CHAPTER ONE- INTRODUCTION

1.0   Background

Pain management (also called pain medicine; algiatry) is an interdisciplinary approach to easing the suffering and improving the quality of life of those living with pain (Hardy, 1997). According to Main and Spanswick (2000), the typical pain management team includes medical practitioners, clinical psychologists, physiotherapists, occupational therapists, and nurse practitioners. Pain usually resolves promptly once the underlying trauma or pathology has healed, and is treated by one practitioner following an assessment using pain assessment tools, with drugs (Thienhaus and Eliot, 2002: 29).

In the world over 70% of people experience severe pain (Global summit, 2005). Acute pain usually lasts hours, days, or weeks and is associated with tissue damage, inflammation, a surgical procedure, or a brief disease process. Acute pain serves as a warning that something is wrong. Chronic pain, in contrast, worsens and intensifies over time and persists for months, years, or a lifetime. Some pain like that of cancer tends to be a serious public health issue (Folley, 2004). Constructing an effective analgesic strategy for pain relies on a thorough clinical assessment, including a detailed history of the pain complaint. The temporal pattern of the pain is one of the key factors to be included in a pain assessment (Folley, 2004; Hølen et al., 2006; Friedrichsdorf et al., 2007). Pain is generally conceptualized as being acute, sub-acute, chronic, or intermittent. As a pain syndrome with a poor prognosis, the clinician needs to identify pain and explore its characteristics. It therefore follows that, pain assessment is critical to optimal pain management interventions.   While pain is a highly subjective experience, its management necessitates objective standards of care (Regina, 2000).

WHO (2007) reports that the early identification and impeccable assessment and treatment of pain are vital for improving quality of life of patients. The World Health Organization (WHO) recommends a pain ladder for managing analgesia which was first described for use in cancer pain, but can be used by medical professionals as a general principle when dealing with analgesia for any type of pain (WHO, 1986; 2004). In the treatment of chronic pain, whether due to malignant or benign processes, the three-step WHO Analgesic Ladder provides guidelines for selecting the kind and stepping up the amount of analgesia. The exact medications recommended will vary with the country and the individual treatment center, but the following gives an example of the WHO approach to treating chronic pain with medications. If, at any point, treatment fails to provide adequate pain relief, then the doctor and patient move onto the next step. The WHO ladder portrays a progression in the doses and types of analgesic drugs for effective pain management. The best choice of modality often changes as the patient's condition and the characteristics of the pain change.

The first step in this approach is the use of acetaminophen, aspirin, or another Non-steroidal Anti-inflammatory Drug (NSAID) for mild to moderate pain. Adjuvant drugs to enhance analgesic efficacy, treat concurrent symptoms that exacerbate pain, and provide independent analgesic activity for specific types of pain may be used at any step.

When pain persists or increases an opioid such as codeine or hydrocodone should be added (not substituted) to the NSAID. Opioids at this step are often administered in fixed dose combinations with acetaminophen or aspirin because this combination provides additive analgesia. Fixed combination products may be limited by the content of acetaminophen or NSAID, which may produce dose-related toxicity. When higher doses of opioid are necessary, the third step is used. At this step separate dosage forms of the opioid and non-opioid analgesic should be used to avoid exceeding maximally recommended doses of acetaminophen or NSAID.

Pain that is persistent or is of moderate to severe intensity from the outset should be treated by increasing the dosage or with more potent opioids. Drugs such as codeine or hydrocodone are replaced with more potent opioids (usually morphine, hydromorphone, methadone, fentanyl, or levarphanol).

Medications for persistent cancer-related pain should be administered on an around-the-clock schedule, with additional "as needed" doses, because regularly scheduled dosing maintains a constant level of drug in the body and helps to prevent a recurrence of pain. Patients who have moderate to severe pain when first seen by the clinician should be started at the second or third step of the ladder.

Nurses and physicians have misconceptions on pain management regarding use of morphine and other opioids (Fennell et. al., 2000). Studies have found that two of the chief barriers for health care professionals *are poor pain assessment including the use tools and lack of knowledge about pain* (Ferrell, 1995).

A study was conducted to introduce structured pain assessment on a surgical ward at a general hospital in Kenya. The aim was to improve pain control, and subsequently patient's recovery and satisfaction with care. It was agreed that the ultimate aim was to develop and use a *common tool for pain assessment throughout the hospital* thereby reducing disparity in various clinical areas, and raising standards of patient care (Hastings, 1995).

1.1 Statement of the Problem

Despite the widespread acceptance of a highly effective therapeutic strategy for the management of pain, surveys suggest that more than 40 to 50 percent of patients in routine practice settings fail to achieve adequate relief (Bonica et al., 1990; Portenoy et al., 1992; Coyle et al., 1998). It has been shown that pain is a direct or indirect consequence of several diseases and further, there are numerous barriers to effective pain management (Cleeland, 1984:1991;

Ventafridda et al, 1990; Von Roenn et al., 1993) among which is clinician under assessment and treatment. Studies have revealed that patients who complain of severe pain may not be believed by a physician pain assessment is often inadequate, and knowledge of approaches to pain management is often rudimentary Cleeland, 1984:1991; Ventafridda et al, 1990; Grossman, 1991; Von Roenn et al., 1993).

Not only patients with severe pain suffer, even patients with moderate to severe pain are often under-treated in both developing and developed countries. This poses a significant public health challenge. WHO is committed to promote maximum possible pain relief to every patient in pain. The correct diagnosis and proper treatment of pain is an important public health concern. In addition, millions of people in the world with severe acute and chronic pain suffer because of the lack of knowledge and skill of doctors and nurses and the lack of a standardized scientific approach (WHO, 2007). In a related development, Goma et al, (2008) conducted a study in Zambia and reported that 84% of health workers stated that pain was by far the commonest presenting symptom they had to deal with when caring for patients. However, 65% of health workers lacked a systematic methodology for managing pain. In its study, the team did not present any pain assessment tools. To date, there is no systematically collected data on the knowledge and practices of our doctors and nurses on assessing pain and what types of tools are used. There are many gaps in the research in Zambia such that even the Goma study did not cover areas like: The percentage of doctors and nurses that assess pain using any indicator and what do doctors and nurses do to treat pain. Therefore this study sought to answer the following overarching question.

1.2   Research Question

What do doctors and nurses do to patients that have pain?

1.3   Study Objectives

The main objective of the study was to determine the use rate of pain management tools among doctors and Nurses at UTH and the Cancer Hospital.

Specifically the study was premised on the following objectives;

- To determine the levels of knowledge among doctors and nurses on the types of pain management tools in use in the two hospitals.
- To compare the levels of knowledge and use of pain management tools between doctors and nurses.
- To determine whether doctors and nurses use pain management tools to assess and treat pain.

CHAPTER TWO- LITERATURE REVIEW

2.0   The Literature Search

In order to structure this study, a systematic, manual and computerised search was performed using the Entrez and Ovid search engines in four databases. These included: Science Direct, Wiley International, JSTOR, Pub Med, CINAHL, EMBASE and PsycINFO, supplemented by the Cochrane Database of Systematic Reviews, using the following search strand: "acute pain, chronic pain" OR "assessment and pain" OR pain and measurement OR "pain and management." Using the additional Mesh terms "pain treatment" and "pain classification" proved to narrow the search too much. The search was originally performed in September 2007, and was updated to include citations entered into the databases until1st February 2010.

Papers were selected for further reading if the abstract contained any information related to the assessment or classification. From the full publications, only articles providing specific information related to the search were included.

One hundred and seventy nine titles were identified in Science Direct, 45 in Wiley International, 45 112 in JSTOR, 269 in PubMed, 142 in Embase, 103 in CINAHL, 69 in PsycINFO, and 2 in the Cochrane Database. There were 475 after correcting for duplicates. After examining the 475 titles and abstracts, 386 papers were selected for further reading because they were considered relevant for the purpose of the present review.

2.1   Pain
The International Association for the Study of Pain has defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage."39 Pain is the perception of nociception, and like other perceptions, it is determined by an interaction between activity in sensorineural pathways and a variety of behavioral and

psychological factors. Although psychological processes can strongly influence the expression and impact of pain, organic factors that produce activity in the sensorineural pathways appear to predominate in the cancer population (Gonzales et al., 1991).

2.2   Suffering

Suffering is the perception of distress engendered by all the adverse factors that together undermine quality of life. Pain may contribute profoundly to suffering, but numerous other factors, such as the experience of other symptoms, progressive physical impairment, or psychosocial disturbances, may be equally or more important (Ventafridda et al., 1990). Suffering and pain are therefore best regarded as related but discrete experiences, which have distinct clinical implications. Analgesia alone may not lessen suffering, and consequently, pain therapy is not the sole objective in the supportive care of the cancer patient. Rather, pain therapy must be a critical component of a more comprehensive therapeutic plan designed to address the diverse factors that impair quality of life (Ventafridda, 1989; .WHO, 1990).

2.3   Pain Characteristics and the Identification of Pain Syndromes

Cancer pain syndromes are defined by the association of particular pain characteristics and physical signs with specific consequences of the underlying disease or its treatment. Syndromes are associated with distinct etiologies and pathophysiologies and have important prognostic and therapeutic implications. Pain syndromes can be either acute or chronic.

The evaluation of pain characteristics provides some of the data essential for syndrome identification. These characteristics include intensity, quality, distribution, and temporal relationships.

2.4   Pain Intensity

The evaluation of pain intensity is pivotal to therapeutic decision-making (WHO, 1990; Cherny and Portenoy, 1994).It indicates the urgency with which relief is needed and influences the selection of analgesic drug, route of administration,

and rate of dose titration. Furthermore, the assessment of pain intensity may help characterize the pain mechanism and underlying syndrome.

2.5   Pain Quality

The quality of the pain often suggests its pathophysiology. Somatic nociceptive pains are usually described as sharp, aching, throbbing, or pressure-like. Visceral nociceptive pains may be gnawing or crampy when due to obstruction of a hollow viscus or aching, sharp, or throbbing when due to involvement of organ capsules or mesentery. Neuropathic pains may be described as burning, tingling, or shock-like (lancinating) (WHO, 1990; Ventafridda, 1989, 1990; Cherny and Portenoy, 1994).

2.6   Pain Distribution

Patients with cancer pain commonly experience pain at more than one site (Portenoy et al., 1992). The distinction between focal, multifocal, and generalized pain may be important in the selection of pain therapy. The term "focal" pain, which is used to denote a single site, has also been used to depict pain that is experienced in the region of the underlying lesion. Focal pains can be distinguished from those that are referred, that is, experienced in a site remote from the lesion. Familiarity with pain referral patterns is essential to target appropriate diagnostic and therapeutic strategies (Torebjork, 1984; Ness and Gebhart, 1990). For example, a patient who develops progressive shoulder pain and has no evidence of focal pathology needs to undergo evaluation of the region above and below the diaphragm to exclude the possibility of referred pain from diaphragmatic irritation.

2.7   Temporal Relationships

Acute pain is defined by a recent onset and a natural history characterized by transience. The pain is often associated with overt pain behaviors (such as moaning, grimacing, and splinting), anxiety, or signs of generalized sympathetic hyperactivity, including diaphoresis, hypertension, and tachycardia. Chronic pain on the other hand has been defined by persistence of pain for three months or

more beyond the usual course of an acute illness or injury, a pattern of recurrence at intervals over months or years, or by association with a chronic pathologic process (Bonica, et al., 1990).

2.8   Pain Assessment and Characterization

Pain assessment and characterization are based on patients' ability to provide descriptive statements about the quality of pain through clinical history, assessment instruments, and pain intensity ratings. Ever since Dubuisson and Melzack managed to classify pain syndromes solely with the use of pain-describing words,1 pain descriptors and symptoms they represent have been used in the clinical arena.2 Specific pain qualities appear to play a significant and unique role in the prediction of pain interference (Bonica et al., 1990) and although there are obvious limitations in the discriminative power of verbal pain descriptors, these are widely used and recommended by pain specialists (Twycross and Fairfield, 1982; Bonica et al., 1990).

In large epidemiological studies, neurological examination (especially the use of quantitative sensory tests) to examine pain qualities and pain types is not feasible for every patient. However, surveys assessing pain in a large group of patients using questionnaires with pain descriptors as part of the pain scale may reveal important information about variations in pain perception among cancer patients. A pain scale measures a patient's pain intensity or other features. Pain scales are based on self-report, observational (behavioral), or physiological data. Self-report is considered primary and should be obtained if possible. Pain scales are available for neonates, infants, children, adolescents, adults, seniors, and persons whose communication is impaired. Pain scores are sometimes regarded as the Fifth Vital Sign (Jensen et al., 1989; Bonica et al., 1990; Walid and Zaytseva, 2009).

2.9 Pain Guidelines

The WHO report of 2007 stated that most experts in developing and developed countries follow the WHO analgesic ladder and WHO guidelines for cancer related pain relief. Different departments in headquarters and regional offices of WHO have addressed pain management and related issues in their respective. Some of them have addressed policy-related issues and others have provided treatment protocols without addressing policy issues regarding opioid availability. However there is a need to look at the problem of pain in a comprehensive manner as there are many cross-cutting issues across the sectors managing pain that can only be addressed by a comprehensive approach.

Many local, national and international professional bodies have developed their own guidelines. The appropriate drug selection, dosage, alternative replacement of the drugs and changing the management program are included in the guidelines but are not uniformly agreed upon between the societies. WHO through these guidelines can help to promote adequate availability of opioids and other essential analgesics. Often the allowed dosages of opioids in policy guidelines from the governments do not consider the patient's pain status and the effectiveness of the treatment. Authoritative, clear and concise evidence-based guidelines from WHO could have a major impact on the correct use of these drugs. These will be very much welcomed by the medical communities, as well as regulatory authorities in all countries.

2.10 WHO normative guidelines

Almost all the experts advised to update and revise the existing WHO cancer related pain relief guidelines. Although one expert from a developing country felt that he would rather see efforts focused on guidelines other than cancer.

The 3-step analgesic ladder (discussed below) has been an exceptional model that demonstrates a conceptual step-wise approach to the management of cancer related pain. The basic premise stands very useful, but many changes in pharmacotherapy need updating. Recently new drugs, new formulations,

different classes of drugs and different methods of administration have become available. There are a number of opioids that were not available then; including sublingual and transdermal buprenorphine, transmucosal and oral fentanyl etc. In addition, methadone has a much larger role now; the issue of prescription opioid drug dependence syndrome has become much more prevalent. There has been development of newer techniques of pain assessment and greater development of palliative care and hospice programs. More evidence is now available for the optimal use of opioids and the control of their adverse effects, such as the major problem of gastrointestinal dysfunction that occurs during opioid treatment for chronic pain.

2.11   The Step Ladder and Pain Management

WHO (2004) reports that "chronic pain is one of the most underestimated health care problems in the world today, causing major consequences for the quality of life of the sufferer and a major burden on the health care system in the Western world,". It has developed a three-step "ladder" for cancer and pain relief. Administering the right drug in the right dose at the right time is inexpensive and 80-90% effective. In the U.S.A, health care professionals are not addressing acute pain adequately despite the existence of evidence-based guidelines (Acute pain guidelines, 1992). Studies assessing physician knowledge and attitudes in cancer pain management have documented that knowledge deficits exist across practice and specialties (Pargeon, 1999).

Sub-optimal pain management is not the result of lack of scientific information, considering the explosion of research on pain assessment and treatment. Yet reports documenting the inability of health care professionals to use this information continue to appear in the literature. Studies have found that two of the chief barriers for health care professionals are poor pain assessment and lack of knowledge about pain (Ferrell 1995) and lack of knowledge on the three step ladder that was developed by the WHO (Figure 1).

Figure 1: WHO's pain relief ladder
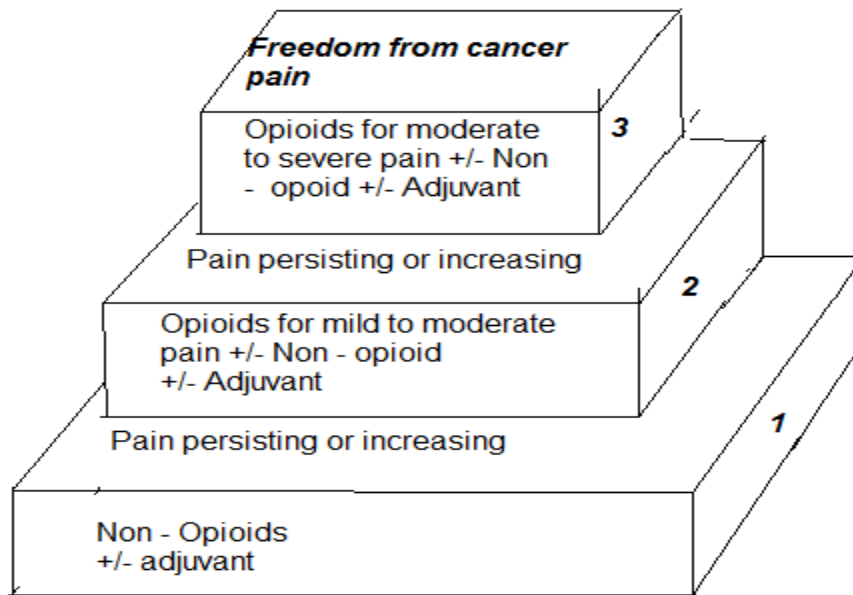
WHO's pain relief ladder,(adapted from WHO,pain ladder, 2004)

In 1982, the World Health Organization (WHO) Executive Board Advisory Committee on Medical Research and the World Health Assembly endorsed the WHO Cancer Pain Relief Programme that lead to the publication of the publication of the WHO guidelines on cancer pain relief (WHO, 1996). The recommended therapeutic strategy is based on the familiar analgesic ladder (WHO, 1996). These guidelines could be used by medical professionals as a general principle when dealing with analgesia for any type of pain (WHO,1 996 In the treatment of chronic pain, whether due to malignant or benign processes, the three-step WHO Analgesic Ladder provides guidelines for selecting the kind and stepping up the amount of analgesia. The exact medications recommended will vary with the country and the individual treatment center, but the following gives an example of the WHO approach to treating chronic pain with medications. If, at any point, treatment fails to provide adequate pain relief, then the doctor and patient move onto the next step and this is best presented as follows.

Mild pain

Paracetamol (acetaminophen), or a non steroidal anti-inflammatory drug such as ibuprofen

Mild to moderate pain

Paracetamol, an NSAID and/or paracetamol in a combination product with a weak opioid such as Hydrocodone used in combination, may provide greater relief than their separate use.

Moderate to severe pain

Morphine is the gold standard of choice, followed by Oxycodone, Hydromorphone, Oxymorphone and Fentanyl in the form of a transdermal patch designed for chronic pain management. Diamorphine, Methadone and Buprenorphine are used less frequently. Pethidine is not recommended for chronic pain management due to its low potency, short duration of action, and toxicity associated with repeated use. Amitriptyline is prescribed for chronic muscular pain in the arms, lower back, legs and neck. While opiates are often used in the management of chronic pain, high doses are associated with an increased risk of opioid overdose (Dunn et al., 2010).

Opioids

Opioid medications can provide a short, intermediate or long acting analgesia depending upon the specific properties of the medication and whether it is formulated as an extended release drug. Opioid medications may be administered orally, by injection, via nasal mucosa or oral mucosa, rectal, transdermal, intravenously, epidurally and intrathecally. In chronic pain conditions that are opioid responsive a combination of a long acting or extended release medication is often prescribed in conjunction with a shorter acting medication for breakthrough pain (exacerbations). Most opioid treatment is oral (tablet, capsule

or liquid), but suppositories and skin patches can be prescribed. An opioid injection is rarely needed for patients with chronic pain.

Although opioids are strong analgesics, they do not provide complete analgesia regardless of whether the pain is acute or chronic in origin. Opioids are efficacious analgesics in chronic malignant pain and modestly effective in nonmalignant pain management. However, there are associated adverse effects, especially during the commencement or change in dose. When opioids are used for prolonged period's drug tolerance, chemical dependency and, rarely, diversion and addiction may occur.

Non-steroidal anti-inflammatory drugs

The other major groups of analgesics are Non-steroidal anti-inflammatory drugs (NSAID). This class of medications does not include acetaminophen, which has minimal anti-inflammatory properties. However, acetaminophen may be administered as a single medication or in combination with other analgesics (both NSAIDs and opioids). The alternatively prescribed NSAIDs such as ketoprofen and piroxicam, have limited benefit in chronic pain disorders and with long term use is associated with significant adverse effects. The use of selective NSAIDs designated as selective COX-2 inhibitors have significant cardiovascular and cerebrovascular risks which have limited their utilization (Ballantyne, 2006; Munir et al., 2007).

Antidepressants and antiepileptic drugs

Some antidepressant and antiepileptic drugs are used in chronic pain management and act primarily within the pain pathways of the central nervous system, though peripheral mechanisms have been attributed as well. These mechanisms vary and in general are more effective in neuropathic pain disorders as well as complex regional pain syndrome (Jackson, 2006). Drugs such as Gabapentin have been widely prescribed for the off-label use of pain control. The list of side effects for these classes of drugs are typically much longer than opiate

or NSAID treatments for chronic pain, and many antiepileptics cannot be suddenly stopped without the risk of seizure.

Other Adjuvant and Atypical Analgesic Agents

Other drugs are often used to help analgesics combat various types of pain and parts of the overall pain experience. In addition to gabapentin, the vast majority of which is used off-label for this purpose, orphenadrine, cyclobenzaprine, trazadone and other drugs with anticholinergic properties are useful in conjunction with opioids for neuropathic pain. Orphenadrine and cyclobenzaprine are also muscle relaxants and are therefore particularly useful in painful musculoskeletal conditions. Clonidine has found use as an analgesic for this same purpose and all of the mentioned drugs potentiate the effects of opioids overall.

Interventional procedures

Pulsed radiofrequency, neuromodulation, direct introduction of medication and nerve ablation may be used to target either the tissue structures and organ/systems responsible for persistent nociception or the nociceptors from the structures implicated as the source of chronic pain (Meglio ,2004; Romanelli et al., 2004; Rasche et al., 2006; Varrassi et al., 2007).

An intrathecal pump used to deliver very small quantities of medications directly to the spinal fluid. This is similar to epidural infusions used in labour and postoperatively. This approach allows the drug to be delivered directly to the site of action that is the spinal cord, and so allows a higher dose to be given with less systemic side effects.

Physical approach

Physical medicine and rehabilitation (Physiatry) employs diverse physical techniques such as thermal agents and electrotherapy, as well as therapeutic

exercise and behavioral therapy, alone or in tandem with interventional techniques and conventional pharmacotherapy to treat pain, usually as part of an interdisciplinary or multidisciplinary program (Ferrante et al., 1991).

Hypnosis

A 2007 review of 13 studies by Elkins found evidence for the efficacy of hypnosis in the reduction of pain in some conditions, though the number of patients enrolled in the studies was small, bringing up issues of power to detect group differences, and most lacked credible controls for placebo and/or expectation. The researchers concluded that "although the findings provide support for the general applicability of hypnosis in the treatment of chronic pain, considerably more research will be needed to fully determine the effects of hypnosis for different chronic-pain conditions." (Elkins, 2007: 283).

2.12   Role of nurses and pharmacists

Pain management has been consigned mainly to doctors and nurses as well as pharmacists have not been involved in many countries. Nurses are essential in pain diagnoses and treatment in all health care settings. They are closest to the patients and their families and provide constant emotional, spiritual and personal support. They have important role in assessing and monitoring pain management.

The nurses can first evaluate the pain and can recommend to the treating doctor whether the use of pain relief medication is appropriate. After using the medicines, nurses can evaluate the effect of the medications. They can guide the doctor about patient's condition and when to change the step of the ladder. Many of them act as the coordinators of different pain groups from different specialties (WHO, 2007).

2.13   Previous Research on Pain

A study to observe pain management practices by nurses in emergency departments (EDs) in Central Africa and the various factors influencing these practices was conducted. Time to first analgesic treatment was recorded in 53 patients presenting to the ED of a Central African hospital in February 2005. A survey was simultaneously conducted on the attitudes and commitment of nurses towards the management of pain. All 28 nurses assigned to the ED agreed to participate in the survey. Severity of pain was the factor most influencing the time to first analgesia following admission to the ED. Severe pain was assessed as a score of $\geqslant 7$ on a 1–10 visual analogue scale. The median time to first analgesia in patients with severe pain was 150 min, which was considerably longer than in patients without severe pain (p = 0.003). A quarter of the 28 nurses had no official training in pain management and most (>80%) were unable to carry out a formal assessment of pain. The majority (>90%) were confident of their ability to treat pain. Thirteen (48%) were of the opinion that cultural factors influenced their management of pain and 67% admitted that they had some fears about administering morphine to patients in the ED. ED in Central Africa is inadequate. Cultural factors greatly influence how nurses manage pain in the emergency room. Patients would benefit considerably if nurses received additional education about the diagnosis and management of acute pain in EDs in Central Africa (Rasoloherimampiononiaina et al 2007).

A study was conducted to introduce structured pain assessment on a surgical ward at a general hospital in Kenya, East Africa. The aim was to improve pain control, and subsequently patient's recovery and satisfaction with care. It was agreed that the ultimate aim was to develop and use a *common tool for pain assessment throughout the hospital*, thereby- reducing disparity in various clinical areas, and raising standards of patient care. The project was seen as a pilot, and planned introduction of the pain assessment took place over 1 month (Hastings, 1995).

In a study conducted in the Republic of South Africa to document the prevalence and patterns of cancer pain management, it was observed that out of the 263 patients screened, a total of 94 patients were experiencing cancer-related pain: this comprised 35.7% of the sample. Inpatients had a higher prevalence than outpatients, which is likely due to the fact that these patients are more acutely ill. Blacks (56.1%) had a higher prevalence of pain than whites (29.4%); this difference was most pronounced in the outpatient setting. Phase 2 consisted of asking 426 patients with cancer pain from different settings to complete a questionnaire that included the brief pain inventory and was designed to learn about their pain and how it was managed. Nearly one-third of the entire sample experienced worst pain of severe intensity. There was little difference between the public and private cancer care centers. The lowest percentage of patients with severe worst pain' was in the hospice setting but even in this group about one-fourth of the patients had peak pain that was severe. Of non-whites combined, 81% experienced worst pain' of moderate to severe intensity as compared to 65% of whites. Only 21% of patients reported that they had achieved 100% pain relief Patients experienced interference in general activity, mood, walking, working, relations with others, sleeping, and enjoyment of life related to their pain. 30.5% of the entire sample had a negative score on the pain management index, a comparison of the most potent analgesic used by a patient relative to their worst pain. Of this group, 58.1% were experiencing severe worst pain'. Unrelieved cancer pain is a significant problem (Beck et al 2001).

In a study to analyze the links between levels of acute pain management knowledge, perceptions of clinical skills and the acute pain management education history of doctors and nurses working in orthopaedics and general surgery in an acute hospital. Questionnaires were sent to 101 doctors and nurses. Eighty two were returned. Questions were derived from an abridged version of McCaffery and Ferrell's (2002) Nurses' Knowledge and Attitudes Survey Regarding Pain, acute pain literature and the trust's clinical standards and protocols. The results identified the most useful sources of acute pain

management education and who accessed these; barriers to good acute pain management, other than a lack of education; differences between doctors and nurses in standards of education, levels of perceived competence and knowledge in assessment, pharmacology and analgesic delivery systems. Staff and patient misconceptions, inadequate sources of learning and professional traditions continue to affect the quality of acute pain management. However, progress has been made in the trust to overcome these factors through collaborative practice, review of education programmes and specific practice development initiatives (Coulling , 2005)

In a survey conducted in Zambia in 2007-2008, a majority of health workers interviewed 84%, stated that pain was by far the commonest presenting symptom they had to deal with when caring for patients. Hospices reported even higher percentages of 85-98% of their clients suffering from pain; the aetiology of which varied greatly. Despite this high prevalence of patients suffering pain, 65% of the health workers lacked a systematic methodology for pain a majority of health workers interviewed 84%, stated that pain was by far the commonest presenting symptom they had to deal with when caring for patients. Hospices reported even higher percentages of 85-98% of their clients suffering from pain; the aetiology of which varied greatly. Despite this high prevalence of patients suffering pain, 65% of the health workers lacked a systematic methodology for pain assessment and the same respondents never used any guides for pain assessment. The use of the pain assessment tools was evident only in the hospices visited by the researchers on this study. Charts/tools for pain assessment were found on the walls. For health care institutions, routine history taking and physical examination were reported as being the main mode of detecting a patient's pain (Goma et al ; 2008).

2.14 Pain assessment Tools

Pain assessment tools are normally used to quantify a patient's report of pain. Accurate use of these tools is critical to optimal medication selection. There are numerous pain assessment instruments that evaluate pain intensity, pain

location, pain behaviors, or a combination of these factors. In the past two and a half decades, over one dozen instruments have been developed to measure the cognitions, beliefs, and attributions patients have about the cause of the pain and their self efficacy expectations, for example, the Cognitive Error Questionnaire and Visual Analogue Scales, (Lefebvre ,1981;Smith et al., 1994; Pain Cognitions Questionnaire, (Boston et al., 1980) Cognitive Evaluative Questionnaire, Verbal Rating Scales and Survey of Pain Attitudes, (Jensen et al., 1987; Stron et al., 1992) Pain-Related Control Scale, (Flor et al., 1993) Pain Beliefs Questionnaire,(Philips , 1989; Edwards et al., 1992) Pain Beliefs and Perceptions Inventory and Memorial Pain Assessment Card; (Williams and Thorn , 1989; Herda et al., 1994). Pain Information and Beliefs Questionnaire, (Schwartz, 1985) Pain Catastrophizing Scale, (Sullivan et al., 1995; Osman et al., 1997) and Inventory of Negative Thoughts in Response to Pain (Gil et al., 1990).

Although a variety of self-report measures are nowadays available, most measures have not been used extensively in different research settings, the scales show considerable overlap, not all measures have been psychometrically well-constructed, and some measures have shown disappointing results regarding validity aspects (DeGood and Shutty 1992). In only a few studies, psychometric properties of the various measures to assess pain cognitions have been compared (Main and Waddell, 1991; Strong et al., 1992)

A review of the literature shows that majority of studies have used unidimensional scales only (69%), such as visual analogue scales (VAS), numerical rating scales (NRS) from 0 to 10, and Verbal Rating Scales (VRS) (Herr et al 2006). In 14% of the papers that were reviewed, more than one unidimensional scale was used. Some researchers used questionnaires designed to obtain a number of different indicators or measures, and in some cases, a final "pain score." In particular, some researchers used the Memorial Pain Assessment Card (MPAC) (Theobald et al., 2002). Originally published in 1987 (Fishman et al., 1987), it includes a VAS for pain intensity and pain relief

and a VRS for pain intensity. The Brief Pain Inventory (BPI), used in three studies (Rosen et al., 2001; Saad et al., 2002; Chang, 2002) is based on 0–10 NRSs evaluating different aspects of pain intensity and pain interference with function; (Serlin,et al., 1995) the RTOG Acute Radiation Morbidity Scoring Criteria,(Cox et al., 1995) including a 4-level (from none to severe) VRS for pain intensity, and analgesic consumption, was used in one study (Cengiz et al., 1999).

A group of Italian researchers (Sciuto, 2001; 2002) adopted the "modified Wisconsin test," which uses three scales, one for pain intensity and frequency, one evaluating pain interference with sleep, and one analgesic consumption, each of them graded on 5 intensity levels; the final score is given by the highest score obtained on any of the three scales. One report used a score that combined analgesic use and pain intensity in a grading system. Although, to the researcher's assessment of the reviews, 85% of the methods used (VAS, NRS, VRS, NGRS, MPAC, and BPI) had been previously validated (Fishman et al., 1987; Caracen et al., 2002), these researchers reported a literature citation about validity for only 30% of them. Overall, 56 studies used validated instruments and 7 studies used instruments (the bone pain score, the modified Wisconsin test and two different "ad hoc questionnaires") which, to the researchers knowledge, have never been validated.

From this review that the commonest pain assessment tools are the VAS and the VRS and the Numeric Pain Inventory Scale (NPIS) as well as the Simple Descriptive Pain Intensity Scale (SDPIS). Though the Numeric Pain Inventory Scale and the Simple Descriptive Pain Intensity Scale are simple to use, they are rarely used by practitioners.

2.14.1 The Visual Analogue Scale

A visual analogue scale (VAS) (Wewers and Lowe, 1990; Grant et al., 1999) is a psychometric response scale which can be used in questionnaires. It is a

measurement instrument for subjective characteristics or attitudes that cannot be directly measured. When responding to a VAS item, respondents specify their level of agreement to a statement by indicating a position along a continuous line between two end-points. This continuous (or "analogue") aspect of the scale differentiates it from discrete scales such as the Likert scale. The VAS can be compared to other linear scales such as the Likert scale or Borg scale. The sensitivity and reproducibility of the results are broadly very similar, although the VAS may outperform the other scales in some cases (Collins et al., 1997; DeLoach et al., 1998).

2.14.2 Simple Descriptive Pain Intensity Scale

The none-mild-moderate-severe pain scale is used when the patient or nursing home resident cannot understand the other scales, as can happen in dementia. In essence, this is the scale of last resort.

2.14.3 The Brief Pain Inventory

The BPI, developed by Daut, et al. was modeled after the McGill Pain Questionnaire (Daut et al., 1983) The BPI is a seventeen item patient self-rating scale assessing demographic data, use of medications, as well as sensory, and reactive components of pain. The BPI includes items that will address components of sensory pain including severity, location, chronicity and degree of relief due to therapy. The BPI also has items that address reactive pain components including depression, suffering and perceived availability of relief.

CHAPTER THREE - RESEARCH METHODOLOGY

3.0   Research Design

A cross-sectional non interventional comparative study was designed to answer the main research question.

3.1   Research setting

The study was conducted at the University Teaching Hospital (UTH) and The Cancer Disease Hospital (CDH). These are tertiary level referral hospitals. Unlike UTH which provides all types of services, The CDH is a specialist palliative care unit run by the Ministry of Health. The two hospitals have full-time and part-time senior medical staff and the former is a training center for medical doctors and nurses. The cancer hospital intends to train future specialists in palliative care.

3.2   Population Sample Size and Sampling

The study populations in this study were doctors and nurses from the departments of Surgery, Internal Medicine and Oncology drawn from UTH and CDH. In order to present the sought reality and from which descriptions and explanations on pain management, respondents in this study were selected using stratified proportionate quota random sampling of subgroups using Yamane formula (Yamane, 1967:258). Yamane formula is used to determine an ideal sample size when the population is known based on a preferred precision.To draw the sample elements for the study from the two population groups the formula below was applied.

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

Where: n is the desired sample size, N is the known population size and e is the precision set at .05

Following the determination of population sizes, the respondents were then divided into strata. The first strata in this study were nurse and doctor populations. The second were admitting units and wards.

Stratified random sampling was selected in this study because it assured the researcher to enlist nearly everyone in the population, but also key subgroups of the population, especially small minority groups like doctors. Stratified Random Sampling, also sometimes called *proportional* or *quota* random sampling, involves dividing your population into homogeneous subgroups and then taking a simple random sample in each subgroup. In more formal terms, the researcher divided the population of nurses into non-overlapping groups (i.e., *strata*) N_1, N_2, N_3, ... N_i, such that $N_1 + N_2 + N_3 + ... + N_i = N$. Then the researcher drew a simple random sample of $f = n/N$ in each strata. This sampling decision was made for the explicit purpose of obtaining the richest possible source of information to answer the overarching question.

3.2.1   Inclusion criteria
Only qualified doctors and nurses working in Surgery, Internal Medicine and Oncology consenting to be participants were enlisted.

3.3   Piloting
The study was conducted in two phases: a pilot study was done first at a private hospital (name withheld for ethical reasons) during which experiences with the first tool led to the refining of the tool. The second phase was the main study. Between January 2010 and March 2010, the researcher surveyed nurses and doctors with patient care responsibilities. The survey questionnaire was distributed in the wards and consulting rooms to the randomly selected health workers using a sampling frame. The first part of the questionnaire queried the demographic data of the participants. The remainder addressed issues including: knowledge and practice with minimal data on pain epidemiology.

3.4 Ethical Considerations

This protocol and any subsequent alterations were reviewed by the University of Zambia Biomedical Research Ethics Committee. Since this study involves human subjects, it was paramount to obtain permission from the respondents or social actors, UTH and CDH.

Informed Consent

Consent to participate in this study was guaranteed as a right so that the person involved should have legal capacity to give consent and exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion. To do so, all respondents were availed with sufficient knowledge and comprehension of the elements of the subject matter involved as to enable them to make an understanding and enlightened decision. This latter element required that before acceptance of an affirmative decision by the respondents, it was made known to them the nature, duration, and purpose of the research; the method and means by which the study was going to be conducted and all possible inconveniences. Respondents were informed of their rights to withdraw from the study at any time without any sanctions (Kostrewski and Oppenheim, 1980; Breakwell et al., 2006: Miley et al., 2007).

Risks

The researcher explained to the respondents that there were no risks or harm with regards to participating in the study except for the tolerable discomfort of getting into their private time answering the questionnaire. The respondents were informed about the time to be spent answering the questionnaire and provided the researcher does not disrupt their social life negatively. Respondents were guaranteed that their names would not be on any paper and the questionnaire would be destroyed after six months following the analysis. They were however informed that if they felt some discomfort or in case they were anxious about some questions or spending some time with the researcher and felt to decline to

take part or stop everything, they would have to do so voluntarily. This is because the decision to be part of the study was entirely up to them. Whatever they decided was not going to be held against them. They were made aware by the researcher's disclosure to understand that the researcher who was responsible for the study was not a member of any health management or regulatory board and that their participation would not have any harm in any way.

Confidentiality

The participation in this study conferred confidentiality. None of the information could identify all the respondents by name. All information provided by the respondents has been treated confidentially so far and shall be stored only for six months under lock and key. Research data shall be destroyed at the end of the study. This will guarantee the respondents that no any other person will have information related to them.

Rights and complaints

If they have concerns about the study, they may contact the Chair Person University of Zambia Biomedical Research Ethics Comittee.

3.5   Statistical Analyses

SPSS software, version 17.0 (SPSS, Chicago, IL), was used for statistical analyses. Proportions were compared using the Pearson's Chi-squared test. The level of statistical significance was set at 5%.

CHAPTER FOUR- RESULTS

4.0   Introduction

I present the research findings using three main variables the themes to stand in for the three research objectives[1] which are (i) levels of knowledge (ii) use pain management tools to assess and treat pain and (iii) comparing the levels of knowledge and use of pain management tools between doctors and nurses. Before presenting the results using these themes, key demographic profiles of the study sample are presented first. One hundred twenty nine questionnaires were distributed to nurses and doctors in three clinical areas (medicine, surgery and oncology). No doctor filled in the questionnaire from the oncology area. Fourteen questionnaires were excluded from the study because they were filed by student nurses who did not meet the inclusion criteria. Nine questionnaires could not be traced because the respondents were either on leave or changed departments or were posted out of the hospital. In spite of this, the response rate was 79%.

4.1   Demographic Profile

This study drew a sample N= 102 of respondents from three clinical areas (medicine, surgery and oncology) who met the inclusion criteria. There were more female respondents than male respondents n= 73 (71.6%). This was occasioned by the fact that health worker populations in the two hospitals are predominantly feminine and nurses take the toll. Within the nursing and doctor professions, there were marked differences in the sex distribution between doctors and nurses (χ^2=28.19, p<0.001). There were more female nurses n= 63

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[1] To determine the levels of knowledge among doctors and nurses on the types of pain management tools in use in the two hospitals.
To determine whether doctors and nurses use pain management tools to assess and treat pain.
To compare the levels of knowledge and use of pain management tools between doctors and nurses.

(81.9%) than male nurses n= 13 (17.1%) and there were more male doctors n= 19 (73.1%) than female doctors n= 7 (26.9%) (Table1).

Table 1: Comparative Distribution across sex of the respondents N= 102

	Sex			
Profession	Female		Males	
	n	%	n	%
Doctors	7	26.9	19	73.1
Nurses	63	81.9	13	17.1

The study sample was comprised 40% of nurse practitioners who had diplomas and 32% of nurses who had certificates. Meanwhile, only 8% of practitioners were medical doctors with first degree, and another 8% of doctors with postgraduate degree in medicine or surgery (Figure 2).

Figure 2: Qualification of respondents n= 102
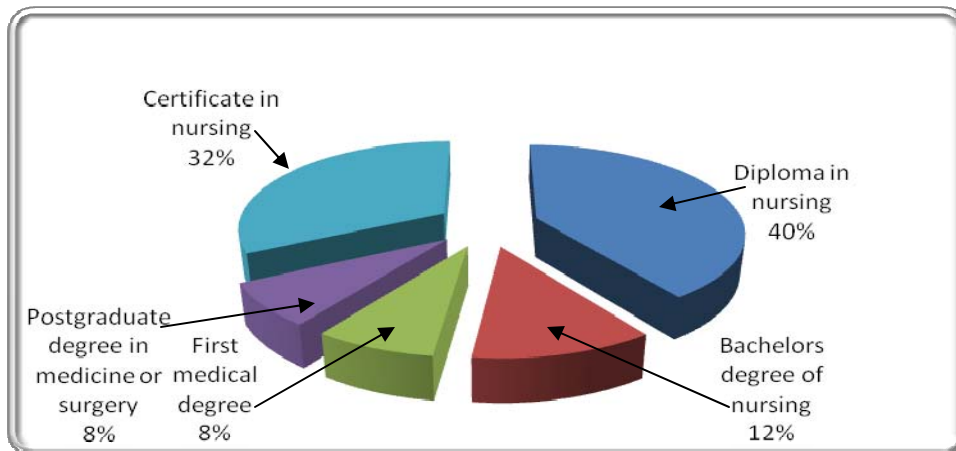
4.2   Patient Loads

A collective description from the nurses and doctors of patient loads in terms of the numbers of patients that nurses and doctors handled who had pain as compared to other signs and symptoms was done. It was evident that that nearly every patient that the nurses and doctors handled had pain. This is evident from the means shown in Table 2. A comparative picture between nurses and doctors showed remarkable differences with nurses scoring lower than doctors.

Table 2: Mean patient load handled as compared to other signs and symptoms

	Doctors' Loads	Nurses Load	Weighted Load (Doctors and Nurses)
	N= 26	N= 76	N= 102
Mean patient pain load	73.12	51.32	58.00

Doctors and nurses encountered the various categories of pain. However, there were no marked differences in terms of pain encountered across the two professions. Both nurses and doctors saw more patients with headache and facial pain than any other type of pain (Table 3).

Table 3: The commonest encountered Pain

Type of Pain	Doctors' Experiences		Nurses' Experiences	
	N	%	n	%
Bone pain	2	7.7	6	7.9
Pain syndromes of the viscera	6	23.1	18	23.7
Headache and facial pain	12	46.2	34	44.7
Tumor involvement of the peripheral nervous system	4	15.4	12	15.8
Traumatic pain	2	7.7	6	7.9
Total	26	100	76	100

4.3 Levels of Knowledge on Pain Assessment and Priority to Assess Pain

Doctors and nurses were asked a series of questions related to the granting of priority to pain assessment and whether or not they were aware of pain assessment tools. It was surprising to observe that both doctors and nurses were not aware of any pain assessment tools including four of the commonest pain assessment tools like: Visual Rating Scale (VRS), Numeric Pain Inventory Scale (NPIS), Numeric Rating Scale (NRS) and the MacGill Pain Questionnaire (MGPQ) among others.

Concerning knowledge of the World Health Organisation Pain Relief ladder, the proportions of doctors and nurses who reported to be aware of it was surprising low across the two professions (Fisher's exact test, p=0.246) with 26.9% of doctors and 15.8% of nurses reporting being familiar with the WHO ladder (Table 4)..

Table 4: Familiarity with WHO pain relief ladder

	Are you familiar with the World Health Organization (WHO) pain relief "ladder"?				Total
	Yes		No		
	N	**%**	**N**	**%**	
Doctors	7	26.9	19	73.1	26 (100%)
Nurses	12	15.8	64	84.2	76 (100%)

4.4 Pain Management and Use of Tools

Doctors and nurses were asked if at all they rated patients' pain in their working areas. Significantly more nurses (27.6%) than doctors (3.8%) reported that doctors and nurses rated pain (χ^2=6.48, p=0.011) as shown in Table 5.

Table 5: Rating Patients' Pain Using Pain Scales

	Do doctors and nurses rate patients' pain using pain scales		
	Yes	No	**Total**
Doctor	1 (3.8%)	25 (96.2%)	**26 (100%)**
Nurse	21 (27.6%)	55 (73.4%)	**76 (100%)**

When asked about priority assessment of pain, which is cardinal in clinical practice, both doctors and nurses, did not give priority to any periodical assessment of patient pain, be it quantifying or qualifying the pain for prognostic purposes. Most respondents (26.3% of doctors and 32.4% of nurses) treated pain just like all other manifestations (Table 6).

Table 6: Percent priority of pain assessment (regularity)

Priority To Assess pain	Nurses	%	Doctors	%
Very high priority	4	5.3	1	4.9
High priority	9	11.8	3	12.7
Treated just like all other manifestations	20	26.3	10	32.4
Low priority	19	25.0	7	25.5
Very low priority	24	31.6	5	24.5
Total	**26**	**100**	**26**	**100**

Pain was ranked as very high or high priority by 14.4% of nurses and 15.3% of doctors (Table 7).

Table 7: Priority Ranking Of Pain Assessment

Priority Ranking of Pain Assessment	Nurses		Doctors	
	n	%	n	%
Very high priority	2	2.6	1	3.8
High priority	9	11.8	3	11.5
Treated just like all other manifestations	29	38.2	9	34.6
Low priority	18	23.7	7	26.9
Very low priority	18	23.7	6	23.1
Total	**76**	**100**	**26**	**100**

4.5 Comparing the levels of knowledge and use of pain management tools

All doctors and nurses were not aware of these classical pain assessment tools. When the doctors and nurses were asked about the percentages of patients that actually achieved satisfactory pain relief based on the quality of care provided, it was surprising that there were intra and inter professional differences (Table 8).

Table 8: Nurses and doctors' perception of patient relief satisfaction index

Measure	Doctors N=26	Nurses N= 76	Weighted measurers N= 102
Mean	29.88	21.00	22.85

Looking at the lack of knowledge in the existence of pain assessment and pain management tools, both doctors (96.2%) and nurses (98.7%) admitted that they lacked skills and knowledge and stated that they needed some help in the area of pain assessment and management (Table 9).

Table 9: Profile of need for help in the area of pain assessment and management

Measure	Doctors		Nurses	
	n	%	n	%
Very much	17	65.4	28	36.8
Much	8	30.8	32	42.1
Somehow	0	0.0	15	19.7
Low priority	0	0.0	0.0	0.0
Not at all	1	3.8	1	1.3
Total	26	100	76	100

CHAPTER V- DISCUSSION AND CONCLUSIONS

5.0   Introduction to Key Findings

The management of pain in Zambia has only been evaluated once in a study by Goma et al, (2008). This study was just an eye opener to the poor management of pain. As a part of a basic research project in public health related to the quality improvement objective in the management of cancer pain at UTH and CDH, the researcher surveyed 26 doctors and 76 nurses. This study was set to answer one overarching question which was "What do doctors and nurses do to patients that have pain?" The answer to this question is that nurses and doctors do assess and treat patients who have pain and that they use particular criteria outside the norms of practice. This answer is supported by the data drawn from three objectives and these are described below.

Knowledge levels among doctors and nurses on the types of pain management tools

This study has shown that   both doctors and nurses were not aware of a wide range of pain assessment tools including four of the commonest pain assessment tools like: Visual Rating Scale (VRS), Numeric Pain Inventory Scale (NPIS), Numeric Rating Scale (NRS) and the MacGill Pain Questionnaire (MGPQ) among others. However, Concerning knowledge of the World Health Organisation Pain Relief ladder, the proportions of doctors and nurses who were aware of it was surprising low.

To determine whether doctors and nurses use pain management tools to assess and treat pain.

Both doctors and nurses did make assessments and treat patients of pain but there were more instances of failure to rate pain. Both nurses and doctors rated pain subjectively and did use any pain assessment tools. However, nurses rated

pain more frequently than doctors. In addition, pain was not given any priority in periodical assessments which is contrary to the dictates of clinical practice.

To compare the levels of knowledge and use of pain management tools between doctors and nurses.

Looking at the lack of knowledge in the existence pain assessment and pain management tools, both doctors and nurses lacked skills and knowledge and that they needed some help in the area of pain assessment and management. However, the doctor sample needed more help than the nurses.

5.1 What this study shows

The ability to evaluate pain experiences is an essential feature of high-quality nursing and medical practice. Noting that there are numerous methods of measuring and assessing pain, our respondents did not know any one tool. This study has highlighted practical and conceptual problems regarding the management of pain. Clinicians and nurses did not know of any tools and as such one would wonder about the properties of the relevant instruments that they use when selecting a method of pain appraisal for their patients.

This study has shown that pain management leaves much to be desired among the practitioners in the two hospitals. One can say that the practice of pain management leaves patients dissatisfied with care. There is no doubt that pain control is a significant problem in health care, and under-treatment of pain may be widespread if at these two highly developed institutions there are no pain management tools. Unrelieved pain diminishes activity and the quality of life of patients with pain could be said to be significantly worse than that of cancer patients without pain (Ferrel et al. 1991). The importance of effective pain management cannot be overemphasized as pain is the symptom patients dread the most (Levin et al. 1985). Lack of expertise by clinicians in assessing and managing pain has been listed as an important cause of poor pain control

(Cleeland, 1991). This lack of expertise has been related to inadequate training both at the undergraduate and postgraduate levels (Marks and Sacher, 1973). It is surprising that even among the significant populations of nurses and doctors that have done postgraduate programs in medicine and surgery lag behind in pain management.

These findings are no different from the observations made by Cleeland (1989) concerning cancer management for instance. This clinical deficiency in assessment and management of pain is unfortunate because the majority of pain patients can have pain that is adequately controlled as long as the World Health Organization (WHO) treatment guidelines are used (Schug et al. 1990; Grond et al. 1991). But this is only possible if assessment of resident physician clinical performance is not based on flawed subjective evaluations. It is only possible if the nursing and the medical schools considered teaching clinical skills that should also focus on pain management.

Finally, this study has attempted to fill the gap in research on pain management. The data sets from the two hospitals presented here provide support for the need to consider prioritizing pain management.

5.2 Conclusions and Recommendations

The results show the need to improve the standard of care for patients with pain. This is a critical clinical challenge facing not only the institutions providing care but practitioners as well. The study has demonstrated major problems in the assessment and treatment of people living with or in pain. Pain assessment must be incorporated into the routine care of patients. The relief of pain must be emphasized as a cardinal goal of pain management and patients don't just need reassurance but extra efforts to secure comfort to control the underlying pathology. The individual health workers could effectively treat most pain problems by attending to careful pain assessment and implementing the WHO analgesic therapy.

One of the things that have come out of the study is the need for a multidisciplinary management team of pain and not only in palliative care but in general health care. This is not to suggest that a team of experts needs to see every patient who experiences pain and the researcher might rightfully question the yield of such an intensive effort. The researcher is of the opinion there is dire need to assure ourselves that the special needs of the individual patient are being met in order to raise the satisfaction index from good pain management practices. Adequate utilization of simple screening tools for pain like the Visual Assessment Scale, the Visual Rating Scale and the Numeric Pain Inventory Scale (NPIS) and the Simple Descriptive Pain Intensity Scale (SDPIS) would help to identify patients for multidisciplinary management. Studies have demonstrated that pain was less of a problem for patients monitored by nurse practitioners. This may benefit our patients noting that doctors are fewer than nurses and nurses spend more time with our patients. " Whether the tools available for pain management are limited, careful monitoring of pain, coupled with adjustment of treatment strategy when indicated and continued assessment of treatment effectiveness must be the ideal management standard. The WHO pain management ladder may be handy in this case.

The researcher is making varying recommendations noting that there is an existing gap in the control of pain between the administration of appropriate drugs and evidence based prescription to achieve optimal pain management. The recommendations are backed by the facts that improving pain management requires that pain be recognized as a priority and that pain assessment be acknowledged as the fifth vital sign among the vital signs record, this makes pain visible and raises awareness to the problem. Therefore, the study recommends as follows:

1. The hospital authorities ought to endeavour to facilitate the development of pain management tools and guidelines based on local practices or consider the use of the five tools which are: Visual Assessment Scale, the

Visual Rating Scale and the Numeric Pain Inventory Scale (NPIS), the Simple Descriptive Pain Intensity Scale (SDPIS) and the WHO pain ladder management tool.

2. Relying on the mass of good evidence about poor pain management, the researcher believes that clinical skills could be improved quite easily early in the medical curriculum with the use of evidence based practice teaching. The researcher argues that the hospital managements could utilise the medical illustration unit in the school of medicine to conduct short courses on pain management.

3. The fact that there were appreciable numbers of doctors and nurses who want to be helped in pain management, there is a need to consider in-service training for the serving doctors and nurses.

4. The two hospitals as part of their quality assurance programs ought to conduct satisfaction studies from time to time which could be used to improve service delivery. It is important to continue to seek and explore the views of patients and even doctors' and nurses' experiences around service planning and delivery.

5. Special consideration should be given in the guidelines for the management of pain in special patient groups and specific clinical situations, for example: guidelines are needed in pediatric groups at all development stages (neonates, premature babies, infants, children and adolescents) for acute and chronic pain of all types. Guidelines for older people. Availability of drugs in suitable concentrations for these age groups is necessary. Guidelines for pain assessment in cognitively impaired patients, patients who have difficulties in communicating their suffering, feeble patients and patients with co-morbidities (depression, anxiety, insomnia, the debilitated, deaf, blind, displaced persons or refugees, terminal stage, dementia, and extreme old age). Deciding the duration for defining acute and chronic pain. The guidelines should give examples of locally documented case studies for different types of common pain.

5.3   Limitations and Strengths of the Study

Like all studies, this study has limitations inherent of the research design that was selected such that the interpretations and extent of application should be taken with caution. The first limitation has to do with the proportionate sampling design that was used. The division of the sample elements into strata for randomization into homogeneous subgroups or subsets within each of which an independent sample was selected, created a large number of nurses than that of doctors and noting that is how the scenario is by design. The use of different sampling fractions in the strata created wide variabilities while trying to maintain natural occurrences. However, the researcher was constrained and could not apply disproportionate sampling because there strata like cancer hospital that were very small and the doctor population was rather very elastic on account of different commitments. Give these limitations; the researcher was able to elicit the views of a representative number of doctors within the two institutions.

The second limitation has to do with the statistical analysis. Most quantitative researchers would want hypothesis tested and significant tests done in order to guarantee power to the research process. In this study, we had no hypotheses and no statistical associations of any nature. One drawback of such research is the unlikelihood of peers, journals and researchers who tend to reject such work and opt to accept only papers that have statistically significant results (Mahoney, 1977; Chann 1982; Dickersin, 1990). In spite of this, observation, most of the data that was collected on key variables ended up not to be mutually exclusive. There was only one independent and dependent variable as such significant tests could not be computed. Further than this, all variables were categorical.

However in spite of these limitations, the findings are worth considering because they are based on current rather than retrospective views. Hence they do not run the risk of recall bias; on the spot inquiries in eliciting experience are useful. The results of this study could be generalised to other tertiary hospitals in Zambia. This study provides useful data to guide decision making for professionals caring for patients

living with pain. Future research is needed to determine the life of people living in pain and with pain who were not part of this study.

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<h1 align="center">APPENDIX I: INFORMED CONSENT</h1>

ACCEPTABILITY OF PAIN ASSESSMENT TOOLS BY DOCTORS AND NURSES AT UNIVERSITY TEACHING HOSPITAL AND CANCER DISEASES HOSPITAL.

INTRODUCTION

I, Donald Muma Kalolo; a Master of Public Health student at the University of Zambia, School of Medicine is kindly requesting for your participation in the above mentioned study. This study is in partial fulfillment of the requirements for the award of a Master of Public Health. Before you make up your mind whether to take part in the study or not, I would like to explain to you the purpose of the study and what is expected of you. Your participation in this study is voluntary. You are under no obligation to participate. If you agree to take part in the study, you will be asked to sign this consent form in the presence of a witness.

PURPOSE OF THE STUDY

The Study will help to determine your acceptability of pain assessment tools in health institutions. This information is important in promoting awareness of pain in patients through the use of pain assessment tools for the proper management of pain by health workers in public health institutions.

PROCEDURE

The Study involves a questionnaire and selected pain assessment tools. This will be a face to face interview. This will be done after you accept to take part in the study. The interview will take approximately 15 to 20 minutes.

RISKS

There are no risks involved in this Study.

BENEFITS

There is no direct benefit for you by participating in this Study. However, the information that will be obtained will be useful in the promotion of pain assessment and appropriate tools available for use by health workers in health institutions. No monetary favors
Will be given in exchange for information obtained, but education on appropriate pain assessment, tools and management will be given as need arises.

CONFIDENTIALITY

The research records and all the information obtained will be treated as confidential. You will be identified by a number and not by name.

INFORMED CONSENT FORM

The reasons for conducting this study have been explained to me and I fully understand that:

If I agree to take part in this study, I can withdraw any time without advancing any reason and that my participation in the study is purely voluntary.

I ……………………………………………………………………………………………….
 (Names)

Agree to take part in this study.

Signed/Thumb print:…………………   Date: ……………………… (Participant)

Signed: ………………………………   Date………………………… (Witness)

Signed………………………………….   Date: ……………………..... (Researcher)

CONTACT PERSONS IN CASE OF QUESTIONS

1. Donald Muma Kalolo, University of Zambia, School of Medicine, Department of Community Medicine, PO Box 50110, Lusaka. Cell: 0955755404.

2. Professor S. Siziya, University of Zambia, School of Medicine, Department of Community Medicine, PO Box 50110, Lusaka.

3. Dr L.T Muungo, University of Zambia, School of Medicine, Department of Pharmacy, PO Box 50110, Lusaka.

4. The Chairperson, Biomedical Research Ethics Committee, UNZA, PO Box 50110, Lusaka

APPENDIX II: PERMISSION FROM AUTHORS

General Instructions

Frequently nurses contact us requesting short surveys that can be used for staff meetings, inservices, quality improvement activities, and other situations in which only brief time is available to collect information. Another important consideration is providing surveys that can be easily tabulated for those who may not have access to any data management or statistical support. The attached packet includes several surveys which have been used by Margo McCaffery and Betty Ferrell over the past several years. You are free to use these in any way that you desire. You may duplicate these, publish the results, and share them with others, and you do not require any additional permission from us to do so.

There are always questions regarding the reliability and validity of research instruments. These are important concepts in research as we do want to know that the instruments we use are in fact reliable and consistent and that they do truly measure the content desired. Each of the attached surveys has been derived from established pain management content, generally extracted to represent the content from the Agency for Health Care Policy and Research (AHCPR) pain guidelines. This content is also consistent with the guidelines by the World Health Organization (WHO) and the American Pain Society (APS). Many of the items in these surveys are extracted from some of our more comprehensive research instruments in which more rigorous psychometric testing has been accomplished such as test/retest reliability, internal consistency, and other psychometric features. However, the instruments attached have been developed for your use to be brief, practical survey tools, and thus we have not gone through any additional psychometric testing. Thus, there is no additional reliability or validity information available. You can share with others the fact that each of these instruments has been used extensively by us and content has been derived from established pain guidelines.

 The packet includes a blank copy of each instrument with an attached key in which the correct or most desirable answer is indicated. We hope that these instruments are helpful to you. Good luck with your research!

APPENDIX III: BUDGET

	ITEM	AMOUNT (ZMK)
1	Secretarial Services	3,500,000.00
2	Research Assistants (3)	3,000,000.00
3	Data entry and Statistical Analysis	9,625,000.00
	TOTAL	15,625,000.00

APPENDIX IV: SURVEY QUESTIONNAIRE

1. Age of respondent
2. Sex of respondent: Male …….Female……..
3. Profession…………..
4. Qualification of respondent…………………………………………………………………………...
5. Clinical area……………………………………………………………………………………………
6. Years of experience as a health worker………
7. Do doctors and nurses rate patients' pain using pain scales
8. As a percentage, what is the proportion of patient load that you handle as compared to other signs and symptoms?...............
9. I am aware of the Visual rating Scale (VRS) as a pain assessment tool. **Yes …..No…… (see figure below)**
10. I am aware of the Numeric Pain Inventory Scale (NPIS) as a pain assessment tool. **Yes …..No……(see figure below)**
11. I am aware of the Simple Pain Descriptive Inventory Scale (SPDIS) as a pain assessment tool. **Yes …..No……(see figure below)**
12. I am aware of the Numeric Rating Scale as a pain assessment tool . **Yes …..No……(see figure below)**
13. I am aware of the Memorial Pain Assessment Card (MPAC) as a pain assessment tool **Yes …..No……**
14. I am aware of the Brief Pain Inventory as a pain assessment tool **. Yes …..No……**
15. I am aware of the Dolorimeter Pain Index as a pain assessment tool. **Yes …..No……**
16. I am aware of the Faces Pain Index as a pain assessment tool. **Yes …..No……**
17. I am aware of the MacGill Pain Questionnaire as a pain assessment tool. **Yes …..No……**
18. I am aware of the Descriptor Differential Scale as a pain assessment tool. **Yes …..No……**
19. I am aware of the Walid-Robinson Pain Index as a pain assessment tool. **Yes …..No……**
20. Which is the commonest pain that you encounter?
21. In your work area how much of a priority is pain assessment (regularity)?
22. Do you use the NPIS to assess pain? **Yes …..No……**
23. Do you use the Verbal Analogue Scale to assess pain? **Yes …..No……**
24. Do you use the Verbal Rating Scale to assess pain? **Yes …..No……**
25. Do you use the Simple Descriptive Pain Inventory to assess pain? **Yes …..No……**
26. Are you familiar with the World Health Organization (WHO) pain relief "ladder"?
27. Do you use the World Health Organization Pain Relief Ladder? **Yes …..No……**
28. To what extent do you observe changes in vital signs or behavioral expressions of pain if a patient has severe pain?
    a) Always
    b) Frequently
    c) Occasionally
    d) Seldom
    e) Never
29. In your opinion do you think enough is being done in your work setting to manage the patient's pain?
    a) Much
    b) Not much
    c) Not at all
30. How comfortable are you able to assess a patient using pain assessment tools?
    a) Very comfortable
    b) Uncomfortable
    c) Moderately comfortable
    d) Comfortable
    e) Very comfortable

31. What is the level of priority that pain as a "fifth vital sign" is monitored on the vital signs chart in your ward?
    a) Very high priority
    b) Low priority
    c) Treated just like all other manifestations
    d) Low priority
    e) Very low priority

32. In your experience what percentage of patients actually achieve satisfactory pain relief with the quality of your care?..................

33. Would you like any help in the area of pain assessment and management?
    a) Very much
    b) Much
    c) Somehow
    d) Low priority
    e) Not at all
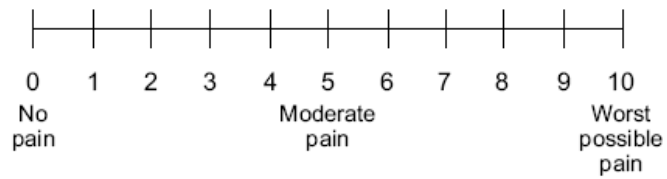
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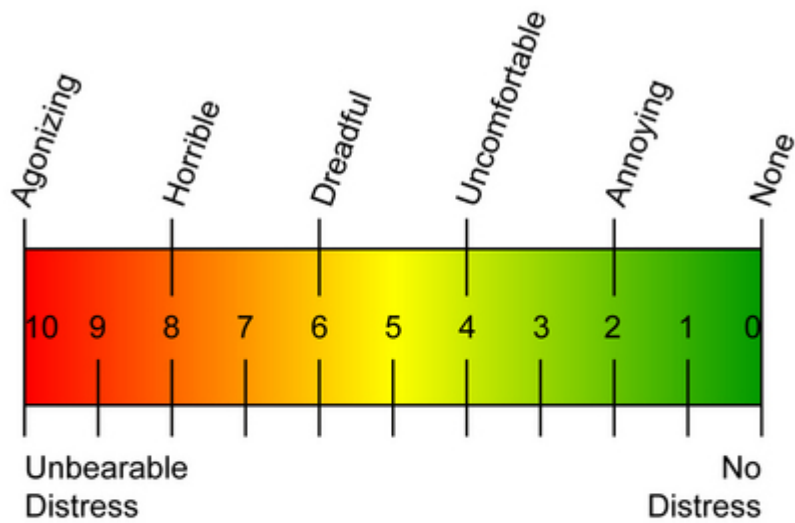
Task _____

Date _____ Start _____ End _____

0-10 Numeric Pain Intensity Scale*

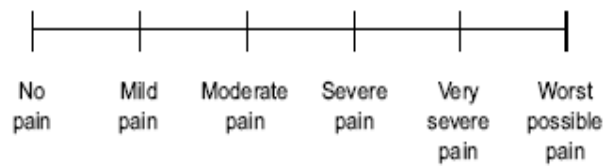|										
0	1	2	3	4	5	6	7	8	9	10
No pain					Moderate pain					Worst possible pain

Verbal Rating Scale

0 = NO PAIN
10 = WORST POSSIBLE PAIN

0 = NO PAIN
100 = WORST POSSIBLE PAIN

Simple Descriptive Pain Intensity Scale*

No pain	Mild pain	Moderate pain	Severe pain	Very severe pain	Worst possible pain

SHORT-FORM McGILL PAIN QUESTIONNAIRE
RONALD MELZACK

PATIENT'S NAME: _____   DATE: _____

	NONE	MILD	MODERATE	SEVERE
THROBBING	0) _____	1) _____	2) _____	3) _____
SHOOTING	0) _____	1) _____	2) _____	3) _____
STABBING	0) _____	1) _____	2) _____	3) _____
SHARP	0) _____	1) _____	2) _____	3) _____
CRAMPING	0) _____	1) _____	2) _____	3) _____
GNAWING	0) _____	1) _____	2) _____	3) _____
HOT-BURNING	0) _____	1) _____	2) _____	3) _____
ACHING	0) _____	1) _____	2) _____	3) _____
HEAVY	0) _____	1) _____	2) _____	3) _____
TENDER	0) _____	1) _____	2) _____	3) _____
SPLITTING	0) _____	1) _____	2) _____	3) _____
TIRING-EXHAUSTING	0) _____	1) _____	2) _____	3) _____
SICKENING	0) _____	1) _____	2) _____	3) _____
FEARFUL	0) _____	1) _____	2) _____	3) _____
PUNISHING-CRUEL	0) _____	1) _____	2) _____	3) _____

NO PAIN |—————————————————————————| WORST POSSIBLE PAIN

PPI

0	NO PAIN	_____
1	MILD	_____
2	DISCOMFORTING	_____
3	DISTRESSING	_____
4	HORRIBLE	_____
5	EXCRUCIATING	_____

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