N)$$

where;



$n_f$  is the desired sample size when population is less than 10 000

$n$  is the desired sample size when population is more than 10 000 (which is 384.16 as calculated above)

$N$  is the estimate of the population size (the number of pediatric nurses working in the surgical and medical pediatric wards). The total number was 120.

$$n_f = 384.16 / (1 + 384.16/120)$$
$$= 91.4 \text{ which is rounded to } 91$$

## **Inclusion & Exclusion Criteria**

### ***Inclusion criteria***

1. Nurses working either full or part-time in the pediatric medical and surgical wards
2. Nurses who consent to the study.

### ***Exclusion criteria***

1. Nurses who decline consent
2. Nurses working in adult wards

## **The Tool**

The tool to used was a questionnaire based on the 'Pediatric Nurses Knowledge and Attitudes Survey Regarding Pain' (PNKAS) questionnaire, an instrument developed by Manworren (2001), for use in surveying nurses working in pediatric settings. The tool is available online at the City of Hope Pain Resource Centre (<http://prc.coh.org>).

The questionnaire consisted of three sections;

1. Section one: Consisted of eight (8) questions relevant to level of control and preparedness of participants to manage pain. Participants were required to tick the box that reflected this for them. This section is not in the Manworren tool.
2. Section two: Consisted of twenty three questions (23) about pain knowledge and attitudes. These required a simple true or false response.
3. Section three: Consisted of four (4) questions related to demographic data such as age, employment and education.

Participants were asked to complete all these questions as these were vital in the final analysis.

## **Reliability and Validity of the tool**

Contents of the PNKAS tool reflect the standards for pediatric pain management. The reliability and validity of the tool was not re-tested but rather reliance made on previous studies. Manworren modified PNKAS from the 'Nurses Knowledge and Attitudes Survey Regarding Pain' (NKAS) tool, first developed by Ferrell and McCaffery. A team of pain experts have previously established reliability and validity of the original NKAS tool, extensive test-retest has also occurred.<sup>37</sup> Development of the PNKAS tool and establishment of its validity, reliability and internal consistency has been described. Manworren has published results using this survey and continues to gather data as more nurses and institutions use the tool.

### **Tool Distribution**

The questionnaire and a letter informing the participants of the study were hand delivered to the participants. All the participants were asked to complete the questionnaire without seeking help and return within a specified time frame.

### **Data management**

Data obtained from returned questionnaires was verified and stored in hard and soft copies. Data was analyzed using the SPSS for Windows version 12.0. Results were presented in pie charts, graphs and tables.

### **Ethical Considerations**

1. The nature of the study was explained to all the participants.
2. No nurse was under any obligation to participate.
3. The data gathering and analysis process protected the participant's identity and confidentiality.
4. Study was undertaken after approval by the Kenyatta National Hospital Ethics Committee.

## RESULTS

Data collection was done between March 19, 2009 and May 20, 2009. Out of the 91 questionnaires distributed, 71 were returned, 11 of these were blank and 10 were inadequately filled for analysis. The questionnaires analyzed were 50 (54.9% response rate).

### RESPONDENTS' CHARACTERISTICS

Respondents' education level included Hospital Certificate ( $n=7$ , 14%), Diploma ( $n=28$ , 56%), Degree ( $n=6$ , 12%) and Post Graduate ( $n=7$ , 14%). Two of the respondents did not complete the test portion of the survey and seven respondents did not provide complete demographic data despite the assurance of anonymity

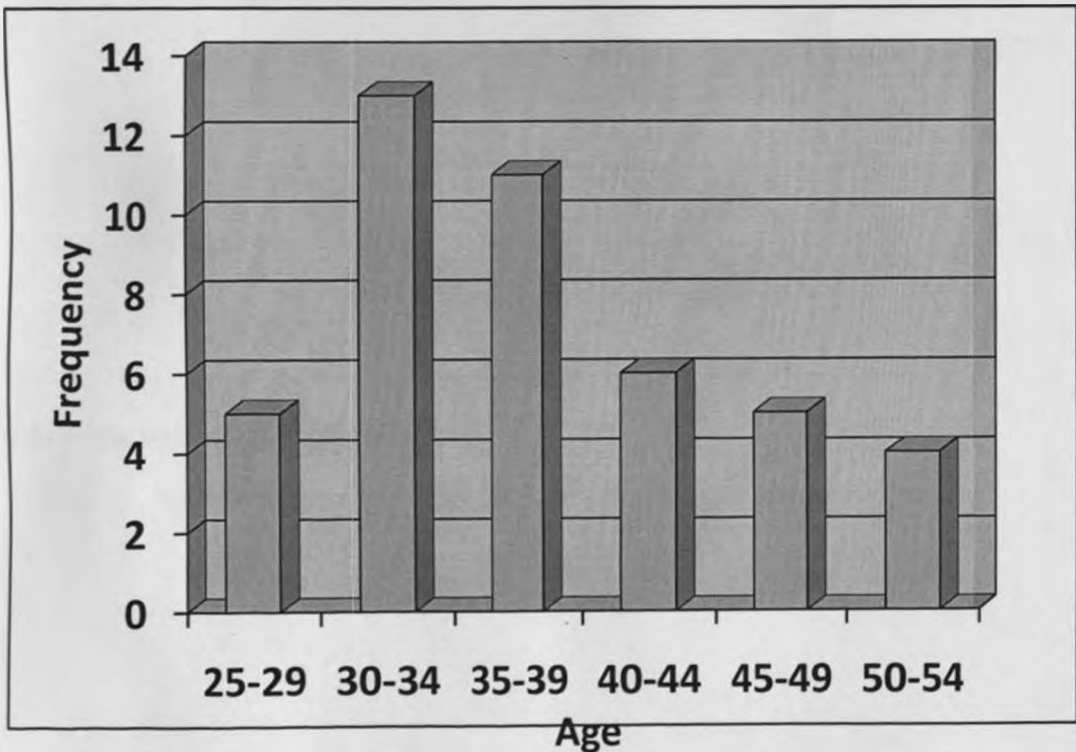


Figure 3: Age Distribution

## Experience in Paediatrics

66 % of respondents had worked in the pediatric unit for five years or less, 14% between six and ten years while 6% had worked for eleven to fifteen years. Seven respondents did not fill in the number of years they had worked in the pediatric unit.

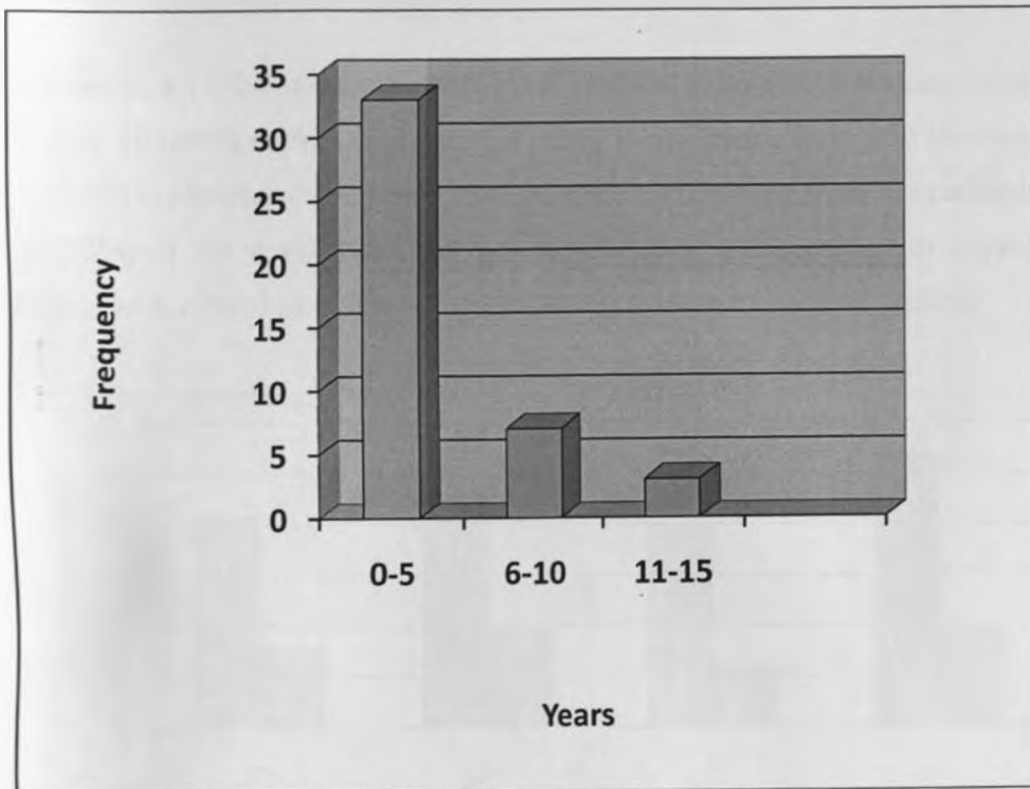


Figure 4: Years worked in Paediatric Unit

## EDUCATION ON PAIN

21 (42%) respondents indicated they had received some education in anatomy or physiology of pain, 23 (46%) respondents in pain assessment, 20 (40%) in non-pharmacological interventions with 27 (54%) indicating they had received education in pharmacological interventions prior to working in a pediatric setting.

In contrast, 8 (16%) of the respondents had received education in anatomy or physiology of pain, 10 (20%) in pain assessment, 6 (12%) in non-pharmacological interventions and 10 (20%) in pharmacological interventions since commencing work in a pediatric setting. 16 (32%) of the respondents had not received any education in any aspect of pain management either before or since commencing work in their current setting.

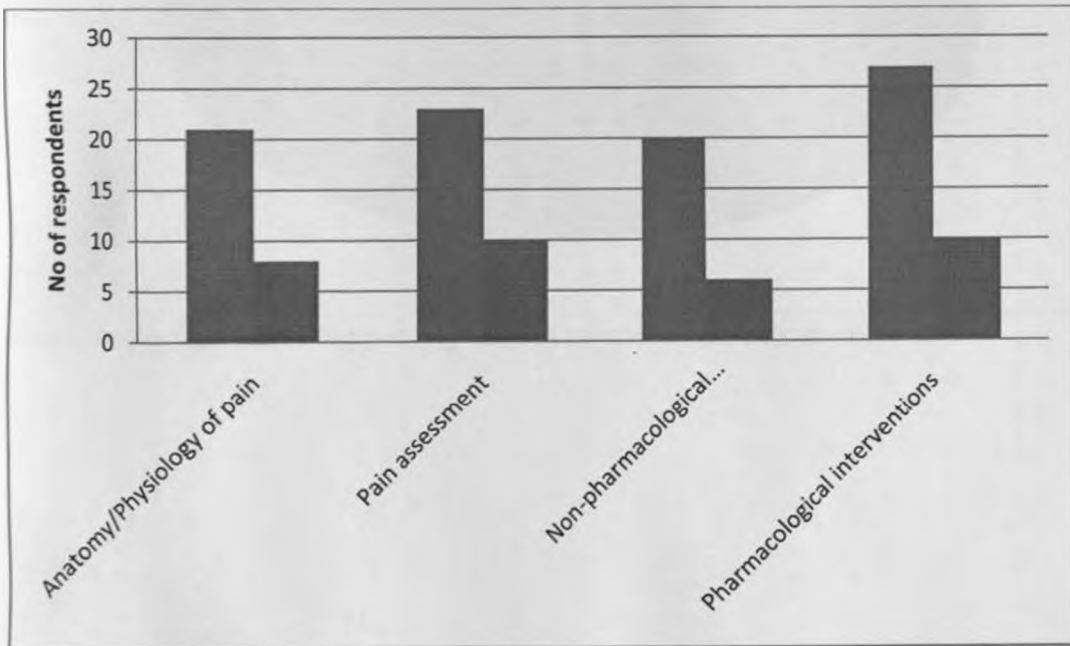


Figure 5: Number of respondents educated prior to versus while working in pediatric unit

## **FREQUENCY OF ACCESSING LEARNING OPPORTUNITIES**

### **Participation in multi-disciplinary discussions on pain**

24 respondents indicated they had never taken part in any multi-disciplinary discussions while the rest indicated they occasionally did so. None of the respondents indicated that they frequently participated in multi-disciplinary sessions on pain.

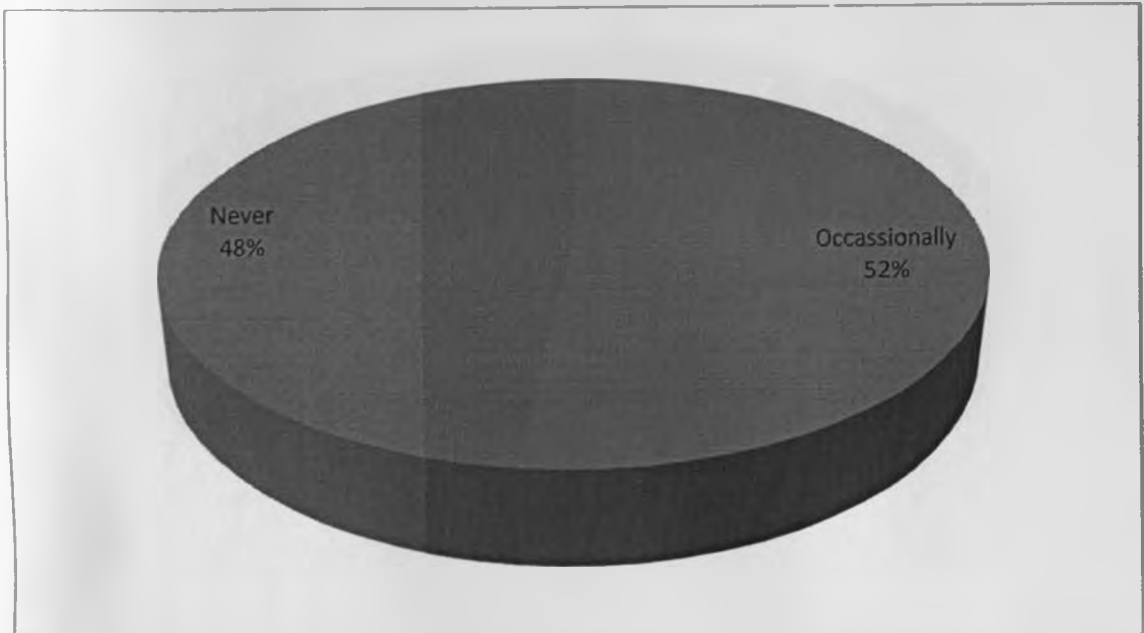


Figure 6: Pie chart showing participation in multi-disciplinary discussions

**Attending in-service sessions related to pain**

35 (70%) respondents indicated they had never attended in-service sessions related to pain, 14 (28%) respondents occasionally did so and only one respondent frequently attended such sessions.

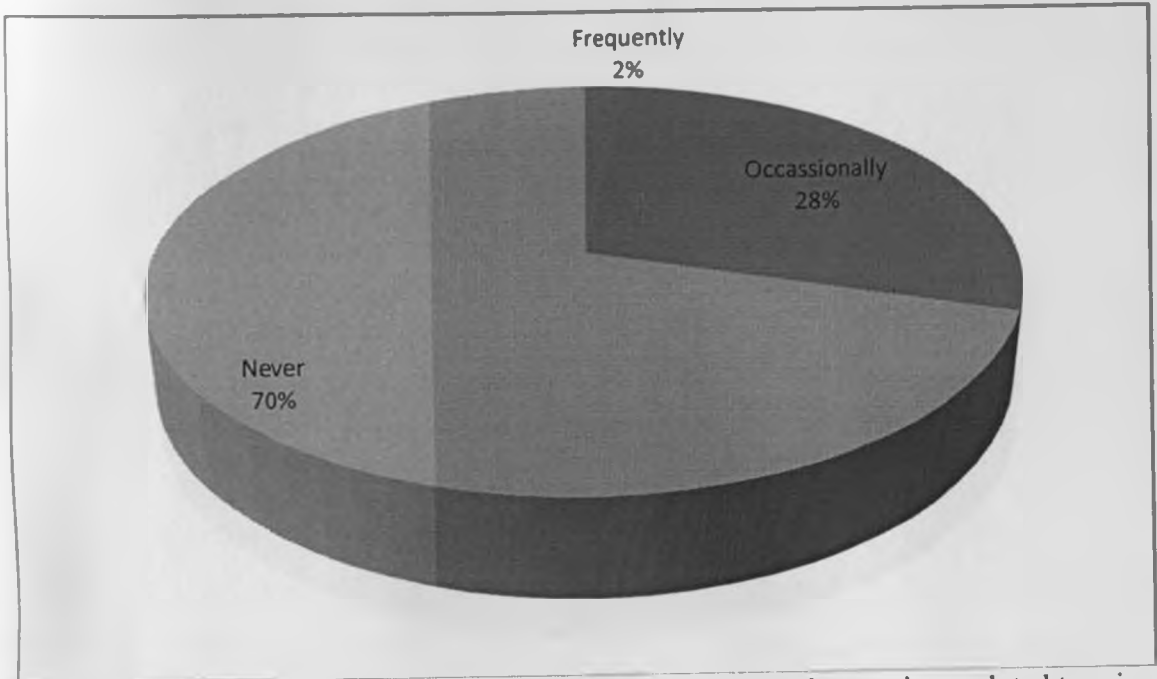


Figure 7: Pie chart showing frequency of attendance in in-service sessions related to pain



### Read journal articles on pain management

14 (28%) respondents indicated they had never read journal articles or pain literature on the Internet related to pediatric pain while 27 (54%) respondents indicated they occasionally undertook this activities. 9 (18%) respondents indicated they frequently read journal articles or pain literature on the Internet.

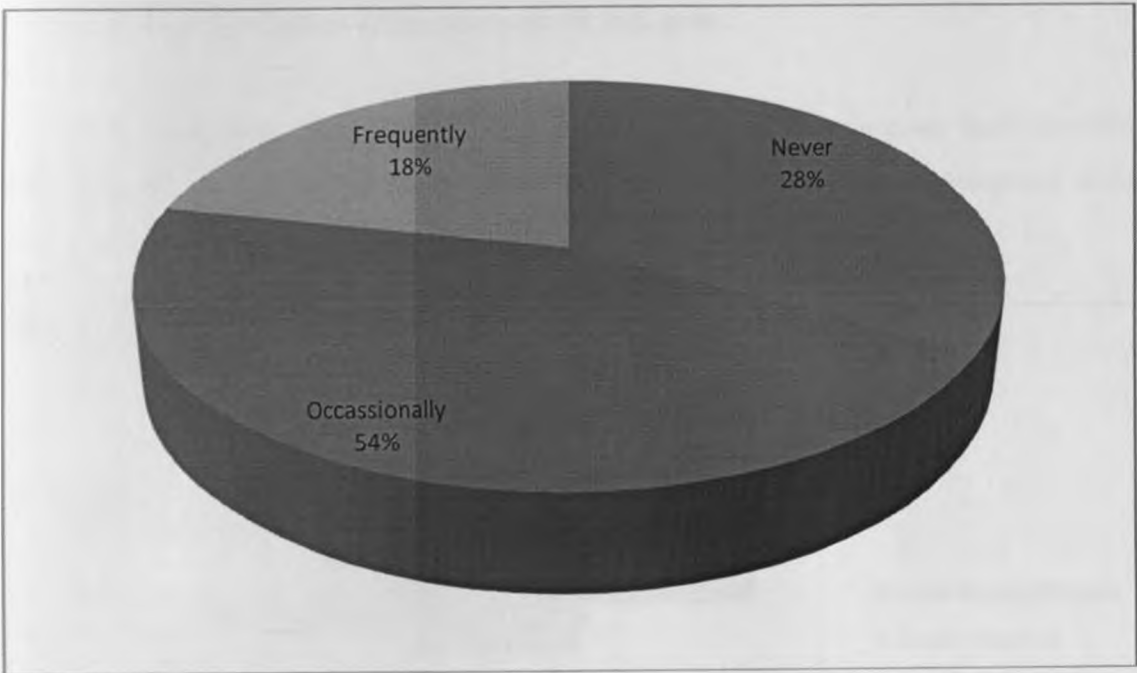


Figure 8: Pie chart showing frequency of reading journal articles

## FACTORS INFLUENCING USE OF NARCOTICS

While the majority of respondents felt workload had small or no influence on their ability to administer narcotics, 19 (38%) respondents felt that the reluctance of other medical staff to order narcotics inhibited them from administering narcotic analgesia.

Half of the respondents ( $n=25$ ) felt that the fear of opioid addiction had significantly influenced their decision to administer narcotic analgesia.

14 (28%) respondents felt that lack of knowledge had an influence on their decision regarding narcotic analgesia while 18 (36%) respondents felt lack of assessment skills influenced their administration of narcotics.

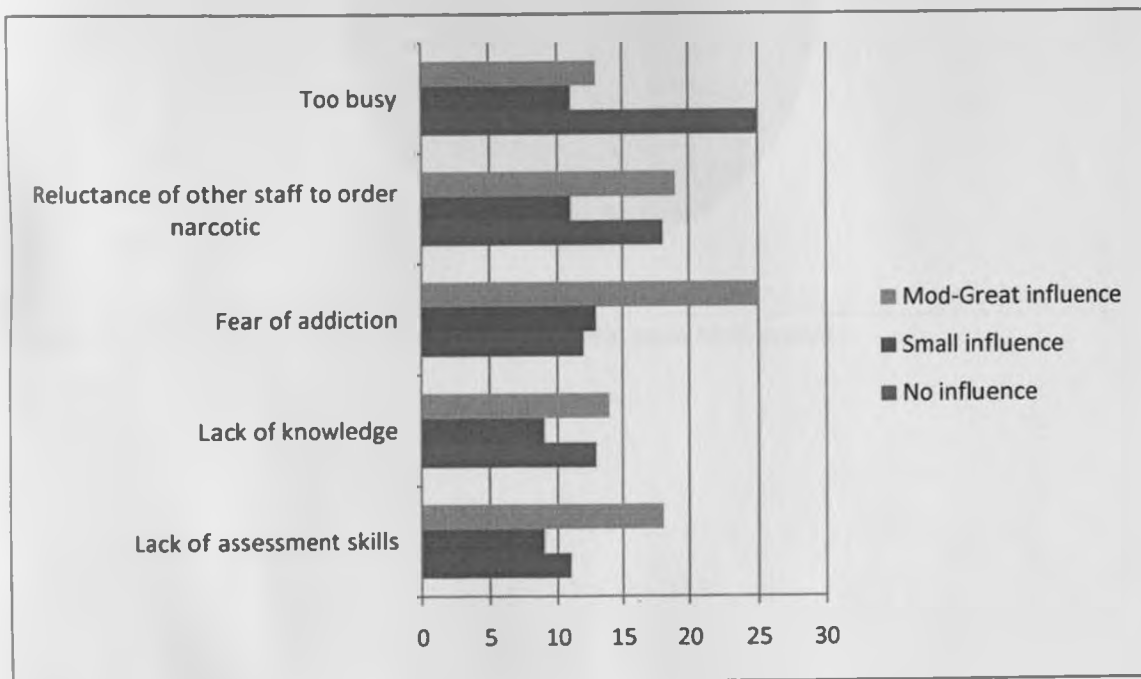


Figure 9: Factors influencing administration of narcotic analgesia

## PEDIATRIC PAIN ASSESSMENT

### Comfort level with basic pain assessment

Most respondents felt very comfortable with basic pain assessment, while 12 (24%) and 5 (10%) of the respondents felt not comfortable and very uncomfortable respectively.

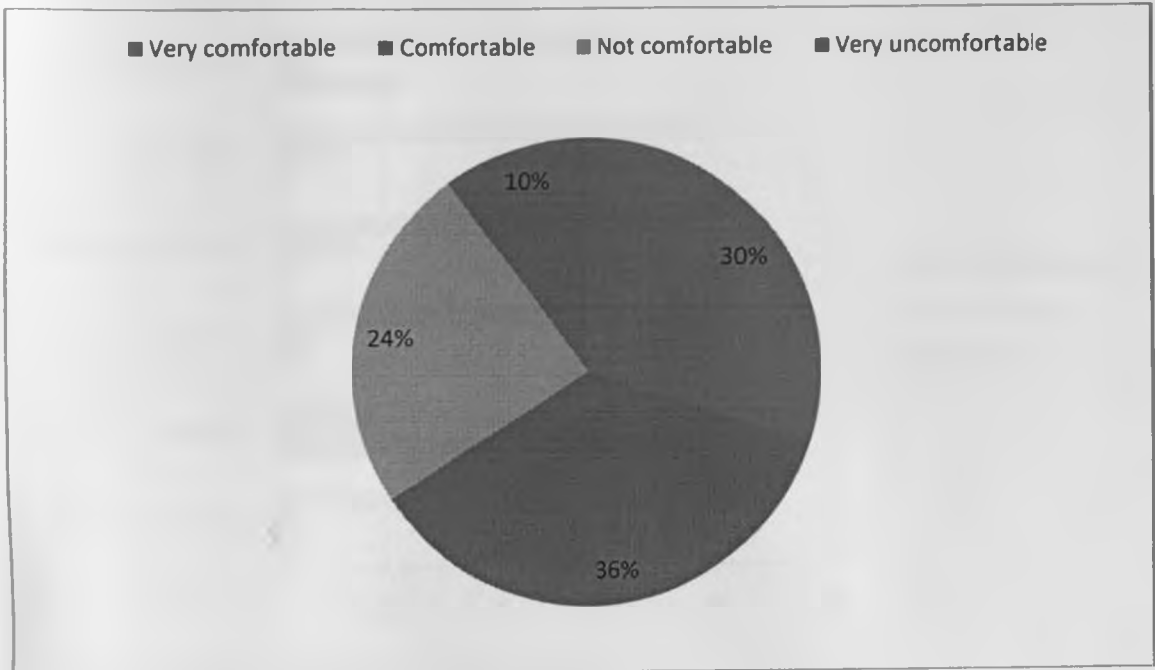


Figure 10: Pie Chart showing comfort with basic pain assessment

## Pain assessment tools

Most respondents reported that they are greatly influenced by facial expressions (n=45), vital signs (n=42), family report of an infant's or child's discomfort (n=39) or the child's own report of pain using a pain rating tool (n=33).

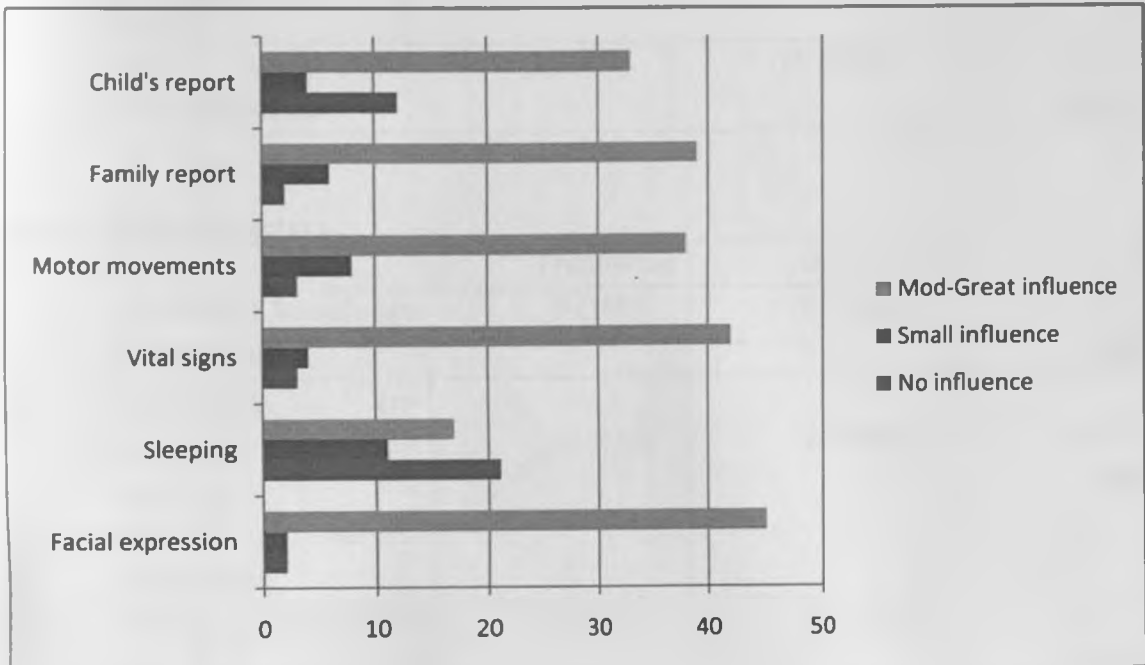


Figure 11: Factors influencing pain assessment

## **BARRIERS TO OPTIMUM PAIN MANAGEMENT**

### **Patient related factors**

	Frequently	Occasionally	Never
Insufficient knowledge about the patient	16 (32%)	29 (58%)	5 (10%)
Child's cooperation taking medication	_9 (18%)	35 (70%)	6 (12%)

### **Doctors' related factors**

	Frequently	Occasionally	Never
Insufficient knowledge of the doctor	_9 (18%)	26 (52%)	14 (28%)
Insufficient co-operation by the doctor in relation to nurses' suggestions	_16 (32%)	24 (48%)	9 (18%)
Doctors perception of pain	15 (30%)	26 (52%)	9 (18%)
Inadequate prescribing of pain relief	18 (36%)	24 (48%)	5 (10%)

### **Nurses' related factors**

	Frequently	Occasionally	Never
Insufficient knowledge of other nursing staff	13 (26%)	24 (48%)	12 (24%)
Insufficient time to spend with individual patients	25 (50%)	9 (18%)	6 (12%)
A personal lack of knowledge	12 (24%)	31 (62%)	7 (14%)

Table 3: Factors influencing optimum pain management

## GENERAL KNOWLEDGE AND ATTITUDES

Respondents were asked to complete 23 true/false questions related to knowledge and attitudes towards pain and pain management in children. These questions related to pain assessment, patient variables, pharmacological and non-pharmacological interventions, and addiction knowledge.

Most respondents answered all the questions in this section while two of the respondents answered only 6 questions. Unanswered questions were assumed to be incorrect responses.

No respondent achieved 100% correct response, the highest score was 19 (n=9) and the lowest was 2(n=1).

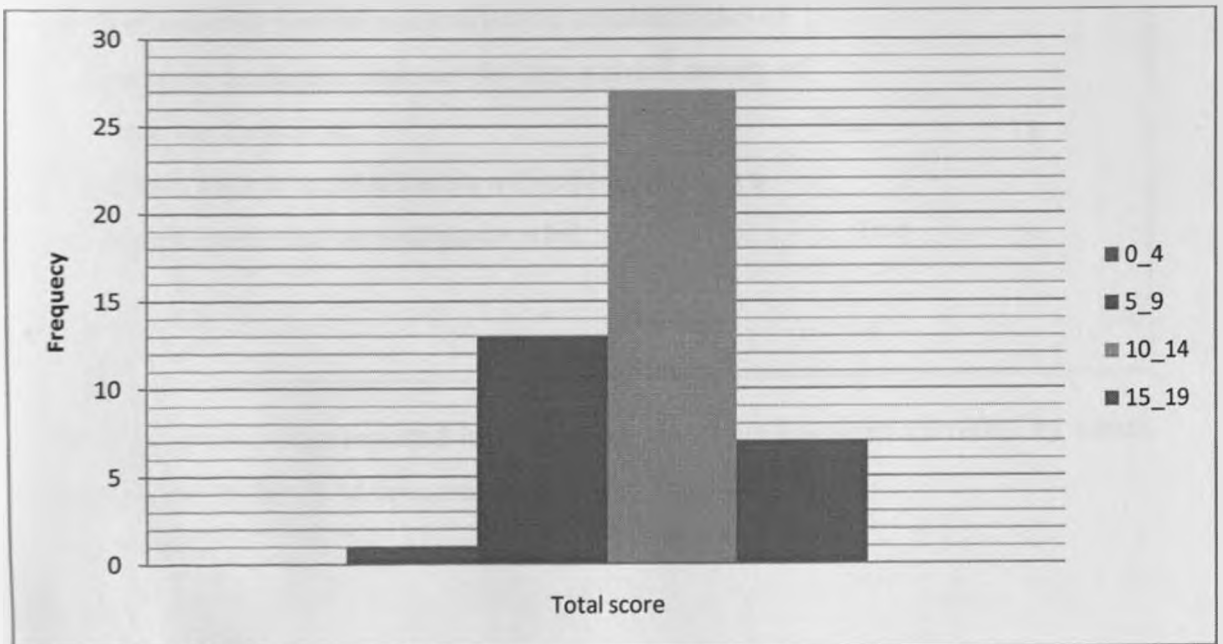


Figure 12: Total score

**Table 3: Questions most answered correctly**

Question	Correct answer	N(%) correct
1. After the initial recommended dose of opioid analgesic, subsequent doses should be adjusted to response*	True	86
2. The child in pain should be encouraged to endure as much pain as possible*	False	86
3. Parents should not be present during painful procedures*	False	82
4. Comparable stimuli in different people produce the same of pain*	False	80
5. Because of underdeveloped neurological system, children under 2 years have decreased sensitivity and limited memory of painful experiences*	False	80
6. Children who require repeated painful procedures should receive maximum treatment for the pain and anxiety of the first procedure	True	78
7. Giving Panadol or NSAID along with other narcotics is a logical method of increasing pain relief	True	75

(\* These questions were reported in the top ten questions answered correctly by nurses completing the PNKAS, Manworren 2000)

## DISCUSSION

The aim of the study was to assess knowledge, attitude and practice of pediatric nurses regarding pain management at the Kenyatta National Hospital.

Only 54.9% of the sample responded to the survey. Manworren, in a similar survey, achieved a response rate of 35.7%<sup>36</sup> while Rienman achieved an average 44% response rate with a 30-66% response rate at different sites.<sup>40</sup> Some of the respondents reported that the format of the questionnaire was too difficult while others reported they did not have enough time between clinical duties to complete the questionnaire.

Given the complex nature of clinical practice, previous studies have concluded that measuring nurses' knowledge and attitudes is merely a method to identify areas of weakness and hence develop strategies to improve pain management practices.<sup>36,38</sup> In this study, as in previous studies, the items in which scores were low were considered areas of weakness, and high score items as areas of strength in knowledge and attitude.

The questionnaire used for this study was adopted from the PNKAS tool developed by Manworren, comparisons were made with other studies that have used the tool either in part or whole. The original authors NKAS of PNKAS recommended using total scores rather than attempting to break the results into knowledge or attitude. No predetermined acceptable score had been selected by these developers, however, most researchers have identified 80% or higher as acceptable.<sup>36,38</sup> The range in scores for this survey was 8.7-82.6% with a 49.6% average score. Rieman and Gordon score ranged 37-100% correct with a mean of 74%.<sup>40</sup> Manworren reported 31-97.6% score with 66% average.<sup>36</sup>

It may be considered that the nursing staff in the areas surveyed may not be adequately educated about pain or have negative attitudes of pediatric pain management. This is supported by the less than 50% respondents who reported to have received training in various aspects of pain management. There was a low frequency of accessing learning opportunities about pain management while working in the pediatric units. Furthermore,



only 14% of respondents were confident that a personal lack of knowledge was not a barrier to optimum pediatric pain management. (Table 2)

Some areas of knowledge and attitudes scored significantly better than others. Areas of strength identified by this study centered on the concept of caring, as they were concerned with the individual's pain perception and the nurses' desire to relieve that pain. Areas of strength (Table 3) were generally consistent with those reported by Manworren and Rieman.

Two of the nine questions that were most frequently answered incorrect were similar to those in other studies (Table 4). Areas of deficits in knowledge and negative attitudes could be categorized into two main areas; pharmacological management of children's pain and pain assessment.

Five of the nine incorrect answered questions were related to the pharmacological aspect of pain, specifically opioids. McCaffery theorized that similar results in her study reflected the belief of many nurses that pharmacological information and prescription falls in the realm of physician's practice.<sup>38</sup> In this survey, more than 50% of respondents did not feel lack of knowledge affected their use of narcotics. There were concerns for addiction and respiratory depression, a finding noted in other studies.<sup>30,31</sup>

80% of the respondents (Table 4) considered respiratory depression to be the commonest side effect of morphine compared with 39.2% and 48% in Manworren's and Vincent's studies respectively.<sup>36,39</sup> It has been reported that this fear of respiratory depression turns into a barrier that affects optimum pain management for children.<sup>10,33</sup> Non respiratory side effects of opioids, for example, nausea, constipation and pruritus are more common.<sup>1</sup> Furthermore, the respiratory depression caused by morphine or fentanyl is no greater in three to six months of age than in adults with similar plasma concentrations.<sup>1</sup> 68% (Table 4) of nurses indicated that infants cannot tolerate opioids for pain relief. Empirical evidence has shown that providing appropriate analgesics is crucial especially

for infants.<sup>5</sup> Understanding age related changes in pharmacokinetics has allowed use of intravenous morphine in preterm and term infants and infants.<sup>3</sup>

34 respondents (68%) indicated children or adolescents with history of substance should not be given opioids as they are at a risk of repeated addiction. The risk of addiction (compulsive drug seeking behavior) appears low among children receiving opioids for pain.<sup>1</sup> Nurses' overestimation of the incidence of addiction in patients receiving opioids for pain has been found in previous studies.<sup>37,39</sup>

Another area of weakness identified in this study was pain assessment. 46% and 20% of respondents (Fig 5) had received education in pain assessment prior to and while working in pediatric units respectively. 66% of nurses felt comfortable in basic pain assessment (Fig 6). In this study, more respondents relied on facial expressions and vital signs to assess pain as compared to use of child's own report of pain. 76% believed that observable changes in vital signs must be relied on to verify a child's report of pain. Other studies have shown that nurses tend to rely on the children's behavioral manifestation than child's self report of pain.<sup>38,39</sup> In Rienman's study however, 95.3 % of respondents thought that the child was the most accurate judge of the severity of pain.<sup>40</sup> Vincent reported that 82% of pediatric nurses trusted children's report when there was overt behavioral manifestations of pain, however, only 40% of nurses trusted the self report when these manifestations were absent.<sup>39</sup>

Investigation of assessment of children's pain behavior in the current study indicated that 20% of respondents knew that children are able to sleep in spite of severe pain. This is much lower than the 84% recorded in Vincent's study.<sup>39</sup>

Other than the deficits in knowledge identified by the study, two major barriers to optimum pain management as reported by the nurses were noted (Table 3). Half of the respondents attributed poor pain management to a low patient to nurse ratio resulting in insufficient time to spend with individual patients. A third of the nurses thought that there was inadequate prescribing of pain relief.

Beyond knowledge, clinical experience has been thought to contribute to competent patient care.<sup>40</sup> According to Benner's model of novice to expert, a competent nurse is one who has been in the same role for at least 2 years.<sup>40</sup> In this study, 66% of the respondents had worked in the pediatric unit for 5 years or less. It was not evaluated how many had worked for less than two years.

Rienman found that the 0-2 year group scored significantly less than the other groups. It was recommended from that study that this group may benefit most from skill assessment and supportive measures during this time as a novice. In this study, the 0-5 group did not score significantly less than the other groups. Further, there was no difference in score in the various education levels. However, the small sample size may have contributed to the demonstration of no differences in scores in the various groups.

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### **Limitations of the study**

1. In this study, nursing characteristics, knowledge and attitudes regarding pain were examined in a section of pediatric nurses (working in surgical and medical wards). Results of this study cannot be generalized to nurses working with children in other units.
2. These study results reflect knowledge and attitudes in pain assessment and management as measured by this survey, but they do not necessarily translate into actual pain management clinical practices.
3. Only 54.9% of the sample surveyed responded to the survey. This may bias the findings. Nurses with an interest in pain may have been more likely to complete the survey, whereas non-responders may have been those with greater pain knowledge deficiencies

## CONCLUSION

Pain management knowledge deficiencies were identified among pediatric nurses although results also indicate that pediatric nurses are aware that their patients experience pain.

Most nurses rely on knowledge acquired in training prior to working in the pediatric unit. This knowledge may not be sufficient to adequately care for children in pain. Other barriers to optimum pain management in children are lack of enough time to spend with patients and inadequate prescription of pain relief.

Based upon these results, pediatric nurses need more information about pharmacologic management including opioids, risks of addiction and risks of respiratory depression and pain assessment. The inadequacy of time to attend to individual patients is a problem that can be addressed by allocating more nurses to the pediatric nurses.

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## **APPENDIX 1**

### **Letter of explanation**

Dear Participant,

My name is Dr Wambui Mwangi, a postgraduate student in anaesthesia at the University of Nairobi. I would like to invite you to participate in a Pediatric pain assessment and management survey, by completing the enclosed questionnaire. This research is being completed as a requirement of my Master of Surgery in Anaesthesia.

As you will be aware pain, and fear of pain are major concerns for many hospitalized children and of many nurses. Previous research in pediatric pain has primarily occurred in other parts of the world. No such study has been done at this institution. The purpose of this research is to examine the management of pediatric pain at the Kenyatta National Hospital.

By participating, you will be helping to increase the body of nursing knowledge in relation to pediatric pain assessment and management and improve practice at the institution.

Please ensure you complete all the items of the questionnaire without help, as seeking help will affect the validity and reliability of any analysis of the data gathered. Please don't indicate your name; your identity will remain confidential.

Remember: this is NOT a test.

Thank you very much for your support.

Please feel free to contact me with any questions you may have regarding the survey.

### **Contact details;**

**Dr. Wambui Mwangi**

**Mobile: 0722-299023**

**E-mail address: o.wambui@yahoo.com**

## APPENDIX 2

### INFORMED CONSENT FORM

I understand the relevance of this study. I have not been coerced or enticed with any benefits and agreed to take part in the study voluntarily.

By completing this questionnaire, I indicate my consent to participate in the study. I understand that confidentiality will be maintained.

Participant's signature.....

I.....have explained the nature of the study to the participant and have not withheld any information. I have assured the participant of their confidentiality and the voluntary nature of the study.

Researcher's signature.....

## APPENDIX 3

### QUESTIONNAIRE

Section One - Place a tick (v) by the correct answer.

1. **Prior to working in a Paediatric setting did you receive or participate in any of the following:-**

	Yes	No	Not sure
A. Education in Anatomy / physiology of pain.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
B. Education in Pain assessment.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
C. Education in Non-pharmacological interventions.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
D. Education in Pharmacological interventions.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
E. Certification in Pain management	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

2. **Since commencing work in a Paediatric setting have you receive or participate in any of the following:-**

	Yes	No	Not sure
A. In-service education in Anatomy / physiology of pain.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
B. In-service education in Pain assessment.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
C. In-service education in Non-pharmacological interventions.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
D. In-service education in Pharmacological Interventions	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
E. Certification in Pain management.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

**3. Please indicate the frequency with which you access or experience the following: -**

	Consistently	Frequently	Occasionally	Infrequently	Never
A. Taken part in multi-disciplinary discussions related to pain assessment or management.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
B. Attend in-services related to pain.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
C. Read journal articles or pain literature on the Internet, related to paediatric pain.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
D. Received any education on paediatric pain assessment / management.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
E. Discussed pain management with the Team or Nurse Leader.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
F. Deciding whether or not an infant / child has pain.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
G. Deciding what medication to administer to an infant.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

**4. To what degree has a recent experience with pain: self, family influenced your nursing decisions about pain management:-**

Influence	No Influence	Small Influence	Moderate Influence	Great Influence
A. Personal experience with pain – self.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
B. Personal experience with pain – family.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

**5. To what degree do the following inhibit you from administering narcotic analgesia:-**

	No Influence	Small Influence	Moderate Influence	Great Influence
A. Too busy with other patients or duties.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
B. Reluctance of medical staff to order narcotic.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
C. Fear of opioid addiction.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
D. Lack of knowledge of drugs.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
E. Lack of assessment skills.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

**6. Which of the following patient responses influences your decisions to provide interventions for pain relief:-**

	No Influence	Small Influence	Moderate Influence	Great Influence
A. Facial expression.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
B. Sleeping.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
C. Vital Signs.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
D. Increased motor movements.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
E. Decreased motor movements.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
F. Family report of infant / child discomfort.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
G. Child's report of pain using a pain measurement tool.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

**7. Please indicate your comfort level on the following :-**

	Very Comfortable	Comfortable	Not Comfortable	VeryUncomfortable
A. Basic pain assessment.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
B. Assessment of pain in pre-verbal infants / children.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
C. Opioid titration.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
D. Recognizing respiratory depression.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
E. Managing opioid side effects.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
F. Programming and managing a PCA pump.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
G. Nursing care of an infant with a morphine infusion.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
H. Using non-pharmacological pain management measures.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
I. Physiology of pain.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

**8. Please indicate the frequency with which you consider the following to be barriers or problems related to nursing staff being able to provide optimum pain relief:-**

	Consistently	Frequently	Occasionally	Infrequently	Never
<b>A. Insufficient knowledge about the patient or family.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>B. Insufficient knowledge of the doctor.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>C. Insufficient knowledge of other nursing staff.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>D. Insufficient co-operation by the doctor in relation to your suggestions.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>E. Inadequate prescribing of pain relief.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>F. Patient to nurse ratio (i.e. insufficient time to spend with individual patients).</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>G. A personal lack of knowledge.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>H. Infant / child's / adolescent's cooperation taking medication.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>I. Doctor's knowledge and perception of pain.</b>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Section Two - True and False

**True/False – Circle the one which you consider is the correct statement.**

9. Observable changes in vital signs must be relied upon to verify a child's / adolescent's statement that he/she has severe pain. T F
10. Because of an underdeveloped neurological system, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences. T F
11. If the infant/ child/ adolescent can be distracted from his pain this usually means that he /she is not experiencing a high level of pain. T F
12. Infants/ children/ adolescents may sleep in spite of severe pain. T F
13. Comparable stimuli in different people produce the same intensity of pain. T F
14. Non-drug interventions (e.g. heat, music, imagery, etc.) are very effective for mild-moderate pain control but are rarely helpful for more severe pain. T F
15. Children who will require repeated painful procedures (i.e. daily blood draws) should receive maximum treatment for the pain and anxiety of the first procedure to minimize the development of anticipatory anxiety before subsequent procedures. T F
16. Paracetamol 650mg PO is approximately equal in analgesic effect to codeine 32mg PO. T F
17. 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). T F
18. The usual duration of analgesia of Morphine IV is 4 – 5 hours. T F
19. Research shows that promethazine (Phenergan) is a reliable potentiator of opioid analgesia. T F
20. Parents should not be present during painful procedures. T F
21. Adolescents with a history of substance abuse should not be given opioids for pain because they are at high risk for repeated addiction. T F

- |  |          |          |
|--|----------|----------|
| <b>22. Beyond a certain dosage of morphine increases in dosage will NOT provide increased pain relief.</b>   | <b>T</b> | <b>F</b> |
| <b>23. Young infants, less than 6 months of age, cannot tolerate opioids for pain relief.</b>  | <b>T</b> | <b>F</b> |
| <b>24. The child / adolescent with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.</b>                             | <b>T</b> | <b>F</b> |
| <b>25. 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.</b> | <b>T</b> | <b>F</b> |
| <b>26. Based on one's religious beliefs a child / adolescent may think that pain and suffering is necessary.</b>   | <b>T</b> | <b>F</b> |
| <b>27. Anxiolytics, sedatives, and barbiturates are appropriate medications for the relief of pain during painful procedures.</b>  | <b>T</b> | <b>F</b> |
| <b>28. After the initial recommended dose of opioid analgesic, subsequent doses should be adjusted in accordance with the individual patient's response.</b>               | <b>T</b> | <b>F</b> |
| <b>29. The child / adolescent should be advised to use non-drug techniques alone rather than concurrently with pain medications.</b>                                       | <b>T</b> | <b>F</b> |
| <b>30. The most common side effect of morphine is respiratory distress.</b>  | <b>T</b> | <b>F</b> |
| <b>31. Giving Panadol or non-steroidal anti-inflammatory agents, along with other narcotics is a logical method of increasing pain relief.</b>                             | <b>T</b> | <b>F</b> |



### Section Three – Demographic Information

#### **32. Age of participant (in years).**

- 20 – 24     25 – 29     30 – 34     35 – 39  
 40 – 44     45 – 49     50 – 54     55 and over

#### **33. How many years have you worked in the pediatric unit?**

- 0 – 5 years                       6 – 10 years                       11 – 15 years  
 16 – 20 years                       21 years and over

#### **34. Total years nursing.**

- 0 – 5 years                       6 – 10 years                       11 – 15 years  
 16 – 20 years                       21 years and over

#### **35. Highest level of nursing education. (tick one)**

- Hospital certificate / registration                       Diploma  
 Degree                       Post Graduate Certificate/Diploma  
 Masters                       PhD

**APPENDIX 4****BUDGET**

Item	Quantity	Cost
Laptop	1	50000
Printing paper	3	2500
Ink cartridges	3	4500
Modem	1	5000
Internet hours		6000
Statistician		5000
Printer	1	4500
ERC fee		1000
<b>GRAND TOTAL</b>		<b>78500</b>

# APPENDIX 5

## WORK PLAN

	2008				2009					
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Background research	x	x	x							
Proposal writing			x							
Proposal Defense/Presentation				x						
Presentation to ERC					x	x	x			
Pilot study								x		
Data collection								x	x	
Data analysis									x	
Report writing										x
Results presentation										x



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19<sup>th</sup> March 2009

Ref: KNH/UON-ERC/ A/176

Dr. Wambui Mwangi  
Dept. of Surgery  
School of Medicine  
University of Nairobi

Dear Dr. Mwangi

**RESEARCH PROPOSAL: "A SURVEY OF KNOWLEDGE, ATTITUDE AND PRACTICE OF PEDIATRIC PAIN MANAGEMENT AMONG PEDIATRIC NURSES AT THE KENYATTA N. HOSPITAL"  
(P20/01/2009)**

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This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** your above revised research proposal for the period 19<sup>th</sup> March 2009 –18<sup>th</sup> March 2010.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given. Clearance for export of biological specimen must also be obtained from KNH-ERC for each batch.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

**PROF. A N GUANTAI**  
**AG. SECRETARY, KNH/UON-ERC**

- c.c. The Chairperson, KNH/UON-ERC  
The Deputy Director CS, KNH  
The Dean, School of Medicine, UON  
The Chairman, Dept. of Surgery, UON  
Supervisor: Dr. Muriithi J.M. Dept. of Surgery, UON