ASSESSMENT OF KNOWLEDGE ATTITUDES AND PRACTICE OF ANALGESIC USE AMONG DOCTORS AND ADEQUACY OF PAIN MANAGEMENT IN CANCER PATIENTS IN KENYATTA NATIONAL HOSPITAL

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H58/74225/2014

A Dissertation Submitted in Part Fulfilment Of The Requirements For The Award Of Master Of Medicine Degree in Internal Medicine, University of Nairobi.

2017
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**Dedication**
This book is dedicated to my family for their unending patience and enduring support, and to the patients who courageously keep up the good fight.
Acknowledgements
I am eternally grateful to God Almighty for good health and an opportunity to carry out this dissertation.

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<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
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<tr>
<td>ART</td>
<td>Antiretroviral Therapy</td>
</tr>
<tr>
<td>CIBP</td>
<td>Cancer Induced Bone Pain</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>ECOG</td>
<td>Eastern Cooperative Oncology Group</td>
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<td>ENT</td>
<td>Ear, Nose and Throat</td>
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<td>EPIC</td>
<td>European Prospective Investigation into Cancer</td>
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<td>HAART</td>
<td>Highly Active Antiretroviral Therapy</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>IASP</td>
<td>International Association for the Study of Pain</td>
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<td>KASP</td>
<td>Knowledge and Attitudes Survey On Pain</td>
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<td>KNH</td>
<td>Kenyatta National Hospital</td>
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<tr>
<td>KS</td>
<td>Kaposi’s Sarcoma</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>Non Steroidal Anti Inflammatory Drugs</td>
</tr>
<tr>
<td>NRS</td>
<td>Numeric Rating Scale</td>
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<td>PMI</td>
<td>Pain Management Index</td>
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<tr>
<td>SHO</td>
<td>Senior House Officer</td>
</tr>
<tr>
<td>SOPC</td>
<td>Surgical Out Patient Clinic</td>
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<tr>
<td>VAS</td>
<td>Visual Analogue Scale</td>
</tr>
<tr>
<td>VRS</td>
<td>Verbal Rating Scale</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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Abstract

Background
Pain in cancer is one of the most common and most feared symptom and is an important determinant of the patient’s quality of life. Despite multiple protocols being set for pain management in cancer patients, studies show that the prevalence of pain in cancer patients is still high, with significant under-treatment for those patients on analgesia. This study aims to assess the knowledge, attitude and practices of doctors and the adequacy of pain management in cancer patients.

Objectives
To assess the knowledge, attitudes and practice of analgesic use among Senior House Officers and Medical Officers and adequacy of pain management among cancer patients in Kenyatta National Hospital.

Methods
This was a descriptive, cross-sectional study which was carried out over a five-month period in the various clinics in the Kenyatta National Hospital. They included the haematology-oncology clinic, radio-oncology clinic, surgical out-patient clinics and gynaecology out-patient clinics. The study participants included both doctors and patients attending these clinics. The doctors were given a self-administered Knowledge and Attitude Survey on Pain (KASP) questionnaire and a questionnaire to assess current practice to complete. The KASP questionnaire consists of questions that assess both knowledge and attitude of healthcare providers regarding cancer pain management with only one correct answer from the choices given. The second questionnaire collected data on current practice of doctors with regards to prescribing analgesics. Each patient was interviewed using the Brief Pain Inventory questionnaire which collected information on the patient’s current and past pain level, their current prescribed analgesia and the effect of the pain on their daily life.

Results
Between October 2016 and March 2017, a survey on 144 doctors from the various clinics was conducted. Overall score of the KASP questionnaire was 66.5%. There was good theoretical knowledge on pain assessment which, however, did not translate to good practice. Knowledge on the pharmacology of analgesic medication, especially opioids was poor. Knowledge on the adverse effects of opioid medication was also poor with an inflated fear of addiction. Although majority (66.5%, n=144) of the doctors frequently assessed for pain, they seldom used an objective assessment tool. 43.2% (n=144) frequently referred to the WHO pain ladder when
prescribing analgesics. Most (90.6%, n=144) frequently reviewed the efficacy of the analgesics prescribed but only 50.7% regularly assessed for adverse effects of the medication.

Of the 350 patients were recruited from the various clinics, 70.6% were found to be undertreated for their pain. Patients attended to in the surgical, gynaecology and haemato-oncology clinics were more likely to be adequately managed for pain than those in the ENT and radio-oncology clinics.

No relationship was found between the knowledge and attitude of doctors and their practice patterns.

**Conclusion**

There is inadequate knowledge and poor attitude by doctors on cancer pain and its management. There are suboptimal practice patterns regarding objective pain assessment and adherence to pain management guidelines, translating to poor pain control among the patients attended to in the various clinics.

**Recommendations**

We recommend current education strategies on cancer pain management be re-evaluated. We recommend increase in awareness and use of formal pain assessment tools by clinicians and emphasis on adhering to clinical practice guidelines on cancer pain management. Further studies should be carried out on system related and patient related barriers on pain management at KNH.
Introduction

Pain is one of the most common, debilitating and often undertreated symptom in cancer patients. Numerous studies show large proportion of cancer patients are still in pain despite contact with healthcare providers.(1–8) The effects of this untreated pain are far reaching both to the individual and the society at large.

“Of all human experiences, pain is, as long as it lasts, the most absorbing; it is the only human experience that when it comes to an end, automatically confers a sense of joy. … However, the oddest thing about pain is that despite its intensity and its unequalled power over mind and body, it is difficult to recall when it is over.” (9)

In 1999 the Department of Veteran Affairs initiated a campaign to include “pain as a fifth vital sign” in an attempt to promote regular, objective assessment of pain which would result in prompt treatment of unrelieved pain. (10) Assessment of pain was done using the Numeric Rating Scale and was recorded along with the patient’s other vital signs.

Pain is one of the most common symptom that leads to hospitalisation of cancer patients. In one study, the most common complaint in the patients was dyspnoea (15.7%) followed by pain (15.2%).(11) Another study assessing reasons for Emergency department visits in cancer patients also ranks pain as the second most common reason (12.8%) after fever without neutropenia (23.3%).(12) A study assessing the public’s attitude towards cancer pain revealed that 48% of the patients thought cancer pain to be “extremely painful”.(13)

The patient’s report of pain is said to be the gold standard in pain assessment. (14) Every patient should have their pain assessed at each visit(10,15) and this pain should be dealt with from initial contact and throughout the patient’s management. Pain assessment requires a detailed history focused on pain intensity, location, frequency, quality, radiation, severity, onset and aggravating/relieving factors. Current treatments should be documented. (16)

Adequate pain relief could potentially have a huge impact in improving the quality of life of patients, especially those with advanced cancers. (3) Studies have found that a good number of patients in pain receive inadequate pain relief, (2,3,5,17) in contrast to the 80-90% that should be receiving adequate analgesia according to the WHO analgesic ladder. (18) Health as a fundamental human right is enshrined in most international human right instruments, also in our own constitution (Article 43 of The Constitution of Kenya, 2010), and it can therefore be extrapolated that a life free of pain is also a fundamental human right. (19)

The aim of this study is to investigate the provider-centred issues that form a barrier to adequate pain management. Its aim is to evaluate the knowledge base of healthcare providers on the management of pain in ambulant patients, the attitudes towards patients’ pain and the practices employed towards the management of pain including whether they follow any given guidelines and how these practices impact the patients’ pain relief. At the moment, there is no protocol for managing pain in cancer patients in KNH.
Any knowledge deficit identified may aid in developing an educational programme that targets doctors’ needs and that may lead to an improvement in pain management in oncology patients.
Literature Review

Introduction
It is stated that “there are few human experiences that are as compelling as pain…”(20)

Pain is defined by the International Association for the Study of Pain (IASP) as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”.(21) It is “one of the most feared and burdensome symptoms for cancer patients and cancer survivors.”(22)

In 2004, the WHO and IASP sponsored the “Global Day Against Pain” where adequate pain management was classified as a human right and “unreasonable failure to treat pain” viewed as a breach of a fundamental human right. (23)

Epidemiology of cancer pain
The number of patients diagnosed with cancer worldwide is steadily increasing with more than half of them located in developing countries.(6) A big proportion of these patients have incurable disease, with a significant number presenting with advanced disease at the time of diagnosis. According to the Nairobi Cancer Registry, a large proportion of the cancer patients are diagnosed at an advanced stage where treatment is difficult, if not impossible.(24) The most appropriate management for these patients is pain control and palliative care.(6)

Of the nine million new cases of cancer worldwide, 50% are found in developing countries with most cases deemed incurable at the time of diagnosis.(6) Global estimates, as of 2002, show about 24.6 million people to be living with cancer.(25)

About two thirds of cancer patients experience pain.(6,7) In a systemic review, the prevalence of cancer pain was found to be 33% after curative treatment, 59% in those undergoing treatment, 64% in advanced, metastatic or terminal disease and 53% in all disease stages.(8) Other studies have found the prevalence of pain to range from 35-90%. (1,4,5,17)

Treatment of cancer pain is suboptimal such that majority of the patients are undertreated for their pain with various studies showing a prevalence of 25- 85%. (2,26,27) In a study assessing adequacy of analgesia in cancer patients, of the 67% of patients in pain, only half of them were receiving treatment specifically for their pain, with 25% of them not on any analgesics. Of the patients in pain and not on any analgesics, 85% reported lack of initiation of analgesia by the healthcare provider, 80% were afraid of dependence or tolerance and 76% were not able to afford the medication.(28) A literature review assessing under treatment of pain in cancer patients concluded that at least half the patients diagnosed with cancer have their pain undertreated.(29)

The effects of pain in cancer patients are far reaching to both the individual and the society. Pain is shown to impact quality of life and functional status of the patient, (5,23,30) and is also associated with depression, anxiety, poor sleep habits, suicidal ideations, reduced participation in social activities and a poor quality of life.(28,31–33) Di Maio et al (3) found that up to 50% of patients reported a change in their daily activities due to their pain. Pain is also associated with an increased need for extensive medical treatment in order to accomplish daily functions(31,34) and can lead to
delays and even discontinuation of treatment.(35) One study showed that 32% of patients would rather die than experience the kind of pain they were in.(36) Liebeskind et al, in their study showed that pain reduces the body’s immune response and potentially indirectly promoted tumour growth.(37)

**Types of cancer pain**

There are different types of pain present in the various stages of cancer. Pain is classified either by the pathophysiological mechanism that cause it, the duration of pain or the syndromes associated with it.(38) The three mechanisms attributed to the pathophysiology of pain include: nociceptive, neuropathic and psychogenic.

Nociceptive pain is either somatic or visceral and is due to direct tissue injury (chemical, mechanical or thermal) resulting in stimulation of pain receptors. The transmission of signals to the CNS causes the perception of pain.(39)

Neuropathic pain is as a result of damage to the peripheral or the central nervous system. This can be due to chemotherapy (e.g. vinca alkaloids), nerve root infiltration by the tumour, mass effect of the tumour leading to compression of the nerve roots or treatment complications (e.g. radiation plexopathy).(39)

Emotional distress is noted to have a contributing factor in the patient’s perception of pain. It can be picked up when the complaint of pain appears disproportionate to the underlying pain stimulus. (39) A study done by Koffman et al concluded that pain is interpreted differently depending on the cultural background that one is from. Some considered it a “test of faith”, while others saw it as a punishment for some prior indiscretion. Others still saw it as a “challenge” that needed to be overcome.(40)

Pain can either be acute or chronic. Acute pain is due to direct tissue injury and characteristically starts suddenly and diminishes with time as healing progresses.(39) It resolves within 3-6 months.(41) Chronic pain is pain that persists 1 month after resolution of the initial tissue injury, is persistent or recurrent over months or is caused by lesions that are unlikely to heal.(41)

Breakthrough pain is a flare of pain in a background of chronic pain that is well controlled with opioids analgesics.(42) Baseline pain is referred to as “pain that is almost always present and may be described as continuous, steady or constant.” (43) Incidental pain is a type of breakthrough pain that is related to certain activities, either voluntary or non-volitional(39,43). End-of-dose pain is another type of breakthrough pain that occurs before the next scheduled dose of pain medication when using a “by-the-clock” schedule(43). Spontaneous breakthrough pain occurs without any clear causative factor(43).

In a prospective study done by Portenoy et al, 64% of patients had breakthrough pain. Half of the patients had precipitated pain with 70% of that number having incidental pain(42). Other studies give the prevalence of breakthrough pain to be between 40% and over 80%. (44)
Breakthrough pain signifies a more severe pain syndrome and causes functional impairment and psychological distress.(45)

Causes of pain in cancer are also varied. They include: (46)

a. Mass effect of the tumour causing nerve compression causing neuropathic pain
b. Tissue inflammation and damage causing nociceptive pain
c. Obstruction of blood vessels, lymphatic vessels or parts of the gastrointestinal tract
d. Direct tumour involvement including metastases
   85% of patients with bone metastases are noted to be in pain. This cancer induced bone pain (CIBP) has both spontaneous and movement induced components making it difficult to treat with opioids and other standard analgesics without unacceptable adverse effects. Management is usually by palliative radiotherapy(47).
e. Therapy e.g. radiotherapy, chemotherapy, surgical management
   Chemotherapy and radiation therapy used in the management of cancer may lead to toxic neuropathic pain. Several chemotherapy drugs are known to cause neuropathy including the platinum agents (oxaliplatin, carboplatin, cisplatin), the taxanes (paclitaxel, docetaxel), the vinca alkaloids, thalidomide, lenolamide, bortezomib and epothilone. The pathophysiology of drug induced peripheral neuropathy, though not fully understood, is linked to axonopathy and neuronopathy(35).
   There is also a phenomenon seen in chronic opioids use called opioids induced hyperalgesia where use of opioids produces a paradoxical pain sensation(48).
   Infusion related pain syndromes occur during administration of intravenous chemotherapy agents where venous spasms and chemical phlebitis occur(39).

**Barriers to pain management**
Causes of poor pain control are multi-factorial and can be broadly classified into patient related, physician related and system related.

**System related barriers**

There is lack of national policies and low priority given to pain management. This is extrapolated from the sparse number of palliative care centres and minimal palliative care services afforded especially in resource limited countries.(49)

Consequently, national standards and guidelines for the provision of analgesic medication are also lacking.

There are legal restrictions on the use of opioid analgesics. Regulations that restrict the use of opioid medications limit the issuance of such medications to patients who may benefit from them(50). Such regulations may cause physicians to opt for lower doses, fewer refills or a different drug altogether which may not be as effective as the intended opioid.(50,51)

Minimal inclusion of pain treatment in the curriculum of medical schools also hinders proper pain management.(50,52) A recommendation by the WHO was for countries to include palliative care training in their medical education system. (6)
Availability of opioids medication is still very limited in resource-limited countries. (49,53) While developing countries account for 80% of the world’s population, they use less than 10% of the global morphine consumption. (51,54)

Overworked healthcare workers in poorly staffed healthcare facilities pose a barrier to pain relief for patients because there is an inability to assess patient pain and therefore pain medication is not adequately dispensed. (53)

Failure to use validated pain measurement tools by healthcare workers results in poor pain assessment and subsequently, inappropriate management.

Patient related barriers

Under reporting of pain is found to be one of the main patient related barriers to adequate pain management and has been attributed to being one of the main causes of poor pain management among cancer patients. (55). This is partly due to the various perceptions of pain that are influenced by both cultural and religious backgrounds (40) in which some patients view pain as something they should tolerate and therefore do not report it to their medical practitioners. (56)

Adverse effects of medications also limits patient compliance. (57) Intolerable adverse effects will in the long term cause patients to shy away from certain medications. An example is opioid toxicity which causes, among many symptoms, poor concentration, vivid dreams and neuropsychiatric symptoms like confusion, hallucination and hypoactive delirium. (47) (58)

Fear of dependence to opioid medications results in poor compliance to treatment with the misguided notion that if the patient started taking medication early for their pain, they would somehow become “resistant” to the analgesic effects later on. (50,59)

Physician related barriers

Poor pain assessment is one of the highest rating reasons as to why physicians do not afford adequate analgesia to cancer patients in pain. (55) (60) A study done by the ECOG group showed that up to 76% of physicians found this to be a barrier to adequate pain control. (55) Another study showed that patient’s thought that their doctors were more interested in treating the cancer than in treating the pain, reflected in the lack of pain assessment during consultation sessions. (36) Also, patients who look less ill are noted to receive less adequate analgesia as are patients whose pain is attributed to non-cancer causes. (61)

Physicians are reluctant to prescribe opioids analgesics to their patients for various reasons. The use of strong analgesics, especially opioids analgesics is avoided by some healthcare providers due to the fear of side effects, addiction and tolerance. (50) (53) (55) A conservative approach to pain management, to the extent of not giving strong opioids like morphine in the face of severe pain, is a major barrier in adequate pain control. (61) Physician apprehension about opioids being a controlled substance also limits their frequency of prescription of these medications. (50)

Physician attitudes towards pain also play an important role in adequacy of pain management. A review of literature showed that patients with a better performance status and disease at its early
stage were more likely to get inadequate analgesia because they were judged to have less pain. (27,32,55)

Lack of knowledge on effective cancer pain management is also a prominent barrier in adequate pain relief (60) with resultant inadequate management of the side effects from opioid treatment (62) which leads to non-compliance in patients.

Poor communication between the physician and the patient is partly to blame for inadequate pain relief (3). Without sufficient follow up, the efficacy of the analgesic treatment of patients cannot be assessed and therefore required changes cannot be made to the treatment regimen.

**Pain assessment**

The use of validated pain assessment tools is the first step towards proper patient care in terms of pain management (63,64). The most frequently used tools include:

- **Unidimensional tools** that assess a single dimension of pain, i.e. pain intensity.
  1. Visual analogue scale (VAS)
  2. Verbal rating scale (VRS)
  3. Numeric rating scale (NRS)
  4. Faces Pain scale (FPS)

- **Multidimensional pain assessment tools** that assess the characteristics of pain and its effects on patient’s daily life (interference).
  1. Initial Pain Assessment Tool
  2. The McGill pain questionnaire
  3. Brief pain inventory

**Neuropathic pain scale:**
  1. Neuropathic Pain Scale
  2. Pain DETECT Questionnaire
  3. DN4 (Douleur Neuropathique 4)
  4. LANSS (Leeds Assessment of Neuropathic Symptoms and Signs)

Patient progress with regards to adequate analgesia should be assessed using VAS, VRS or NRS. In severe cognitive deficits (old age or terminal illness), assessment for the presence of pain, but not its intensity, can be done using alternative methods (65–68).

The Brief Pain Inventory is an objective measurement tool for assessing clinical pain. It was initially developed to assess pain relating to cancer, but can now be used for assessing pain related to other clinical conditions. Developed by Cleeland et al in 1999, it is a tool that assesses sensory dimension of pain (intensity or severity) and the interference of daily functions brought about by the pain (reactive dimension). It has both a long version and a short version, with the short version
preferred for research purposes. It has four items to assess pain at its “worst”, ‘least”, “average” and “now” (current), all these rated on a scale of 1 to 10. It also inquires about the current pain medications used by the patient. The questionnaire has a high test-retest reliability confirmed by multiple studies. Good internal consistency was shown with an alpha value of 0.80 to 0.87 for the four pain severity items and 0.89 to 0.92 for the seven interference items. The tool has been validated multiple times for use in the assessment of pain. (70–73)

The Pain Management Index (PMI) is a tool used to assess the adequacy of pain control on chronic pain using both the patient's level of pain and the current analgesia used in the management of this pain. It measures a healthcare provider’s response to a patient’s pain. It is calculated by subtracting the pain level reported by the patient from the type of analgesic treatment being given and ranges from -3 to +3. Using this scale, under treatment of pain still appears to be prevalent despite numerous pain management guidelines. Mitera et al in a retrospective study found that up to 25.8% of patients had a negative PMI at initial assessment. A review of published literature done by Deandra et al showed a negative PMI in 43% of cancer patients. (27)

### Treatment of cancer pain

Treatment of cancer pain is required in all stages of the disease and should be aimed at adequate pain control to achieve a good functional status and quality of life. (6) It is recommended that cancer patients should have their pain managed during the primary evaluation aimed at getting a diagnosis and should have adequate pain relief that incorporates treatment of the malignancy, systemic pain analgesics and other adjuvant pain control measures. (64)

Evidence based practice recommend that patients be informed of the treatment plan towards pain management and be encourage to play an active role in their own pain management. (64) There is also a move towards a “by the clock” administration of pain medication with due regard to the pharmacodynamics and pharmacokinetics of the drug of choice, as opposed to an “as required” schedule. (64)

The oral route of administration is most preferred for its simplicity and ease of administration which promotes compliance. If oral route of medication is not feasible e.g. due to severe vomiting, bowel obstruction, altered mental status, dysphagia an alternative route of administration of analgesia should be sought. This should also be done if there is inadequate pain control with oral analgesics. (6,64)

The WHO published guidelines on the management of pain in cancer patients that was based on a 3 step analgesic ladder in 1986. This was in an attempt to give legitimacy to the use of opioids for cancer pain management on the basis of poor pain management due to the reluctance of healthcare professionals, institutions and policies to prescribe opioids for fear of dependence and illegal abuse. The use of the pain ladder is reported to be able to achieve up to 90% pain relief. According to the ladder, treatment is individualized and is dependent on the level of pain of the patient. (76)

The ladder has been shown to be useful in pain management especially for primary care physicians who have initial contact with patients in pain. (77,78) It has come under criticism with the advent of
new methods to achieve pain control but is still found to be effective and useful in achieving pain control. (79) The IASP found the use of the WHO ladder in managing pain in developing countries to be both safe and effective. (80) A study done to assess the effectiveness of the WHO analgesic ladder in treating pain in patients with end-stage renal disease found that more than 90% of the patients reported adequate pain relief. (81) The challenge is its implementation within health systems especially as a guideline matched by supplies in hospitals that take care of cancer patients.

**Figure 1: WHO analgesic ladder**

![WHO analgesic ladder diagram](image)

A new adaptation of the ladder was released incorporating more pain management procedures.
Adjuvant treatments for management of cancer-associated pain include:(64)

a. Radiotherapy.

Has been noted to be effective in cases of bone metastases, mass effect of the tumour causing nerve compression and in cerebral metastases. One study showed pain relief in 27% of the patients by the end of 1 month.(82) Another showed that half the patients given palliative radiotherapy for metastatic bone disease had adequate pain control within 4-6 weeks of treatment.(47)

b. Bisphophonates.

Help in management of bone pain due to bone metastases. (83,84)

c. Management of neuropathic pain

i. Antidepressants: Tricyclic (85,86) or Serotonin- Norepinephrine Re-uptake Inhibitors (SNRIs)

ii. Anticonvulsants(87,88)

iii. Steroids to ease nerve compression

iv. Parenteral (iv) lidocaine and mexiletine(89)

v. Alpha 2 agonists

vi. Nerve blocks

vii. Neurolytic block therapy

**Studies on knowledge, attitudes and practice**

Despite the availability of guidelines, most studies show a high percentage of cancer patients still experience pain in the course of their disease. Ndegwa, in his study, found that 65% of cancer patients had sub optimal pain management with about 47% of cancer patients in pain not on opioid medication and 13% not on any analgesics.(5)
Multiple studies have been done to assess healthcare provider-related barriers to adequate pain control. Breuer et al showed that poor pain control in cancer patients was partly attributable to limitations in knowledge and practices related to pain management in population with cancer. (90) A Korean study among young doctors found a significant knowledge deficit in a large proportion of physicians with regards to opioids use in cancer patients. (91) Inadequate training in healthcare workers was a major setback to the provision of adequate palliative care and pain management. Contributory to this was the inadequate understanding on how to provide palliative care and misconceptions on opioids analgesics. (92, 93) Some of the misconceptions include: pain is requisite to making a diagnosis, opioids use will lead to addiction, pain cannot be avoided. (91–93)

The ECOG group showed that 86% of physicians thought that most cancer patients with pain did not receive proper medication. Only half of the physicians interviewed believed that they provided adequate analgesia. About one third would only start maximal analgesia when the patient had terminal illness with a survival of less than six months. (55)

In the EPIC survey, which included 11 European countries and Israel, of the patients with moderate to severe pain, only 41% were on strong opioids. Among those on pain medication, 63% experienced breakthrough pain and 69% had some degree of limited functional ability, indicative of suboptimal pain management in cancer patients. In this survey, a quarter of the patients were not assessed for pain by their healthcare provider, with only half being assessed with every encounter. Only 15% had their pain assessed objectively. The result of this was that half the patients thought the healthcare provider was disinterested in their quality of life with 12% holding the belief that their pain was not being considered a problem. Of the patients assessed, 11% of those in moderate to severe pain got no medication for their pain. Among those receiving medication, 63% received inadequate analgesia with a large percentage having frequent episodes of pain during the day. (36)

The WHO takes into account the amount of morphine used in a country or region as an indicator of pain management. (6) A report by the International Narcotics Control Board has shown that Africa has the lowest consumption of opioids despite the increasing need for it. (51) In a paper published by the human rights watch regarding palliative care, it was found that there was an enormous unmet need for pain treatment. (92) This is important especially in developing countries where patients with cancer seek treatment at the advanced stages where cure is improbable but patients still suffer severe pain.

Numerous tools have been used in studies that assess the knowledge, attitude and practices of healthcare providers regarding pain management. One of the tools used is the Knowledge and Attitudes Survey regarding Pain (KASP) questionnaire. (94) It is a tool that was developed in 1987 and has been revised extensively from then to reflect the current practices in pain management. The questionnaire was first developed by McCafferrey and Ferrell at the University of Wisconsin and consists of 39 items (Appendix 1). The tool has been used in multiple studies (95–98) and its content is obtained from current standards of pain management including the World Health Organization, the American Pain Society and the National Comprehensive Cancer Network Pain Guidelines. Validity was established by a review of pain experts. Construct validity was
established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established (r>.80) by repeat testing in a continuing education class of staff nurses (N=60). Internal consistency reliability was established (alpha r>.70) with items reflecting both knowledge and attitude domains.(94) The developers of the questionnaire found that it was most helpful to avoid distinguishing items in the questionnaire as either measuring knowledge or attitude, as some of the questions measure both knowledge and attitude. A literature review on assessing knowledge, perceptions and attitudes to pain management among medical and nursing students found the KASP tool to be the main instrument in 9 of the 26 articles included.(99)
Table 1: A summary of studies looking at Knowledge, Attitude and Practice of Physicians in cancer pain management.

<table>
<thead>
<tr>
<th>Study design</th>
<th>Study design</th>
<th>Tools</th>
<th>n</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes and knowledge of physicians about cancer pain management: young doctors of south Korea in their early careers (Korea)</td>
<td>Cross-sectional, descriptive</td>
<td>Researcher formulated questionnaire</td>
<td>1204</td>
<td>1. Inadequate knowledge about cancer pain management 2. More positive attitude among internal medicine and family medicine doctors.</td>
</tr>
<tr>
<td>Evaluating resident physicians’ knowledge, attitude and practice regarding pain control in cancer patients (Iran)</td>
<td>Cross-sectional, descriptive</td>
<td>Researcher formulated Questionnaire</td>
<td>69</td>
<td>1. Physicians’ attitude towards limitations of opioid administration has directly prevented effective pain control. 2. Adequate knowledge of pharmacology among residents attributed to proper education in this field.</td>
</tr>
<tr>
<td>Physicians’ knowledge and attitudes towards the use of analgesics for cancer pain management: a survey of two medical centres in Taiwan. (Taiwan)</td>
<td>Cross-sectional, descriptive</td>
<td>Researcher formulated questionnaire</td>
<td>356</td>
<td>80% of physicians underestimated the pain relief effects of analgesics 86% of physicians concerned about tolerance resulting in reluctance to prescribe opioids 72% of physicians overestimated the likelihood of addiction. Knowledge deficits and poor attitude attributed to insufficient medication and limited clinical practices.</td>
</tr>
</tbody>
</table>
Rationale and Justification
The number of patients with cancer is on the increase in developing nations in general and specifically in our country. These patients present with many challenges in management, top on the list being adequate pain relief. Due to advanced disease and late presentation, cure is often difficult, if not impossible, and palliative care is central in their care.

Prevalence of pain in cancer patients remains high even among patients with frequent contact with healthcare providers,

By tackling provider-related barriers to adequate pain management, we may influence system-related and patient-related barriers by better educating our patients and being in a position to positively influence policy.

Few studies have been done in Africa assessing the knowledge, attitudes and practices of physicians with regards to cancer pain management. Those done have shown a gross deficit in knowledge and attitude, and poor practice concerning cancer pain management. No such study has been carried out in this country.

KNH being a focal point in the education of doctors in this country, and in the region, this study seeks to determine the knowledge capacity of these doctors and how this influences their attitudes towards pain management and subsequently their practices. It also aims to assess the prevalence of under treatment of pain in patients attending the various clinics.

The information obtained will be used as a baseline to assess the knowledge, attitude and practice of doctors managing cancer patients in our institution. It will also evaluate whether our current practice translates into adequate pain relief for cancer patients. The results of this study are intended to influence our management of pain in cancer patients, our future approach to education on palliative care and also be useful in the implementation of protocols and guidelines that will enable us to ensure a holistic approach to cancer management with a focus on adequate pain control.
Research Question
What is the knowledge, attitudes and practices on analgesic use among Senior House Officers and Medical Officers attending cancer patients and the adequacy of pain management among cancer patients in Kenyatta National Hospital?

Objectives

Broad objective

To determine the knowledge, attitudes and practice of analgesic use among doctors and adequacy of pain management among cancer patients in Kenyatta National Hospital.

Specific objectives

1. To determine the level of adequacy of knowledge of analgesics among doctors attending to cancer patients in Kenyatta National Hospital using the Knowledge and Attitudes Survey on Pain Questionnaire.
2. To determine attitude towards analgesic use among doctors in Kenyatta National Hospital using the Knowledge and Attitude Survey on Pain Questionnaire.
3. To determine if the current practices on use of analgesics among doctors is in keeping with the WHO protocol using a formulated questionnaire.
4. To assess adequacy of pain management in cancer patients with pain using the Pain Management Index.
Methodology

Study design
This was a descriptive, hospital based, cross sectional study.

Study site
The study was carried out at various clinics in KNH, a tertiary level and teaching hospital for the University of Nairobi. It is also the largest referral hospital in Kenya. These clinics include: the haemato-oncology clinic, the radio-oncology clinic, the surgical out-patient clinic, the ENT out-patient clinic and the gynaecology out-patient clinic. Except for the haemato-oncology clinic, all the other clinics run daily from Monday to Friday from 8 am to 5 pm. The haemato-oncology clinic runs on Mondays from 8am to 5 pm. The patients are attended to by trained nurses, medical officers, senior house residents and consultants. A varied number of patients are seen in these clinics daily. The study was carried out among Senior House Officers and Medical Officers who encounter cancer patients and among cancer patients in the various clinics.

Study period
The study was carried out between October 2016 and March 2017.

Study population
The population targeted for the knowledge attitude and practice assessment was doctors in the medical, gynaecology, and surgical disciplines.

Inclusion criteria

   a) Senior House Officers in the University of Nairobi MMed programme in Internal Medicine, General Surgery, ENT surgery, Obstetrics and Gynaecology
   b) Medical officers working in the radio-oncology clinics
   c) Willing+ to provide written consent

Exclusion criteria

   a) Doctors on leave or in external rotations.

The target population for the assessment of adequate pain management among cancer patients was the patients attending the haemato-oncology clinic, the radio-oncology clinic, the gynaecology clinic, the ENT clinic and the surgical out-patient clinic.

Inclusion criteria

   a) Histological diagnosis of cancer.
   b) Have been informed of their diagnosis of cancer.
   c) Above the age of 18 years.
   d) Willing to provide written consent
   e) Experiencing pain or on pain medication.
Exclusion criteria

a) Unable to understand the questionnaire (severe cognitive or mental disorder).

b) Attending the clinic on their first visit as a referral from another facility.

c) Language/ communication barrier with no interpreter.

Sample size calculation

Patients

Sample size calculation was done based on the cross-sectional design of the study. Hence, the following formula was used:

\[ n = \frac{Z^2 \times P \times (1-P)}{d^2} \]

- \( n \) – Sample size
- \( Z \) – 1.96 (95% confidence interval)
- \( P \) = Estimated proportion of patients with inadequate pain control = 65.3% (Ndegwa et al.)
- \( d \) – Margin of error (precision error) = ±5%

On substituting into the formula,

\[ n = 348 \]

A minimum of 348 patients were needed to estimate the adequacy of pain management within 5% precision error.

A total 350 patients were recruited into the study through consecutive sampling over a period of twenty weeks from October 2016 to March 2017.

Doctors

The sample size for doctors was population based and all the doctors in Internal Medicine, Oncology, General Surgery, ENT surgery and Obstetrics and Gynaecology were eligible to participate.

Sample size calculation was estimated based on the number of 220 doctors who encounter cancer patients in KNH. A representative sample was drawn from the small population obtained using the formula for finite population (less than 10,000). The calculation was as follows:
\[ n' = \frac{NZ^2P(1-P)}{d^2(N-1) + Z^2P(1-P)} \]

Where
\( n' \) = sample size with finite population correction,
\( N \) = size of the target population = 220
\( Z \) = \( Z \) statistic for 95% level of confidence = 1.96
\( P \) = Estimated proportion of doctors with adequate knowledge on pain management in cancer patients = 50% (no available data reporting level of knowledge)
\( d \) = margin of error = 5%

On substituting into the formula, 
\( n=140 \)

A minimum of 140 doctors was needed to estimate the level of knowledge within 5% precision error.

144 doctors participated in the study. (54 from Internal medicine, 28 from General surgery, 18 from ENT surgery, 34 from Obstetrics and gynaecology and 10 Medical officers in Radio-oncology clinic)

**Sampling method**
Doctors were picked using convenience sampling.

The patient population was picked using consecutive sampling.

**Study procedure**

**Patients**
Patients were recruited from the various clinics. Patients eligible to participate in the study were shortlisted by looking through the patient files to pick out those who were on analgesic medication. Identified patients had the study explained to them by the principal investigator or the research assistant before consent was obtained. Once consent was given, the interview was conducted by either the principle investigator or the research assistant. A questionnaire was used to collect information on the patient’s demographics including details on cancer diagnosis, year of diagnosis, age, sex, metastases, cancer treatment modalities, non-pharmacological pain treatment modalities and number of clinic visits.

Data on pain was collected using the Brief Pain Inventory, which was an interviewer-administered questionnaire. The information was entered into the questionnaire immediately.

**The Pain Management Index**
The Pain Management Index was used to assess the adequacy of pain control in cancer patients. It is calculated by subtracting the patient’s worst report of pain from the most potent analgesic given.
Patient’s self-report of pain is taken using the Brief Pain Inventory and grouped into 3 based on its severity, i.e. 0= no pain, 1= mild pain (rating 1-3), 2= moderate pain (rating 4-7), 3=severe pain (rating 8-10). The most potent analgesics prescribed were classified as: 0= no analgesics, 1= non-opioid analgesics, 2= weak opioid analgesics, 3= strong opioid analgesics.

The PMI’s calculated range is between -3 to +3 with the negative values representing under treatment and scores above zero taken to be indicators of acceptable treatment.

Doctors

Demographics of the doctors was captured in a questionnaire which included sex, age, year of graduation, years of experience, appointment, area of study, year of study and prior training in palliative care.

Sensitization on the nature of the study was done during forums where doctors would get together e.g. grand round. It was also done via email, phone calls and group messages. Doctors’ contacts were obtained from the various Chief Registrars in the different disciplines.

Data on knowledge, attitude and practice was collected using a self-administered questionnaire given to doctors in the various disciplines. Attached to and preceding the questionnaire was a consent form for the study. The questionnaires were handed to the doctors personally. The participants were requested to return the filled questionnaires to the principle investigator. The questionnaires were also sent via email for some doctors.

Data management and analysis

All data was stored in a secure cabinet accessible only to the principal investigator and the statistician.

The data was cleaned, verified and entered into a Microsoft Access 2013 database.

Analysis was carried out using the Statistical Package for Social Scientists, SPSS, version 21.0

The results were presented in summary form with no individuals being identified.

For each correct answer in the KASP questionnaire a score of 1 was given and for each incorrect answer a score of 0 was given. The scores were tabulated and presented as a percentage.

Data was analysed in terms of percentage of complete scores and analysis of individual items. Items with the least number of correct responses and those with the most scores were isolated and discussed individually.

The original survey tool did not have a predetermined acceptable pass mark but later studies set a pass score of 80% such that a score lower than this showed a compromised ability to care for a patient experiencing pain(100–102).
Data concerning demographics of the participants was presented as percentages and using means and standard deviations.

The Pain Management Index was obtained from the patients’ Brief Pain Inventory questionnaire assessing adequacy of pain control. Results were presented as percentages depending on the adequacy (i.e.: values between -3 and -1 are interpreted as poor pain control and those from 0 and above are interpreted as acceptable pain control).

Continuous data was described using means, modes, medians and standard deviations.

Categorical data was described using proportions.

Chi square test was used for group comparison to determine differences between the various specialties included in the study with regards to the level of knowledge between the groups. T-test and one-way ANOVA were used to determine the relationship between the scores obtained on the KASP questionnaire and the demographic characteristics.

**Ethical Considerations**
Approval was from the Department of Clinical Medicine and Therapeutics and from the KNH/UoN Ethics department prior to commencing the study.

Formal consent was obtained from the KNH administration before initiating the study.

A pre-consent counselling was given to the study participants after which consent was obtained.
## Results

### Introduction
The purpose of this study was to determine the knowledge, attitude and practice of pain management among resident doctors and medical officers in the Teaching and Referral hospital of KNH. The study was carried out in the radio-oncology, haematology-oncology, gynaecology, general surgical and ENT clinics between the months of October 2016 and March 2017. The doctors surveyed were Senior House Officers and Medical Officers using the validated Knowledge and Attitude Survey Regarding Pain.

Adequacy of pain management was assessed in patients attending the various clinics using the Brief Pain Inventory tool.

### Study flow

**Doctors**

- 220 doctors available
- 220 questionnaires distributed
- 144 doctors’ questionnaires analysed
- 76 questionnaires not returned

**Patients**

- 360 eligible patients
- 6 declined consent
- 354 patients recruited
- 4 incompletely filled questionnaires
- 350 patients’ questionnaires analysed recruited

### Response rate
A total of 220 questionnaires were distributed to the doctors across the various departments over a period of 2 months of which 144 questionnaires were returned, giving a response rate of 65.5%.
A total 346 patients were recruited from the various clinics during their clinic visits. Recruitment was by consecutive sampling. 3 patients declined consent and 2 were too sick to fill the questionnaires.

**Socio-demographic characteristics of the samples.**

**Doctors**

Demographic data in this survey included age, sex, years of work experience post medical school, level and specialty of post graduate training and previous training on pain management.

The majority of respondents were male (56.9%) most of whom were between 24-34 years of age (84%). The greater proportion of doctors were senior house officers (n=134, 93.1%) whereas medical officers in the radio-oncology department made up only 6.9% of the respondents. Internal medicine post graduate program had the highest percentage of respondents (37.5%) followed by Obstetrics and gynaecology (34%), General Surgery (28%) and ENT surgery (18%).

Of the 144 doctors, 17 (11.8%) had more than ten years’ experience, 105 (72.9%) had 5-9 years of experience and 22 (15.3%) had less than five years’ experience of work post undergraduate medical school training.

Only 38 (26.4%) of the 144 doctors recruited in the study had previous training in palliative care but the vast majority of 106 doctors (73.6%) never had any prior training.

The overall demographic characteristics are summarised in Table 2.
Table 2: Demographic characteristics of doctors participating in the study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>82 (56.9)</td>
</tr>
<tr>
<td>Female</td>
<td>62 (43.1)</td>
</tr>
<tr>
<td><strong>Age group (years)</strong></td>
<td></td>
</tr>
<tr>
<td>24-34</td>
<td>121 (84.0)</td>
</tr>
<tr>
<td>35-44</td>
<td>23 (16.0)</td>
</tr>
<tr>
<td><strong>Appointment</strong></td>
<td></td>
</tr>
<tr>
<td>Medical officer (not in training)</td>
<td>10 (6.9)</td>
</tr>
<tr>
<td>Senior housing officer (in training)</td>
<td>134 (93.1)</td>
</tr>
<tr>
<td><strong>Area of post graduate study</strong></td>
<td></td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>54 (37.5)</td>
</tr>
<tr>
<td>General surgery</td>
<td>28 (19.4)</td>
</tr>
<tr>
<td>ENT surgery</td>
<td>18 (12.5)</td>
</tr>
<tr>
<td>Obstetrics and gynaecology</td>
<td>34 (23.6)</td>
</tr>
<tr>
<td>None (Medical Officers)</td>
<td>10 (6.9)</td>
</tr>
<tr>
<td><strong>Years of experience as a doctor in practice</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>22 (15.3)</td>
</tr>
<tr>
<td>5-9</td>
<td>105 (72.9)</td>
</tr>
<tr>
<td>10-14</td>
<td>15 (10.4)</td>
</tr>
<tr>
<td>15-19</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>&gt;20</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td><strong>Ever had training on palliative care</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>38 (26.4)</td>
</tr>
<tr>
<td>No</td>
<td>106 (73.6)</td>
</tr>
</tbody>
</table>

Patients
350 cancer patients were recruited from the various clinics to determine the adequacy of pain management. Patients included were those in pain or on pain medication and they were recruited on a clinic day after having been reviewed by the doctor (i.e. either initial or follow up visit to the clinic)

Socio-demographic characteristics are outlined in Table 3 below:
Mean age of the patients was found to be 51.8 years.

7.4% of the recruited patients did not have any formal education. The highest level of formal education for majority of the patients was primary school at 49.1%. 32.6% had reached secondary school level. Only 8% had completed tertiary education.

Table 4 shows the clinical characteristics of the patients
Table 4: Distribution of patients in the clinic

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinic</strong></td>
<td></td>
</tr>
<tr>
<td>General Surgery</td>
<td>13 (3.7)</td>
</tr>
<tr>
<td>ENT</td>
<td>29 (8.3)</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>64 (18.3)</td>
</tr>
<tr>
<td>Haemato-oncology</td>
<td>44 (12.6)</td>
</tr>
<tr>
<td>Radio-oncology</td>
<td>200 (57.1)</td>
</tr>
<tr>
<td><strong>Metastatic disease</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>145 (41.4)</td>
</tr>
<tr>
<td>No</td>
<td>205 (58.6)</td>
</tr>
<tr>
<td><strong>Contemporary treatment modalities for Cancer</strong></td>
<td></td>
</tr>
<tr>
<td>Radiotherapy</td>
<td>136 (38.9)</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>205 (58.6)</td>
</tr>
<tr>
<td>Surgery</td>
<td>93 (26.6)</td>
</tr>
<tr>
<td>Adjunct</td>
<td>3 (0.9)</td>
</tr>
<tr>
<td>Antibiotic and haematinic</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td>HAART</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td>Zolendronic acid</td>
<td>1 (0.3)</td>
</tr>
<tr>
<td>Not on treatment</td>
<td>22 (6.3)</td>
</tr>
<tr>
<td><strong>Median number of clinic visits (IQR) in the last 12 months</strong></td>
<td>5.0 (4.0-10.0)</td>
</tr>
<tr>
<td><strong>Duration of illness</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;1 year</td>
<td>201 (57.4)</td>
</tr>
<tr>
<td>&gt;=1 year</td>
<td>149 (42.6)</td>
</tr>
</tbody>
</table>

Majority of the patients (57.1%) were recruited from the radio-oncology clinic. Those from the gynaecology clinic made up 18.3% followed by those from the haemato-oncology clinic who made
up 12.6%. The patients in the ENT clinic constituted 8.3% of the study population while those from the surgical clinic made up the remaining 3.7%.

The median number of clinic visits within the last 12 months was 5

58.6% of the population had no metastases.

Regarding the contemporary treatment modalities, 38.9% of the patients had undergone radiotherapy, 58.6% had undergone chemotherapy while 26.6% had had a surgery in relation to the cancer. 0.9% had received other treatment modalities including antibiotics, haematinics, Zolendronic acid.

42.6% of the population had a more than one-year duration from the time of diagnosis.

Table 5: Pain inventory of the patients enrolled in the study

<table>
<thead>
<tr>
<th>How much pain do you have right now</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pain</td>
<td>97 (27.7)</td>
</tr>
<tr>
<td>Mild pain</td>
<td>179 (51.1)</td>
</tr>
<tr>
<td>Moderate pain</td>
<td>37 (10.6)</td>
</tr>
<tr>
<td>Severe pain</td>
<td>37 (10.6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication for your pain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No analgesics</td>
<td>100 (28.6)</td>
</tr>
<tr>
<td>Non-opioid analgesics</td>
<td>165 (47.1)</td>
</tr>
<tr>
<td>Weak opioid</td>
<td>67 (19.1)</td>
</tr>
<tr>
<td>Strong opioid analgesics</td>
<td>18 (5.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PMI</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Under treatment</td>
<td>247 (70.6)</td>
</tr>
<tr>
<td>Acceptable treatment</td>
<td>103 (29.4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain relief provided by treatment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Median, % (IQR) Category (%) n=312</td>
<td>70 (52.5-80)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>50% relief or more</td>
<td>241 (77.2)</td>
</tr>
<tr>
<td>Less than 50% relief</td>
<td>71 (22.8)</td>
</tr>
</tbody>
</table>
To assess for the adequacy of pain management, the patient’s contemporary level of pain as found in the Brief Pain Inventory tool was compared to the medication prescribed for them at that clinic visit. The data used to calculate the Pain Management Index, which had a score of between -3 and +3. Values above zero denoted adequate pain management. Values between -3 and -1 denoted inadequate pain management.

As seen in table 4, 10.6% of the patients had severe pain but only 5.1% of the prescriptions were for strong opioids indicating a number of patients in severe pain were not on adequate analgesia. Majority (78.8%) of the patients had mild pain or no pain at all.

The Pain Management Index showed that 70.6% of the patients recruited were being undertreated for their pain (i.e. had a score of between -3 and -1).

The median pain relief provided by prior treatment was 70%. 77.2% of the study entrants perceived 50% pain relief or more by the prior treatment prescribed.

**Table 6: Frequency table showing pain treatment given against the level of perceived pain for patients enrolled in the study**

<table>
<thead>
<tr>
<th>Pain level</th>
<th>Pain treatment</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pain</td>
<td>No medication</td>
<td>44 (45.8)</td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>38 (39.6)</td>
</tr>
<tr>
<td></td>
<td>Weak opioids</td>
<td>12 (12.5)</td>
</tr>
<tr>
<td></td>
<td>Strong opioids</td>
<td>2 (2.1)</td>
</tr>
<tr>
<td>Mild pain</td>
<td>No medication</td>
<td>43 (24.0)</td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>96 (53.6)</td>
</tr>
<tr>
<td></td>
<td>Weak opioids</td>
<td>32 (17.9)</td>
</tr>
<tr>
<td></td>
<td>Strong opioids</td>
<td>8 (4.5)</td>
</tr>
<tr>
<td>Moderate pain</td>
<td>No medication</td>
<td>7 (18.9)</td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>17 (45.9)</td>
</tr>
<tr>
<td></td>
<td>Weak opioids</td>
<td>11 (29.7)</td>
</tr>
<tr>
<td></td>
<td>Strong opioids</td>
<td>2 (5.4)</td>
</tr>
<tr>
<td>Severe pain</td>
<td>No medication</td>
<td>5 (13.5)</td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>14 (37.8)</td>
</tr>
<tr>
<td></td>
<td>Weak opioids</td>
<td>12 (32.4)</td>
</tr>
<tr>
<td></td>
<td>Strong opioids</td>
<td>6 (16.2)</td>
</tr>
</tbody>
</table>

Of the patients with severe pain, only 16.2% were on strong opioids while 51.3% were on non-opioids or no pain medication. Majority (45.9%) of the patients with moderate pain were undertreated with non-opioid medication. About half of those with mild pain were appropriately
treated with non-opioid medication. 24% were not on any medication while the rest were on opioids.

There was a majority (45.8%) of patients with no pain and on no medication. However, considering the tool used, we did not take into account the previous prescription of analgesics the patient may have had or the possibility of self-medication(5), all of which could explain this subset of patients.

Table 7 compares the adequacy of pain management in the various clinics and the different analgesics prescribed.

Table 7: Relationship between pain management and the different clinics were study patients were recruited

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adequate (n=102)</th>
<th>Inadequate (n=244)</th>
<th>OR (95% CI)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>4 (30.8)</td>
<td>9 (69.2)</td>
<td>1.3 (0.4-4.2)</td>
<td>0.722</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>12 (41.4)</td>
<td>17 (58.6)</td>
<td>2.0 (0.9-4.4)</td>
<td>0.095</td>
</tr>
<tr>
<td>ENT</td>
<td>16 (25.0)</td>
<td>48 (75.0)</td>
<td>0.9 (0.5-1.8)</td>
<td>0.841</td>
</tr>
<tr>
<td>Haemato oncology</td>
<td>19 (44.2)</td>
<td>24 (55.8)</td>
<td>2.2 (1.1-4.4)</td>
<td>0.021</td>
</tr>
<tr>
<td>Radio oncology</td>
<td>52 (26.3)</td>
<td>146 (73.7)</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

There are persistently higher numbers of patients with inadequate pain control than those with adequate pain control. A logistic regression model shows that patients in the surgical, gynaecology and haemato-oncology clinics were more likely to be adequately controlled for pain than those in the ENT and radio-oncology clinics but the difference was found to be significant only for the haemato-oncology clinic.

It has been found that management in a non-oncology setting was associated with an increased risk of receiving inadequate pain control.(103) This could explain the better pain management in the haemato-oncology clinic. The lower chance of adequate pain control in the radio-oncology clinic needs to be further investigated.

Frequency tables for variables and other description

Level of knowledge and attitude of doctors
The level of knowledge and attitude was assessed using the 38 item KASP questionnaire. The total number of correct answers were tabulated and presented as a percentage score. A cut-off of 80% was set to determine whether there was adequate knowledge. The mean score of all the respondents
was found to be 66.5% (SD=10.8) with a minimum score of 33% and a maximum score of 95%. (Table 8)

Table 8: Scores of knowledge and attitude of pain treatment of doctors enrolled in the study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Knowledge and attitude scores</th>
<th>Category of scores, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>66.5 (10.8)</td>
<td>7 (4.9)</td>
</tr>
<tr>
<td></td>
<td>Median (IQR)</td>
<td>66.7 (60.0-71.8)</td>
</tr>
<tr>
<td></td>
<td>Min-Max</td>
<td>33-95</td>
</tr>
<tr>
<td></td>
<td>Category of scores, n (%)</td>
<td></td>
</tr>
<tr>
<td>&lt;50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;80%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Out of the 144 respondents, 7 (4.9%) had a score of less than 50% denoting insufficient knowledge. The vast majority, 126 (87.5%) ranged between 50-80% denoting satisfactory knowledge, with only 11 (7.6%) respondents obtaining a score of more than 80% denoting adequate knowledge as depicted in table 7. A score below 80% showed a compromised ability to care for a patient experiencing pain(100–102).

When the questions were analysed as dealing with either knowledge or attitude, those dealing with attitude had a better score overall than those dealing with knowledge (Table 9).
Table 9: Separate scores on knowledge and attitude among doctors who participated in the study

<table>
<thead>
<tr>
<th></th>
<th>Knowledge score (%)</th>
<th>Attitude score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD) %</td>
<td>64.0 (11.2)</td>
<td>75.0 (16.5)</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>63.3 (56.7-70.0)</td>
<td>77.8 (66.7-88.9)</td>
</tr>
<tr>
<td>Min-Max</td>
<td>33.3-93.3</td>
<td>33.3-100.0</td>
</tr>
<tr>
<td>&lt;50 %</td>
<td>9 (6.3)</td>
<td>11 (7.6)</td>
</tr>
<tr>
<td>50-80 %</td>
<td>126 (87.5)</td>
<td>86 (59.7)</td>
</tr>
<tr>
<td>&gt;80 %</td>
<td>9 (6.3)</td>
<td>47 (32.6)</td>
</tr>
</tbody>
</table>

In the different groups, though there was no statistically significant difference in the overall score, the highest mean score was seen in medical officers working in the radio-oncology clinic who had a mean score of 73.1% (SD=9.1). Internal medicine residents had a mean score of 67.9%, General surgery 66.8%, ENT surgery 64.7% and Obstetrics and gynaecology 63.3%. (Table 10)

Table 10: Mean overall scores in the different specialties

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>67.9 (12.2)</td>
<td>0.087</td>
</tr>
<tr>
<td>General surgery</td>
<td>66.8 (7.8)</td>
<td></td>
</tr>
<tr>
<td>ENT surgery</td>
<td>64.7 (11.6)</td>
<td></td>
</tr>
<tr>
<td>Obstetrics and gynaecology</td>
<td>63.3 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Medical officers in radio oncology</td>
<td>73.1 (9.1)</td>
<td></td>
</tr>
</tbody>
</table>

Item analysis of knowledge and attitude survey
An analysis was done for each of the 39 different items in the KASP questionnaire and the percentage of correct responses was given for each item. They were distributed into 3 sections: 22 true/false questions, 14 multiple choice questions and 2 case studies.

Section one: true/false questions
In this section, the respondent had to choose whether the statement made was either true or false.
Table 11: Frequency of correct responses to items 1-22

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answer</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Vital signs are always reliable indicators of the intensity of a patient’s pain.</td>
<td>F</td>
<td>84 (58.7)</td>
</tr>
<tr>
<td>2  Because their nervous system is underdeveloped, children under two years of age have decreased pain sensation and limited memory of painful experiences.</td>
<td>F</td>
<td>93 (65.5)</td>
</tr>
<tr>
<td>3  Patients who can be distracted from pain usually do not have severe pain.</td>
<td>F</td>
<td>65 (45.5)</td>
</tr>
<tr>
<td>4  Patients may sleep in spite of severe pain.</td>
<td>T</td>
<td>72 (50.3)</td>
</tr>
<tr>
<td>5  Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.</td>
<td>F</td>
<td>93 (65.0)</td>
</tr>
<tr>
<td>6  Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.</td>
<td>T</td>
<td>84 (58.7)</td>
</tr>
<tr>
<td>7  Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.</td>
<td>T</td>
<td>133 (93.7)</td>
</tr>
<tr>
<td>8  The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.</td>
<td>F</td>
<td>44 (30.8)</td>
</tr>
<tr>
<td>9  Opioids should not be used in patients with a history of substance abuse.</td>
<td>F</td>
<td>91 (63.6)</td>
</tr>
<tr>
<td>10 Elderly patients cannot tolerate opioids for pain relief.</td>
<td>F</td>
<td>136 (95.1)</td>
</tr>
<tr>
<td>11 Patients should be encouraged to endure as much pain as possible before using an opioid.</td>
<td>F</td>
<td>134 (93.7)</td>
</tr>
<tr>
<td>12 Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.</td>
<td>F</td>
<td>133 (93.0)</td>
</tr>
<tr>
<td>13 Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.</td>
<td>T</td>
<td>141 (97.9)</td>
</tr>
<tr>
<td>14 After an initial dose of opioid analgesic, subsequent doses should be adjusted in accordance with the individual patient’s response.</td>
<td>T</td>
<td>141 (97.9)</td>
</tr>
<tr>
<td>15 Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.</td>
<td>F</td>
<td>62 (43.4)</td>
</tr>
<tr>
<td>16 Hydrocodone 5 mg + acetaminophen 300 mg PO is approximately equal to 5-10 mg of morphine PO.</td>
<td>T</td>
<td>51 (36.7)</td>
</tr>
<tr>
<td>17 If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.</td>
<td>F</td>
<td>62 (43.4)</td>
</tr>
<tr>
<td>18 Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.</td>
<td>F</td>
<td>133 (92.4)</td>
</tr>
<tr>
<td>19 Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regiment.</td>
<td>T</td>
<td>79 (55.2)</td>
</tr>
<tr>
<td>20 Narcotic/opioid addiction is defined as a chronic neuro-biologic disease, characterized by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.</td>
<td>T</td>
<td>135 (95.7)</td>
</tr>
<tr>
<td>21 The term ‘equianalgesia’ means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief.</td>
<td>T</td>
<td>128 (90.8)</td>
</tr>
<tr>
<td>22 Sedation assessment is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression.</td>
<td>T</td>
<td>126 (88.1)</td>
</tr>
</tbody>
</table>
Items testing for knowledge on the assessment of pain included questions 1, 14, 17 and 22. Items dealing with assessment of pain were not as well answered as those dealing with assessment of efficacy of treatment and potential adverse effects. 97.9% were aware that reassessment is required once opioids are initiated and 88.1% knew to assess for sedation when giving opioids. Fewer respondents knew that vital signs are not reliable indicators for pain or that analgesia should not be withheld due to lack of a diagnosis.

Items dealing with knowledge of drug pharmacology included questions 5, 7, 8, 16, 18, 19 and 21. Overall, knowledge regarding the pharmacokinetic properties of analgesics and their dosing and indication was poor.

Items dealing with addiction included questions 9 and 20. The definition of addiction and was correctly answered by 95.7% of the respondents. 63.6% knew that a history of substance abuse should not prevent opioid use in patients who are in pain.

Items testing for attitude included questions 3, 4, 10, 11, 12, 13 and 15. Majority would promote the use of subjective pain assessment methods such as using distraction to confirm if there is severe pain and use of placebo to determine the authenticity of pain. 93.7% did not agree with encouraging the patients to endure pain before prescribing opioids. 97.9% would consider a patient’s spiritual beliefs.

Section 2: Multiple choice questions

This section consisted of 15 questions with four possible answers. The respondent was required to choose the best possible answer from the choices given.
Table 12: Distribution of correct responses to MCQ items 23-37 of the KASP questionnaire by the doctors involved in the study

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>23</strong> The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is Intravenous Intramuscular Subcutaneous Oral (correct response)</td>
<td>32 (22.2) 3 (2.1) 9 (6.3) 100 (69.4)</td>
</tr>
<tr>
<td><strong>24</strong> The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is Intravenous (correct response) Intramuscular Oral Rectal</td>
<td>105 (72.9) 36 (25.0) 2 (1.4) 1 (0.7)</td>
</tr>
<tr>
<td><strong>25</strong> Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? Codeine Morphine (correct response) Pethidine Tramadol</td>
<td>37 (25.9) 79 (55.2) 8 (5.6) 19 (13.3)</td>
</tr>
<tr>
<td><strong>26</strong> A 30-mg dose of oral morphine is approximately equivalent to: Morphine 5 mg IV Morphine 10 mg IV (correct response) Morphine 30 mg IV Morphine 60 mg IV</td>
<td>30 (21.3) 72 (51.1) 33 (23.4) 6 (4.3)</td>
</tr>
<tr>
<td><strong>27</strong> Analgesics for post-operative pain should initially be given Around the clock on a fixed schedule (correct response) Only when the patient asks for the medication Only when the nurse determines that the patient has moderate or greater discomfort</td>
<td>134 (93.1) 7 (4.9) 3 (2.1)</td>
</tr>
<tr>
<td><strong>28</strong> A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of a new comorbidity is: &lt;1% (correct response) 1-10% 11-20% 21-40% &gt;41%</td>
<td>36 (26.7) 59 (43.7) 13 (9.6) 15 (11.1) 12 (8.9)</td>
</tr>
<tr>
<td><strong>29</strong> The most likely reason a patient with pain would request increased doses of pain medication is The patient is experiencing increased pain. (correct response) The patient is experiencing increased anxiety or depression. The patient is requesting more staff attention. The patient’s requests are related to addiction.</td>
<td>113 (79.0) 11 (7.7) 3 (2.1) 16 (11.2)</td>
</tr>
<tr>
<td><strong>30</strong> Which of the following is useful for treatment of cancer pain? Ibuprofen</td>
<td>46 (31.9)</td>
</tr>
</tbody>
</table>
Hydromorphone
All the above (*correct response*)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>The most accurate judge of the intensity of the patient’s pain is</td>
<td>93 (64.6)</td>
</tr>
<tr>
<td>The treating physician</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>The patient’s primary nurse</td>
<td>12 (8.3)</td>
</tr>
<tr>
<td>The patient (<em>correct response</em>)</td>
<td>127 (88.2)</td>
</tr>
<tr>
<td>The patient’s spouse or family</td>
<td>4 (2.8)</td>
</tr>
</tbody>
</table>

| Which of the following describes the best approach for cultural         | Answer          |
| considerations in caring for patients in pain:                         | 125 (87.4)      |
| There are no longer cultural influences in the U.S. due to the        | 3 (2.1)         |
| diversity of the population.                                           | 12 (8.4)        |
| Cultural influences can be determined by an individual’s ethnicity    | 5 (3.5)         |
| (e.g., Asians are stoic, Italians are expressive, etc).                | 91 (64.5)       |
| Patients should be individually assessed to determine cultural        | 41 (29.1)       |
| influences. (*correct response*)                                       | 4 (2.8)         |
| Cultural influences can be determined by an individual’s socioeconomic| 53 (37.3)       |
| status (e.g., blue collar workers report more pain than white collar   |                |
| workers).                                                               |                |

| How likely is it that patients who develop pain already have an        | Answer          |
| alcohol and/or drug abuse problem?                                     | 64 (47.4)       |
| <1%                                                                     | 10 (7.4)        |
| 5-15% (*correct response*)                                             | 59 (43.7)       |
| 25-50%                                                                  | 5 (3.5)         |
| 75-100%                                                                 | 2 (1.5)         |

| The time to peak effect for morphine given IV is                       | Answer          |
| 15 min (*correct response*)                                            | 123 (86.6)      |
| 45 min                                                                  | 10 (7.0)        |
| 1 hour                                                                  | 4 (2.8)         |
| 2 hours                                                                 | 5 (3.5)         |

| The time to peak effect for morphine given orally is                   | Answer          |
| 5 min                                                                   | 5 (3.5)         |
| 30 min                                                                  | 91 (64.5)       |
| 1-2 hours (*correct response*)                                          | 41 (29.1)       |
| 3 hours                                                                 | 4 (2.8)         |

| Following abrupt discontinuation of an opioid, physical dependence is  | Answer          |
| manifested by the following:                                           | 62 (43.7)       |
| a. Sweating, yawning, diarrhoea and agitation with patients when the    | 15 (10.6)       |
| opioid is abruptly discontinued. (*correct response*)                   | 12 (8.5)        |
| b. Impaired control over drug use, compulsive use, and craving.         | 53 (37.3)       |
| c. The need for higher doses to achieve the same effect.                |                |
| d. a and b                                                              |                |

| Which statement is true regarding opioid induced respiratory depression:| Answer          |
| More common several nights after surgery due to accumulation of        | 62 (44.0)       |
| opioid. Obstructive sleep apnoea is an important risk factor. (*correct| 44 (31.2)       |
| response*)                                                             |                |
| Occurs more frequently in those already on higher doses of opioids      | 21 (14.9)      |
| before surgery. Can be easily assessed using intermittent pulse        |                |
| oximetry.                                                              |                |
Items testing for knowledge included questions 23, 24, 25, 26, 27, 30, 34 and 35

These addressed the respondent’s knowledge on administration and pharmacokinetic properties of medication. Majority of the respondents knew the drugs used in treatment of cancer pain, correctly chose the appropriate drug for severe pain and knew the appropriate routes of administration for acute and chronic pain. This required knowledge of the WHO pain ladder on available drugs for cancer pain and choice of drugs depending on the level of pain. Only about one third of the respondents knew the time too peak effect of oral morphine but most (86.6%) knew that of intravenous morphine.

Item 26 was assessing knowledge on equianalgesic dosing of medication where the respondent was required to convert 30 mg of oral morphine to its equivalent as intravenous morphine. 51.1% of the respondents got this correct.

Items assessing for knowledge of adverse effects of medication included questions 28, 36 and 37. There is a deficit in knowledge on respiratory depression as an adverse effect of opioid use with majority (73.3%) of respondents overestimating this risk. Less than half of the respondents (43.7%) knew the signs of physical dependence following abrupt discontinuation of opioids medication. 10.6% confused dependence for addiction and 8.5% confused it for tolerance.

Items regarding attitude included questions 29, 31 and 32.

There was generally a good attitude among doctors towards patients in pain. Most of the respondents were agreeable with believing a patient’s report of pain and that a request for more medication was due to increased pain. On cultural considerations in caring for patients in pain, 87.4% agreed that patients require individual assessment to determine cultural influences.

Case studies

Items 38 and 39 were clinical vignettes in which the respondent was given two patients with different presentations both of whom rate their level of pain as 8/10 and is required to make a decision about the patient’s pain and the medication needed. Patient A (item 38) is found smiling, talking and joking with his visitor. Patient B (item 39) is lying quietly in bed and grimaces as he turns in bed. The respondent is to mark the patient’s pain on a scale of 0-10 and determine how much medication the patient gets.
Table 13 shows the distribution of answers selected for question 38 A in which Patient A reports pain of 8 out of 10 and is found smiling, talking and joking with his visitor.
Table 13: Distribution of responses to item 38A for Patient A

<table>
<thead>
<tr>
<th>38A</th>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On the patient’s record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>(no pain)</td>
<td>27 (19.3)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>13 (9.3)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>21 (15.0)</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>16 (11.4)</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>7 (5.0)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>12 (8.6)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>6 (4.3)</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>8</td>
<td><em>(correct response)</em></td>
<td>36 (25.7)</td>
</tr>
<tr>
<td>10</td>
<td>(Worst pain)</td>
<td>1 (0.7)</td>
</tr>
</tbody>
</table>

Only 25.7% of respondents correctly marked the patient’s pain as 8/10 on the numeric pain scale. The bigger majority of 40.7% concluded that the patient was in mild pain (1-4 on the numeric pain scale) while 12.9% rated it as moderate pain (5-6 on the numeric pain scale). 27 of the respondents, constituting 19.3%, thought the patient had no pain at all. A total 26.4% thought the patient had severe pain (8-10 on the numeric pain scale).

Table 14 shows the action the respondents would take with regards to dosage of morphine for the patient.

Table 14: Distribution of responses in item 38B showing the action taken in terms of medication for Patient A

<table>
<thead>
<tr>
<th>38B</th>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administer no morphine at this time.</td>
<td>77 (55.0)</td>
</tr>
<tr>
<td></td>
<td>Administer morphine 1 mg IV now.</td>
<td>38 (27.1)</td>
</tr>
<tr>
<td></td>
<td>Administer morphine 2 mg IV now.</td>
<td>10 (7.1)</td>
</tr>
<tr>
<td></td>
<td>Administer morphine 3 mg IV now. <em>(correct response)</em></td>
<td>15 (10.7)</td>
</tr>
</tbody>
</table>

Only 10.7% of the respondents would have given adequate analgesia to the patient considering his pain score of 8/10. The majority, 55.0%, would not have given the patient any morphine at all despite the stated level of pain. 27.7% would have given him the minimum dose required of 1mg of morphine.
Table 15 shows the distribution of answers selected for question 39A in which Patient B reports pain of 8 out of 10 and is found lying quietly in bed and grimaces as he turns in bed.

**Table 15: Distribution of answers in item 39A for Patient B**

<table>
<thead>
<tr>
<th>39A</th>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On the patient’s record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 (no pain)</td>
<td>2 (1.4)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>7 (5.0)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 (2.9)</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>18 (12.9)</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>13 (9.3)</td>
</tr>
<tr>
<td></td>
<td>8 (correct response)</td>
<td>81 (57.9)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td></td>
<td>10 (worst pain)</td>
<td>5 (3.6)</td>
</tr>
</tbody>
</table>

In this case, a higher number of respondents constituting 57.9% correctly marked the patient’s pain as 8/10 compared to the previous question. 9.9% thought the patient to be in mild pain while 25.1% chose moderate pain. A total 63.3% marked the patient’s pain as severe.

Table 16 shows the action the respondents would take regarding the dosage of morphine for the patient.

**Table 16: Distribution of responses in item 39B showing the action taken in terms of medication for Patient B**

<table>
<thead>
<tr>
<th>39B</th>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administer no morphine at this time.</td>
<td>10 (7.1)</td>
</tr>
<tr>
<td></td>
<td>Administer morphine 1 mg IV now.</td>
<td>39 (27.9)</td>
</tr>
<tr>
<td></td>
<td>Administer morphine 2 mg IV now.</td>
<td>43 (30.7)</td>
</tr>
<tr>
<td></td>
<td>Administer morphine 3 mg IV now. (correct response)</td>
<td>48 (34.3)</td>
</tr>
</tbody>
</table>

34.3% of respondents would have given the patient adequate analgesia. 7.1%, much smaller than those in the previous question, would not have given the patient any morphine at all while 27.9% would have given him the minimum dose of 1mg of morphine.
Further analysis on questions 38 and 39 are summarised in Table 17 and Table 18.

**Table 17: Frequency table showing action taken against the level of pain indicated for Patient A of case study item 38**

<table>
<thead>
<tr>
<th>Q38</th>
<th>Level of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose of medication</td>
<td>None (%)</td>
</tr>
<tr>
<td>No</td>
<td>19 (70.4)</td>
</tr>
<tr>
<td>1 mg</td>
<td>7 (25.9)</td>
</tr>
<tr>
<td>2 mg</td>
<td>1 (3.7)</td>
</tr>
<tr>
<td>3 mg</td>
<td>0</td>
</tr>
</tbody>
</table>

His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.

Of all the respondents who thought the patient to be in severe pain, 32.4% would not have given him any medication while only 29.7% would have given the correct dose of morphine for his assessed level of pain. Despite their poor assessment of the patient’s pain level, 70.4% of the respondents who thought the patient had no pain correctly chose not to give the patient any morphine.

**Table 18: Frequency table showing action taken against the level of pain indicated for Patient B of case study item 39**

<table>
<thead>
<tr>
<th>Q39</th>
<th>Level of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose of medication</td>
<td>None (%)</td>
</tr>
<tr>
<td>No</td>
<td>1 (50.0)</td>
</tr>
<tr>
<td>1 mg</td>
<td>1 (50.0)</td>
</tr>
<tr>
<td>2 mg</td>
<td>0</td>
</tr>
<tr>
<td>3 mg</td>
<td>0</td>
</tr>
</tbody>
</table>

Of all the respondents in this item who thought the patients had severe pain, 46.1% would have correctly given him adequate morphine. This response is better than in the previous item. There were fewer respondents who incorrectly assessed the patient as having no pain.
Items that received the most frequent correct responses

Table 19: Items with the most frequent correct responses

<table>
<thead>
<tr>
<th>Rank</th>
<th>Question number</th>
<th>Question</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>Patients’ spiritual beliefs may lead them to think pain and suffering are necessary.</td>
<td>141 (97.9)</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response.</td>
<td>141 (97.9)</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.</td>
<td>135 (95.7)</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>Elderly patients cannot tolerate opioids for pain relief.</td>
<td>136 (95.1)</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.</td>
<td>133 (93.7)</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>Patients should be encouraged to endure as much pain as possible before using an opioid</td>
<td>134 (93.7)</td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td>Analgesics for post-operative pain should initially be given</td>
<td>134 (93.1)</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity.</td>
<td>133 (93.0)</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.</td>
<td>133 (92.4)</td>
</tr>
<tr>
<td>10</td>
<td>21</td>
<td>The term ‘equianalgesia’ means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief.</td>
<td>128 (90.8)</td>
</tr>
</tbody>
</table>

None of the items in the study had a 100% correct response rate.

There was good response on theoretical knowledge and attitude towards patients. Knowledge on appropriate therapeutics concerning choice and dosing interval of medication was present in majority of the doctors who participated in the study. Definition of opioid addiction and equianalgesia were also known by most of the respondents.

Item 11, 12 and 13 showed good attitude toward patient’s perception of pain. Majority of the respondents knew that the notion that elderly patients cannot tolerate opioids is false and that spiritual beliefs may influence a patient’s perception of pain.
## Items that received the most frequent incorrect responses

### Table 20: Items with the most frequent incorrect responses

<table>
<thead>
<tr>
<th>Rank</th>
<th>Question number</th>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38</td>
<td>On the patient’s record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.</td>
<td>15 (10.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.</td>
<td>36 (25.7)</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
<td>A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new co-morbidity is:</td>
<td>36 (26.7)</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>The time to peak effect for morphine given orally is</td>
<td>41 (29.1)</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.</td>
<td>44 (30.8)</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>Hydrocodone 5 mg + acetaminophen 300 mg (e.g. Betapyn) PO is approximately equal to 5-10 mg of morphine PO.</td>
<td>51 (36.7)</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.</td>
<td>62 (43.4)</td>
</tr>
<tr>
<td>7</td>
<td>17</td>
<td>If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.</td>
<td>62 (43.4)</td>
</tr>
<tr>
<td>8</td>
<td>36</td>
<td>Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:</td>
<td>62 (43.7)</td>
</tr>
<tr>
<td>9</td>
<td>37</td>
<td>Which statement is true regarding opioid induced respiratory depression:</td>
<td>62 (44.0)</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>Patients who can be distracted from pain usually do not have severe pain.</td>
<td>65 (45.5)</td>
</tr>
</tbody>
</table>
Poor response is noted in the areas of knowledge on pharmacokinetic properties of opioid medication, equianalgesic dosing of medication and adverse effects of opioid medication. Attitude towards pain assessment was also noted to be poor.

Pain assessment and appropriate intervention was also noted to have poor response as seen in item 38. It was the question with the lowest number of correct responses.

**Practice of doctors**
Six questions were used to assess for practice based on the WHO guidelines on pain control.

Table 21 shows the distribution of answers regarding the practice of the respondents.

**Table 21: Practice patterns of the doctors who participated in the study**

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How frequently do you assess pain in cancer patients during their visits to you?</td>
<td>93 (66.5)</td>
</tr>
<tr>
<td></td>
<td>44 (31.4)</td>
</tr>
<tr>
<td></td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>Do you use an objective tool to assess pain?</td>
<td>17 (12.2)</td>
</tr>
<tr>
<td></td>
<td>75 (54.0)</td>
</tr>
<tr>
<td></td>
<td>47 (33.8)</td>
</tr>
<tr>
<td>Do you use the WHO step ladder as a reference when prescribing analgesics to cancer patients in pain?</td>
<td>60 (43.2)</td>
</tr>
<tr>
<td></td>
<td>57 (41.0)</td>
</tr>
<tr>
<td></td>
<td>22 (15.8)</td>
</tr>
<tr>
<td>Do you evaluate efficacy of treatment with regards to pain control?</td>
<td>125 (90.6)</td>
</tr>
<tr>
<td></td>
<td>13 (9.4)</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>How frequently do you assess for the adverse effects of prescribed analgesic medication?</td>
<td>70 (50.7)</td>
</tr>
<tr>
<td></td>
<td>64 (46.4)</td>
</tr>
<tr>
<td></td>
<td>4 (2.9)</td>
</tr>
<tr>
<td>How often do you refer cancer patients in pain to the palliative care unit/hospice?</td>
<td>105 (76.1)</td>
</tr>
<tr>
<td></td>
<td>31 (22.5)</td>
</tr>
<tr>
<td></td>
<td>2 (1.4)</td>
</tr>
</tbody>
</table>

About two thirds of the respondents adhered to the guidelines and assessed pain in their patients frequently. Most respondents (87.8%), however, rarely (54.0%) or never (33.8%) used any objective tool to assess the patient’s pain level.

43.2% of the respondents would often prescribe analgesics with reference to the WHO pain ladder with the bigger majority choosing not to.

A large proportion of the respondents constituting 90.6% would assess the efficacy of the analgesics prescribed but only 50.7% would regularly assess for the adverse effects of the medication.

76.1% of the respondents would refer most of their patients to the palliative care unit.

When asked to mention which objective tool they use to assess for pain, only 30 of the 144 respondents could name an objective pain assessment tool. The distribution of correctly named tools is as seen below in Table 22.
Table 22: Frequency of correct responses for the objective tool to assess pain (n=30)

<table>
<thead>
<tr>
<th>The objective tools used to assess pain</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numeric pain scale</td>
<td>25(83.3)</td>
</tr>
<tr>
<td>Visual analogue scale</td>
<td>3 (10.0)</td>
</tr>
<tr>
<td>Faces pain rating scale</td>
<td>2 (6.7)</td>
</tr>
</tbody>
</table>

Table 23: Relationship between score in KASP questionnaire and demographic characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>66.4 (10.0)</td>
<td>0.829</td>
</tr>
<tr>
<td>Female</td>
<td>66.7 (11.9)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-34</td>
<td>67.3 (10.9)</td>
<td>0.061</td>
</tr>
<tr>
<td>35-44</td>
<td>62.7 (10.0)</td>
<td></td>
</tr>
<tr>
<td>How long have you worked as a doctor?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>67.2 (12.8)</td>
<td>0.713</td>
</tr>
<tr>
<td>5-9</td>
<td>66.6 (10.2)</td>
<td></td>
</tr>
<tr>
<td>10-14</td>
<td>65.8 (13.0)</td>
<td></td>
</tr>
<tr>
<td>Years of study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>64.8 (12.6)</td>
<td>0.640</td>
</tr>
<tr>
<td>2</td>
<td>67.1 (8.8)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>65.9 (11.6)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>63.7 (13.2)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>67.8 (10.2)</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>71.8 (4.3)</td>
<td></td>
</tr>
<tr>
<td>Ever had training on palliative care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>70.7 (11.2)</td>
<td>0.005</td>
</tr>
<tr>
<td>No</td>
<td>65.0 (10.3)</td>
<td></td>
</tr>
</tbody>
</table>

There was a significant difference between the score on the KASP questionnaire and any previous training on palliative care with those who had received palliative care training getting higher scores than those who had not.

There was no difference when it came to the scores and their relation with age, experience working as a doctor or year of study in post graduate training.
Table 24: Relationship between knowledge and attitude score and the extent of adherence to pain management guidelines

<table>
<thead>
<tr>
<th>How frequently do you assess pain in cancer patients during their visits to you?</th>
<th>Mean</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>69.9 (7.0)</td>
<td>0.035</td>
</tr>
<tr>
<td>Rarely</td>
<td>60.4 (8.6)</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>67.1 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>64.3 (9.9)</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>60.9 (10.5)</td>
<td></td>
</tr>
<tr>
<td>Do you use an objective tool to assess pain?</td>
<td>64.2 (10.9)</td>
<td>0.750</td>
</tr>
<tr>
<td>Never</td>
<td>64.2 (10.9)</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>63.4 (12.0)</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>63.0 (7.3)</td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>59.8 (10.9)</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>61.5 (4.7)</td>
<td></td>
</tr>
<tr>
<td>How often do you use the WHO step ladder as a reference when prescribing analgesics to cancer patients in pain?</td>
<td>62.2 (11.1)</td>
<td>0.346</td>
</tr>
<tr>
<td>Never</td>
<td>62.2 (11.1)</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>62.6 (10.6)</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>61.1 (11.1)</td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>65.2 (8.2)</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>65.7 (10.9)</td>
<td></td>
</tr>
<tr>
<td>How often do you evaluate efficacy of treatment with regards to pain control?</td>
<td>50.4 (14.7)</td>
<td>0.016</td>
</tr>
<tr>
<td>Never</td>
<td>50.4 (14.7)</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>60.2 (9.1)</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>64.9 (10.2)</td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>60.4 (9.5)</td>
<td></td>
</tr>
<tr>
<td>How frequently do you assess for the adverse effects of prescribed analgesic medication?</td>
<td>54.3 (12.8)</td>
<td>0.045</td>
</tr>
<tr>
<td>Never</td>
<td>54.3 (12.8)</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>64.3 (9.6)</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>65.2 (9.2)</td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>64.4 (10.7)</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>58.9 (10.5)</td>
<td></td>
</tr>
<tr>
<td>How often do you refer cancer patients in pain to the palliative care unit/hospice?</td>
<td>59.8 (8.6)</td>
<td>0.589</td>
</tr>
<tr>
<td>Never</td>
<td>59.8 (8.6)</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>62.4 (12.2)</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>65.4 (10.7)</td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>63.8 (10.3)</td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>61.3 (9.9)</td>
<td></td>
</tr>
</tbody>
</table>
The difference between physician knowledge and their adherence to pain management guidelines in their practice was found to be significant when it came to assessment of pain during visits (P-value =0.03), assessment of efficacy of analgesics prescribed for pain control (P-value=0.016) and assessment of adverse effects of prescribed medication (P-value=0.045).

**Relationship between knowledge/attitude and practice**

By using linear regression, no substantial relationship could be found between knowledge and attitude score and practice patterns of the physicians recruited in the study. The R square value was very small at 0.002 with a level of significance (P-value) of 0.333. Attempts at using linear regression on the different aspects of practice did not yield different results. This is similar to results found by Mina et al which showed no impact of knowledge and attitude on behaviour of physicians assessed. (104)
Discussion

Response rate
The response rate in this study was 65.5% (n=144) achieving the minimum sample size required for the study (n=140). Rodrigues (95), in South Africa found a response rate of 57.2% in his study with no attempts being made to encourage return of questionnaires. Niamh Vickers (105) in her study found a response rate of 52.2% (n=94). Other studies had a varying response rate of between 32% and 73%. (90,106)

The reasons for not returning the questionnaires could have been lack of time to fill the questionnaire, lack of interest in the topic being assessed or misplaced questionnaires.

Attempts to encourage return of the questionnaires were made by verbal reminders.

Characteristics of sample demographics
Appointment
Kenyatta National Hospital is a tertiary referral and teaching hospital. Most of the doctors who work in the clinics are senior house officers in the course of their masters degree programme, thus the higher percentage of senior house officers that responded to the study questionnaire. Being that these senior house officers are in training, it was expected that their knowledge on cancer pain management would be high. This was however not the case. The explanation for this could be that there is no focused palliative care training course in the specialties included in the study. Poor knowledge and misconceptions about pain and its management are found to among the provider centred barriers to adequate pain management. (104)

Medical officers were only found in the radio-oncology clinic where there are no senior house officers. However, these medical officers are trained in cancer management and regularly receive upgrading courses to help them keep up to date with current knowledge.

Years of experience
Majority of the doctors who come for post-graduate training do so after having worked for 2-3 years as medical officers post internship. That gives a total work experience of 3-4 years post medical school training. Because the sample population only included senior house officers and medical officers, the bigger percentage fell into the bracket of 5-9 years of work experience at 72.9% followed by <5 years work experience at 15.3%.

In our study, no significant difference was found in the scores of doctors in relation to the years of experience (p-value= 0.713). This is contrary to what Rodrigues found where there were better scores in health providers with less than fifteen years of experience than those with more (p-value=0.025).(95).Majority of the doctors in this study had a similar number of years of experience as compared to the study done by Rodrigues which could explain the lack of statistically significant difference.
Area of study

The majority of the respondents came from SHOs in Internal medicine, followed by Gynaecology, then General surgery, ENT surgery and finally Medical officers.

All departments deal with oncology patients with the highest patient flow seen by medical officers working in the Radio-oncology clinic and by the Senior House Officers in Internal Medicine (Haematoo-Oncology Clinic). The small number of medical officers in the Radio-oncology clinic are deployed there to provide focused care.

Cancer patients, however, are found in all fields of practice and all doctors are expected to be able to adequately deal with such patients.

Previous training on palliative care

At the moment, palliative care is not part of the curriculum of undergraduate medical training in the University of Nairobi School of Medicine, in contrast to the WHO recommendation.(6) The knowledge on analgesic medication, however, is taught in the pharmacology classes, while that of assessment of patients, including assessment of pain, is often passed on in the clinical areas during undergraduate teachings.

Most of the respondents (73.6%) did not have any formal training, outside the usual sources of information mentioned above, on palliative care. This is similar to what was found by Mina et al in the USA where only one third (37%) of primary care physicians had previous formal training in palliative care.(104) The 26.4% of respondents who did get some training likely got it during their appointment as medical officers in sponsored trainings specific to the hospital they were working in. It has been shown that inadequate training in healthcare workers was a major setback to the provision of adequate palliative care and pain management.(92)

In this study, we find a significant difference in mean scores of respondents who had prior palliative care training as compared to those who didn’t (p-value = 0.005).

Patient characteristics

The patient population in this study had a mean age of 51.8 years and were mostly female with the majority having achieved primary level education. These results are similar to those found by Ndegwa(5) in his study in a similar patient population.

Majority of the patients were found in the radio-oncology and haemato-oncology clinics with the least number coming from the surgical clinics. This could be explained by the fact that patients for adjuvant or neo-adjuvant therapy are sent to the radio-oncology and haemato-oncology clinics after or prior to surgical management.

Majority of the patients had received either chemotherapy or radiotherapy at some point in their treatment. Although the cause of pain was not assessed in this study, it has been shown that treatment and diagnostic procedures can be a source of pain in cancer patients. (103) Only 6% had
received no treatment for their malignancy. These were likely newly diagnosed cancer patients on their initial visits to the clinic.

Scores on knowledge and attitude
The original authors of the KASP questionnaire recommended that results should be analysed in terms of complete scores and individual items. Also, items with the highest and lowest number of correct responses should be individually examined.(107) Examining individual items would establish areas of weakness.

A pass mark of 80% was set to distinguish adequate knowledge on pain management and a score less than this significantly compromised the healthcare professional’s ability to adequately cater to a patient in pain.

In this study, the mean percentage score for the overall questionnaire was 66.5% with a minimum score of 33% and a maximum score of 95%. The mean score compares with studies with scores of 66%, 65.7%, 73% and 70.25% in studies in South Africa, Ireland, Korea and the United States of America, respectively.(95,105,108,109) The deficit in knowledge is similar to other studies done that show knowledge on pain management to be lacking in most healthcare providers. (101–103,106,107,121)

The mean score in this study was low, as is seen in similar studies, showing that there is a significant deficit in knowledge and attitude on chronic pain management.

There was no significant difference in the mean scores between the different specialties or years of practice. Medical officers scored highest and this could be attributable to their frequent, specific training with regards to cancer management, continuous medical education courses, and work in a specialised unit where only cancer patients are reviewed. In the other specialties, the clinics are taken on a rotational basis and therefore the senior house officers may not get as much exposure to cancer patients as the medical officers who work in the radio-oncology clinic.

The fewer numbers of medical officers recruited in the study could also have led to the higher mean score in comparison to the other clinical areas.

Internal Medicine had the second highest mean score likely attributable to the haemato-oncology clinic having the second highest number of oncology patient traffic. The SHOs are required, by the end of their course, to have at least rotated in the clinic once, for a minimum of 3 months. While in this rotation, the SHOs are also required to cover the oncology ward where the bulk of patients have a diagnosis of cancer. This exposure could have contributed to the higher score when compared to other specialties. Ger et al(111) found better knowledge and more liberal attitude toward opioid prescription in physicians who interacted more with cancer patients because of more exposure in clinical practice and therefore more opportunities to correct their misconceptions on cancer pain management.

Knowledge and attitude regarding pain management
It is widely accepted that proper pain assessment is integral to good pain management. According to the WHO publication on cancer pain relief(6), evaluation of pain includes, among others:
Believing the patient’s report of pain
Actively initiating the discussion on pain, and being able to pick up visual cues from the patient
Assessing the severity of pain preferably using formal pain scales
Monitoring the results of treatment

The use of analgesic medication should offer adequate pain relief if the appropriate drug is given at adequate doses and in the correct time. (6) In this study, knowledge on pain assessment was found to be satisfactory in the population of doctors sampled. Most doctors agreed that the patient is the best judge of pain and that a patient’s request for more medication is due to increasing pain as opposed to addiction or attention seeking. This, however, did not translate in decision making. When faced with two clinical scenarios, most respondents ignored the patients’ verbal response on their level of pain. Regarding the patient who was smiling and talking, two thirds of respondents rated the level of pain to be mild or none despite the patient stating a higher pain level. This could be because the patient appeared to be comfortable and relating well with his visitor. The patient who appeared withdrawn and in obvious discomfort had fewer respondents underrating his pain. Respondents seemed to judge the patients’ pain based on their physical presentation and vital signs. The result of poor pain assessment skill is prescription of inappropriate medication leading to inadequate pain control. This was evident in the case scenarios where majority of the respondent would give the patients an ineffective dose of morphine for their pain or no analgesia at all.

Knowledge on the pharmacology of analgesic medications is an important factor in determining prescription patterns among physicians. (50, 53, 55) Knowledge on pharmacokinetic properties of medication was overall poor in this study. Rodrigues found similar results where physicians scored poorly in questions relating to pharmacokinetics of opioid medication (95) as did Mina et al. (104) Two thirds of the respondents in this study did not know the duration of analgesia for intravenously administered morphine while a similar proportion could not correctly give the time to peak effect of oral morphine. There was poor response in the items that required the respondents to practically convert doses of different medications or different formulations. This included item 16 dealing with converting the analgesic effects of different medications with a correct response rate of 36.7% and item 26 dealing with conversion of different formulations of morphine with a correct response rate of 51.1%. Among oncologists, knowledge on opioid equivalents was found to be sub-optimal with only 55% of oncologists giving correct responses in a study done by Mina et al. Knowledge among primary care physicians was lower with only a modest 19% of respondents giving correct answers to the same questions. (104)

When it came to intervention for pain management, majority of respondents agreed that patients should not be encouraged to endure pain as much as possible before initiating opioid analgesics and once opioids are initiated, doses should be adjusted on individual basis. This is in contrast to what Ger found where close to one third of physicians would encourage patients to endure severe pain and avoid morphine. (111) There was however a poor response towards pain control during initial evaluation where more than half of the respondents thought that initiation of opioids in a patient whose source of pain is yet to be discovered would hinder the ability to correctly diagnose the
cause of pain. The recommendation, however, is that pain management should start at initial contact with the patient even before getting a diagnosis.(40,112)

Knowledge on adverse effects of analgesics, particularly opioids, was poor. Majority of doctors participating in the study appeared to be unduly worried about respiratory depression in patients on opioids and there was also a fear of addiction to opioid analgesics. This could lead to doctors avoiding the use of opioid medications, even when indicated, leading to poor pain control. If the knowledge of adverse effects of medication is lacking, then there is poor communication to the patient on what to expect and this leads to poor medication compliance and under reporting of pain by the patient to avoid certain medications.(47,57,58)

The fear of addiction as an adverse effect of opioid use could be overcome by encouraging regular monitoring of the patients and the use of screening tools that can predict future risk of misuse of opioids.(112)

Attitudes towards the patient perception of pain were found to be good in this study. Most doctors would accommodate the patient’s socio-cultural beliefs on pain and would not expect endurance of pain before giving medication. However, poor attitude was noted towards pain assessment with 56.6% of doctors agreeing towards the use of a placebo to confirm if pain is genuine. This is similar to what Zanolini et al found in an Italian study where a similar question had the lowest number of correct answers at 24.3%.(113)

**Practice patterns**

Pain assessment should ideally be done at every visit and the use of a validated pain assessment tool is the first step towards proper pain care(11,12,80). The physician has the primary responsibility to evaluate pain as a vital step in management of cancer pain.(6) In this study, we find that majority of the respondents frequently assessed pain in cancer patients during their clinical visits. However, only a small number used objective tools for the assessment of pain, similar to what Mina et al found in their study.(104) Kim et al, in a multicentre study done in Asia, found that 90.5% of physicians stated that they routinely assess pain in their patients but only about 50.5% were confirmed to have used an objective assessment.(114) Only 30 of the 144 respondents (20.83%) could name an objective pain assessment tool. The WHO guideline on cancer pain management encourages the use of formal pain assessment tools but does not deem it essential.(6) Other contemporary guidelines, however, as exemplified by the National Comprehensive Cancer Network on Adult Cancer Pain Management recommend that objective pain assessment tools should be used to quantify pain intensity.(112) There are various objective tools available for use in the area of pain assessment.(15) Some of these tools are easy to use and can be completed by the patient without much confusion e.g. Faces Pain Scale.(112) With 66.5% of respondents stating that they frequently assess their patient’s pain but only 12.2% using an objective assessment tool, it is likely that most doctors use subjective or clinical ways of assessing the patient’s pain. This could lead to exaggeration or under reporting of pain (64) resulting in inappropriate prescription practices. An initial poor assessment of the patient’s pain leads to under prescription or over prescription of analgesics which in turn lead to inadequate pain management or situations of addiction in the case of opioids. The poor use of objective pain assessment tools could be contributed to by: the lack of knowledge of the existence of such tools by the doctors, the lack of
knowledge on how to use and interpret these tools, the perceived lack of time required to administer adequate assessment with this tools due to large patient numbers in the clinics or the lack of availability of these tools in the facility.

Although the WHO step ladder for pain has been recently criticized for certain deficits, it is still widely accepted as an effective algorithm for use in management of pain, with consequent adequate pain control especially for cancer patients.(75) Most doctors in this study did not reference the WHO step ladder which could affect their choice of analgesics.

Both the WHO and the NCCN guidelines advocate for continual and regular review to evaluate efficacy of treatment and adverse effects and to monitor for features of aberrant use of medication prescribed. The objective is maximum analgesia with minimum adverse effects.(6,112) After prescribing analgesics, the vast majority would assess the efficacy of treatment but only about half would frequently assess adverse effects of the prescribed medication. It has been found that adverse effects of medications limit the patient’s compliance to the treatment plan.(47,57,58) Most of the respondents had poor knowledge on adverse effects of analgesics which could explain the poor assessment practice.

Difficult to treat pain should be referred to specialty service providers, including pain and palliative care services, for further management.(112) The majority of respondents would often refer patients to the palliative care unit or the hospice according to the results in this study. This is beneficial to the patients as they can get better support and follow up from the hospice than they would from the out-patient clinics.

Assessment of pain and evaluation of efficacy and adverse effects of treatment prescribed seem to be positively influenced by the level of knowledge and attitude of doctors.

**Adequacy of pain management**

Majority of the patients were undertreated for pain (70.6%). This is comparable to the number found by Ndegwa(5) , whose study showed that up to two thirds of the patients in pain had inadequate pain management, and also those in other studies.(1,61) In a study done in Moi Teaching and Referral Hospital, up to 66% of the patients were found to be undertreated for pain.(114) The results are similar to those found by Okuyama et al in his study done in Japan where 70% of the population had inadequate pain management.(115)

Median pain relief provide by treatment was 70% (IQR 52.5-80) with 77.2% of patients getting 50% or more pain relief with their current treatment. This is in contrast to the WHO expectation of adequate pain relief (>70% reduction in pain intensity) for up to 90% of patients with the use of the WHO step ladder.(18)

Despite the higher level of knowledge found in the medical officers attending to the radio-oncology clinic (73.1%) as compared to that of the doctors attending the haemato-oncology (67.9%), surgical (66.8%) and gynaecology (63.3%) clinics, patients attending the haemato-oncology, surgical and gynaecology clinics were more likely to have adequate pain relief than those attending the ENT or radio-oncology clinic. There were no significant differences in the socio-demographic characteristics of the patients to explain the difference in adequacy of pain management. The radio-
oncology clinic however has high patient numbers which could affect the amount and quality of time the doctors spend while reviewing the patients.(116)

The discordance between the knowledge of doctors concerning pain management and inadequate pain control as perceived by the patient denotes a gap in the skills required to translate knowledge to good clinical practice.

There was inappropriate treatment for most of the patients recruited in the study with moderate or severe pain. Majority of the patients in severe pain received weak opioids or non-opioids while majority of those in moderate pain who should be on weak opioids received non-opioids despite more than two thirds of the doctors frequently assessing for pain at every visit. The likely reason is discordance between the physician’s assessment and the actual level of pain perceived by the patient. With majority of doctors not using an objective pain assessment tool and less than half referencing the WHO step ladder for their prescriptions, it is possible that there is poor assessment and therefore inappropriate treatment for these patients. With poor pain assessment, an objective treatment approach is elusive.

Several approaches have been put forward to improve pain management in cancer patients. (117,118) They include:

- Implementation of a pain protocol. Intensity of pain in patients shown to reduce when protocols are adhered to.
- Pain consultations by referring patients to palliative care specialists as needed.
- Routine screening for pain in all patients, with use of an objective pain assessment tool.
- Tailor choice of analgesics to individual patient.
- Reassess for effectiveness and adverse effects of medications prescribed and the impact of treatment on the patient’s quality of life.
- Regular feedback to doctors on contemporary practices to allow for improvement where needed.
**Conclusion**
This study showed poor knowledge and attitude regarding cancer pain and its management among Senior House Officers and Medical Officers in that there was:

- Insufficient knowledge on pain assessment
- Insufficient knowledge on pharmacology of analgesics
- Theoretical knowledge not translating to care

There were poor practice patterns in regard to objective pain assessment and adherence to pain management guidelines.

There was poor pain control among the patients attended to in the various clinics with most of them inadequately and inappropriately treated for pain.

No relationship was seen between the level of knowledge and attitude and its influence on the practice patterns.

Current education strategies need to be re-evaluated in terms of cancer pain management.

**Recommendations put forward include:**

1. Increase emphasis on use of and availability of formal pain assessment tools
2. Avail clinical practice guidelines on cancer pain management and increase access to protocols on pain management especially in the clinical areas e.g. the WHO step ladder.
3. Incorporation of pain management/ palliative care training into the undergraduate/postgraduate curriculum.
4. Further studies on system related and patient related barriers on pain management in our set up.

**Study Limitations**

1. The PMI only considers the type of medication prescribed. Issues of inadequate dosing, improper frequency and patient compliance to medication are not factored when calculating the PMI.
2. Probable response bias in the doctors’ questionnaire: Pressure to give expected/anticipated answers rather than actual practice.
References


94. “Knowledge and Attitudes Survey Regarding Pain” developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (http://prc.coh.org), revised 2014.


105. Vickers N. Knowledge and Attitudes Regarding Pain among Surgical Nurses in Three Teaching Hospitals in Ireland. Dublin City University;


107. Ferrell, Betty RN, PhD F, McCaffery, Margo RN, MS F. Knowledge and attitude survey regarding pain [Internet]. Available from: http://prc.coh.org


117. Oldenmenger W. To be in pain or not: research to improve cancer-related pain management. Erasmus University Rotterdam; 2012. 1-150 p.
Appendices
APPENDIX 1 - PATIENT CONSENT EXPLANATION FORM

Introduction

I am Dr Amanda Ngolobe, a postgraduate student in Internal Medicine from the University of Nairobi (UoN). I am undertaking a study on adequacy of pain management amongst patients with cancer at Kenyatta National hospital. This is a requirement as part of post graduate studies. I have already obtained permission to carry out this study from the Kenyatta Hospital/University of Nairobi ethics and Research committee (KNH/UoN ERC) which ensures that participants in a study are safe.

Purpose of the study

This study aims to assess the adequacy of pain management amongst patients with cancer at Kenyatta National Hospital in terms of how effective our drugs are in dealing with pain due to the cancer.

Procedures involved

This study will include reviewing your current pain prescription and answering to a study questionnaire. Information gathered will also include your demographic data, type of cancer and current and other previous treatment received. Some of this information will be obtained from your medical records.

Your rights as a participant

Your participation is voluntary.

Your decision to participate in this study, or not to, will not affect your medical care.

You are free to withdraw from this study at any point.

Your personal identification will not appear anywhere in this study

You are free to ask questions regarding this study before or after signing the consent form.

Risks of participation

There are no risks to you by accepting to participate in this study. There is no invasive procedure being performed.

Benefits of participation

The study findings will be handed over to the Department of Medicine, UoN. Any useful information that would improve better pain management amongst patients with cancer will be shared with the caregivers for appropriate action.

There is no material benefit from participating in this study.
**Confidentiality**

All information obtained from this study will be kept confidential. Only researchers have access to your personal information. Documentation and analysis will be done anonymously and your data sheet will be destroyed at the end.

Should you have any questions or concerns you may contact me: -

1. Dr Amanda Ngolobe, mobile phone 0725 601 599  
   **OR**  
2. Chairperson, KNH/UON ERC,  
   Tel: 0202726300/ 0722829500/ 0733606400/ ext. 44102  
   P.O Box 20723, Nairobi.

Kindly sign the attached consent form should you agree to participate in this study.
APPENDIX 2: PATIENT CONSENT/ASSENT FORM

I hereby freely give consent to allow myself or my ______________________ participate in this study.

Dr Amanda Ngolobe or her research assistants have explained this study to me adequately. I do understand the purpose of the study and procedures involved.

I agree to have my medical records reviewed to get the necessary information required for the study.

I understand that my rights will be respected and confidentiality maintained always.

I also understand that this consent is voluntary and I am at liberty to withdraw from the study without my care being affected.

Patient’s Name ........................................................................................................

Patient’s signature ...................................................................................................

Date..........................................................................................................................

Statement by the witness if guardian or proxy is illiterate

I have witnessed the accurate reading of the consent form to the participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness.....................................................................................................

Signature of witness..............................................................................................

Date......................................................................................................................

Thumb print of participant if Unable to sign due to illiteracy
INVESTIGATOR’S STATEMENT

I have accurately read out the information sheet to the participant, and to the best of my ability made sure that the participant understands the following:

Refusal to participate or withdrawal from the study will not compromise the quality of care and treatment given to the patient.

All information given to us will be treated with confidentiality.

The results of this study may be published to enhance knowledge and to help improve utility/management of peritoneal dialysis surgical complications.

I confirm that the participant was given the chance to ask questions about the study, and all such questions have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this Informed Consent Form has been provided to the participant.

Name of researcher taking consent………………………………………………………………

Signature of the researcher ……………………………………………………………..
KIAMBATISHO 1- FOMU INAYOELEZA IDHINI

UTANGULIZI

Lengo kuu vautafiti

Lengo la utafiti huu ni kukadiria kiwango cha utoshelevu wa usimamizi wa maumivu kati ya wagonjwa walio na saratani katika Hospitali Kuu ya Kenyatta

Taratibu zitakazohusishwa

Upimio huu utachukua takribani dakika 20. Utafiti huu utahusisha kuangalia kiwango ya uchungu ulio nayo na kuilinganisha na madawa za maumivu ulizoandikiwa na muuguzi. Habari zitakazokusanywa zitahusisha data kuhusu hali yako, aina ya saratani ulio nayo, dawa ambazo unatumia kwa sasa na matibabu zingine ulizopata kuhusu uchungu ulio nayo.

Faili lako litachunguzwa kutafuta data ambayo itasaidia utafiti huu.

Haki yako kama mshiriki katika utafiti huu

Ushiriki wako katika utafiti huu ni wa kujitolea.

Hata ukichagua kushiriki au ukatae kushiriki haitaathiri matibabu yako.

 Una uhuru wa kujiondoa katika mahojiano na katika utafiti huu wakati wowote.

Una uhuru wa kuuliza maswali kabla ya kutia sahihi katika fomu ya idhini na wakati wa utafiti.

Maswala yote yatahifadhiwa kwa siri wakati wote.

Hasara za ushiriki
Hakuna hasara yoyote utakayopitia au kupata.
**Manufaa ya kushiriki**

Mwishoni mwa utafiti huu, nitawasilisha matoleo ya utafiti katika idara ya Tiba ya Ndani katika Chuo Kikuu cha Nairobi. Habari zozote muhimu zitakazotokana na utafiti na ambazo zitafanya malezi kuwa bora, walezi watafahamishwa ili hatua mwafaka ichukuliwe.

Hakuna faida ya kifedha utakayopata kwa kushiriki kwa utafiti huu

**Siri**


Ikiwa una swali lolote wakati wa utafiti, unaweza kuwasiliana na wafuatao:

1. **DKT. Amanda Sheri Ngolobe,**  
   Chuo Kikuu Cha Nairobi,  
   Idara Ya Mafundisho Ya Udaktari Na Matibabu Ya Magonjwa,  
   Simu ya mkono: 0725 601 599.  
   **AU**

2. **Mwenyekiti, KNH/UON Kamati Inayoshughulikia Maadili,**  
   Nambari ya simu: 020-2726300/0722829500/0733606400/EXT 44102. P.O. Box 20723, Nairobi.

Kabla sijakuhusisha katika utafiti wangu, Naomba utie sahihi katika fomu ya idhini iliyopo hapo chini. Fomu hii ya idhini haitahusishwa na majibu yako.
KIAMBATISHO 2: FOMU YA IDHINI /KUBALI- WAGONJWA

NAMBARI YA UCHUNGUZI………………..TAREHE……………………..WAKATI………..

Natoa idhini andishi na ninayoifahamu ili kuniruhusu au .........................wangu kushiriki katika utafiti huu kuhusu Ujuzi, Mtazamo na Mazoea ya utumiaji wa madawa za maumivu kati ya madaktari na Utoshelevu wa Usimamizi wa maumivu kati ya Wagonjwa walio na Saratani katika Hospitali Kuu ya Kenyatta

Nimepewa maelezo yanayofaa kuhusu utafiti wa Dkt. Amanda Sheri Ngolobe/msaidizi wake. Ninafanya hivi kwa vile naelewa lengo kuu la utafiti huu na taratibu zitakazohusishwa kama vile kuangaliwa kwa maagizo ya daktari ya kujibu maswali katika fomu ambayo nimpeeza maelezo yake.

Ninaruhusu faili langu litumiwe kutafuta data ambayo itahitajika kwa utafiti huu.

Ninaelewa kuwa haki zangu zitaheshimiwa, na suala la kuhifadhi utambuzi wangu utadumishwa wakati wote.

Pia ninaelewa kuwa idhini ya kushiriki ni ya kujiitolea, na nina uhuru wa kujiondoa katika utafiti huu bila malezi yangu kuathiriwa.

Sahihi ya Mgonjwa………………………………………………

Jina la Mgonjwa………………………………………………
KAULI YA MCHUNGUZI:

Mimi, Mchunguzi Mkuu, nimemuelimisha mshiriki wa utafiti kuhusu lengo kuu la utafiti na kinachodokezwa na utafiti huu.

Jina ........................................

Sahih…………………………… Tarehe………………………………

Kwa maelezo zaidi, unaweza kuwasiliana na

Dkt. Amanda Sheri Ngolobe, katika nambari ya simu: 0725 601 599.

Au: KNH/ERC (Kenyatta National Hospital/Ethics & Review Committee)

Nambari ya simu: 020-2726300/0722829500/0733606400/EXT 4
APPENDIX 3: CONSENT EXPLANATION FORM FOR DOCTORS

I am Dr Amanda Ngolobe, a postgraduate student in Internal Medicine from the University of Nairobi (UoN). You are invited to participate in this survey as part of my study entitled “Assessment of knowledge, attitudes and practice of analgesic use among doctors and adequacy of pain management in cancer patients in Kenyatta National Hospital”

Purpose of the study

This part of the study aims to assess the knowledge, attitude and practice of analgesic use amongst doctors treating patients with cancer.

Procedure involved

You will be requested to fill a research questionnaire.

Risk of the study

There is no risk in participating in this study.

Benefits of the study

Your participation will aid in understanding the current level of analgesic practice amongst healthcare providers and help to promote better practice on this.

There will be no material benefit from your participation in the study.

Right to withdraw

Your participation in this study is voluntary. You are free to decline participation without any dire consequences. You may also change your mind at any point in the study.

Confidentiality

Your personal identity will remain confidential. Data obtained will be analysed anonymously. Only researchers will have access to personal data which does not include your name. The researcher’s aim is for academic and scientific purposes only.

Should you have any questions or concerns you may contact me: -

1. Dr Amanda Ngolobe, mobile phone 0725 601 599
   OR
2. Chairperson, KNH/UON ERC,
   Tel : 0202726300/ 0722829500/ 0733606400/ ext 44102
   P.O Box 20723, Nairobi.
APPENDIX 4- CONSENT FORM FOR DOCTORS

I hereby give my consent to participate in this study on assessment of knowledge, attitudes and practice of analgesic use among doctors and adequacy of pain control in cancer patients in Kenyatta National Hospital.

I have received adequate information about the study from the researcher.

I do understand the purpose of the study and the procedure involved.

I understand my rights will be respected and confidentiality maintained always.

I reckon this consent is voluntary and I may withdraw it at any point if I so wish.

I certify that information given is true and correct to the best of my knowledge.

Doctor’s signature...................................................................................................................................................................................

Date...........................................................................................................................................................................................................
APPENDIX 5 : STUDY QUESTIONNAIRE

July 2014

The “Knowledge and Attitudes Survey Regarding Pain” tool can be used to assess nurses and other professionals in your setting and as a pre-and post-test evaluation measure for educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool has been revised over the years to reflect changes in pain management practice.

Regarding issues of reliability and validity: This tool has been developed over several years.

Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the National Comprehensive Cancer Network Pain Guidelines. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established (r>.80) by repeat testing in a continuing education class of staff nurses (N=60). Internal consistency reliability was established (alpha r>.70) with items reflecting both knowledge and attitude domains.

Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measure both knowledge of addiction and attitude about addiction. Therefore, we have found the most benefit to be gained from analysing the data in terms of the percentage of complete scores as well as in analysing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores to guide your educational needs.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below. We have received hundreds of
requests for the tool and additional use of the tool can be found in other published literature. We also acknowledge the assistance of several of our pain colleagues including Judy Paice, Chris Pasero, and Nessa Coyle in the revisions over the years. If using or publishing the tool results please cite the reference as “Knowledge and Attitudes Survey Regarding Pain” developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (http://prc.coh.org), revised 2014.

We hope that our tool will be a useful aid in your efforts to improve pain management in your setting. Sincerely,

Betty R. Ferrell, RN, PhD, FAAN
FAAN Research Scientist
Consultant

Margo McCaffery, RN, MS.
Lecturer and Consultant
STUDY QUESTIONNAIRE 1

Part one

Serial number: ……………………………

Sex:
  a) Male
  b) Female

Age:
……………………… years

Year of graduating from medical school
……………………………

Appointment:
  a) Medical officer
  b) Senior house officer

Area of study:
  a) Internal Medicine
  b) General surgery
  c) ENT surgery
  d) Obstetrics and gynaecology
  e) None

How long have you worked as a doctor?
…………………………… years

Years of study:
  a) 1
  b) 2
  c) 3
  d) 4
  e) 5

Have you ever had any training on palliative care?
  a) Yes
  b) No
Part two

Knowledge and Attitudes Survey Regarding Pain

True/False – Circle the correct answer.

T    F    1. Vital signs are always reliable indicators of the intensity of a patient’s pain.

T    F    2. Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.

T    F    3. Patients who can be distracted from pain usually do not have severe pain.

T    F    4. Patients may sleep despite severe pain.

T    F    5. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.

T    F    6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

T    F    7. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.

T    F    8. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.

T    F    9. Opioids should not be used in patients with a history of substance abuse.

T    F    10. Elderly patients cannot tolerate opioids for pain relief.

T    F    11. Patients should be encouraged to endure as much pain as possible before using an opioid.
| T | F | 12. Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent’s assessment of the child’s pain intensity. |
| T | F | 13. Patients’ spiritual beliefs may lead them to think pain and suffering are necessary. |
| T | F | 14. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient’s response. |
| T | F | 15. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. |
| T | F | 16. Codeine 20 mg + acetaminophen 300 mg (e.g. Betapyn) PO is approximately equal to 5-10 mg of morphine PO. |
| T | F | 17. If the source of the patient’s pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain. |
| T | F | 18. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose. |
| T | F | 19. Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regimen. |
| T | F | 20. **Narcotic/opioid addiction** is defined as a chronic neurobiologic disease, characterized by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving. |
| T | F | 21. The term ‘equianalgesia’ means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief. |
| T | F | 22. **Sedation assessment** is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression. |
Multiple Choice – Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is
   ____ a. intravenous
   ____ b. intramuscular
   ____ c. subcutaneous
   ____ d. oral
   ____ e. rectal

24. The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is
   ____ a. intravenous
   ____ b. intramuscular
   ____ c. subcutaneous
   ____ d. oral
   ____ e. rectal

25. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
   ____ a. codeine
   ____ b. morphine
   ____ c. pethidine
   ____ d. tramadol

26. A 30 mg dose of oral morphine is approximately equivalent to:
   ____ a. Morphine 5 mg IV
   ____ b. Morphine 10 mg IV
   ____ c. Morphine 30 mg IV
   ____ d. Morphine 60 mg IV
27. Analgesics for post-operative pain should initially be given
   _____ a. around the clock on a fixed schedule
   _____ b. only when the patient asks for the medication
   _____ c. only when the nurse determines that the patient has moderate or greater discomfort

28. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new co morbidity is
   _____ a. less than 1%
   _____ b. 1-10%
   _____ c. 11-20%
   _____ d. 21-40%
   _____ e. > 41%

29. The most likely reason a patient with pain would request increased doses of pain medication is
   _____ a. The patient is experiencing increased pain.
   _____ b. The patient is experiencing increased anxiety or depression.
   _____ c. The patient is requesting more staff attention.
   _____ d. The patient’s requests are related to addiction.

30. Which of the following is useful for treatment of cancer pain?
   _____ a. Ibuprofen
   _____ b. dihydrocodeine
   _____ c. Gabapentin
   _____ d. All the above

31. The most accurate judge of the intensity of the patient’s pain is
   _____ a. the treating physician
   _____ b. the patient’s primary nurse
   _____ c. the patient
   _____ d. the pharmacist
   _____ e. the patient’s spouse or family
32. Which of the following describes the best approach for cultural considerations in caring for patients in pain?
   ____ a. There are no longer cultural influences due to the diversity of the population.
   ____ b. Cultural influences can be determined by an individual’s ethnicity (i.e., some are stoic, others are expressive, etc)
   ____ c. Patients should be individually assessed to determine cultural influences.
   ____ d. Cultural influences can be determined by an individual’s socioeconomic status (e.g., manual labourers report more pain than people with office oriented work).

33. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?
   < 1% 5 – 15% 25 - 50% 75 - 100%

34. The time to peak effect for morphine given IV is
   ____ a. 15 min.
   ____ b. 45 min.
   ____ c. 1 hour
   ____ d. 2 hours

35. The time to peak effect for morphine given orally is
   ____ a. 5 min.
   ____ b. 30 min.
   ____ c. 1 – 2 hours
   ____ d. 3 hours

36. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:
   ____ a. sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued.
   ____ b. Impaired control over drug use, compulsive use, and craving.
   ____ c. The need for higher doses to achieve the same effect.
   ____ d. a and b
37. Which statement is true regarding opioid induced respiratory depression?

   _____ a. More common several nights after surgery due to accumulation of opioid.
   _____ b. Obstructive sleep apnoea is an important risk factor.
   _____ c. Occurs more frequently in those already on higher doses of opioids before surgery.
   _____ d. Can be easily assessed using intermittent pulse oximetry.

**Case Studies**

Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

**Directions:** Please select one answer for each question.

38. **Patient A:** Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

   A. On the patient’s record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew’s pain.

   
   0 1 2 3 4 5 6 7 8 9 10
   
   No pain/discomfort

   B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time.
1. Administer no morphine at this time.
2. Administer morphine 1 mg IV now.
3. Administer morphine 2 mg IV now.
4. Administer morphine 3 mg IV now.

39. Patient B: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

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

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>
No pain/discomfort | worst pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician’s order for analgesia is “morphine IV 1-3 mg q1h PRN pain relief.” Check the action you will take at this time:

1. Administer no morphine at this time.
2. Administer morphine 1 mg IV now.
3. Administer morphine 2 mg IV now.
4. Administer morphine 3 mg IV now.
Part three

1. How frequently do you assess pain in cancer patients during their visits to you?
   a. Always
   b. Frequently
   c. Occasionally
   d. Rarely
   e. Never

2. Do you use an objective tool to assess pain?
   a. Always
   b. Frequently
   c. Occasionally
   d. Rarely
   e. Never

   Which tool do you use? .................................................................

3. Do you use the WHO step ladder as a reference when prescribing analgesics to cancer patients in pain?
   a. Always
   b. Frequently
   c. Occasionally
   d. Only in patients with difficult to treat pain
   e. Never
4. How do you evaluate efficacy of treatment with regards to pain control?
   a. Objective assessment using the pain assessment tools
   b. Ask patient about resolution of symptoms
   c. When patient complains of pain
   d. I do not assess for efficacy of treatment

5. How frequently do you assess for the adverse effects of prescribed analgesic medication?
   a. Always
   b. Frequently
   c. Occasionally
   d. Rarely
   e. Never

6. How often do you refer cancer patients in pain to the palliative care unit/ hospice?
   a. Always
   b. Frequently
   c. Occasionally
   d. Rarely
   e. Never
STUDY QUESTIONNAIRE 2

Serial number: .................................................................

Cancer diagnosis: .................................................................

Year of diagnosis .................................................................

Age ........................

Sex ........................

Level of education .................................................................

Metastases:

  a) Yes
  b) No

Cancer treatment modalities:

  a) Radiotherapy
  b) Chemotherapy
  c) Surgery
  d) Others: ................................................................. (mention)
  e) None

Number of clinic visits

.................................................................

Non-pharmacological pain treatment modalities

.................................................................

.................................................................

.................................................................
BRIEF PAIN INVENTORY (SHORT) QUESTIONNAIRE

1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these everyday kinds of pain today?
   □ Yes    □ No

2. On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.

3. Please rate your pain by marking the box beside the number that best describes your pain at its worst in the last 24 hours.
   □ 0 □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10
   No Pain

4. Please rate your pain by marking the box beside the number that best describes your pain at its least in the last 24 hours.
   □ 0 □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10
   No Pain

5. Please rate your pain by marking the box beside the number that best describes your pain on the average.
   □ 0 □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10
   No Pain

6. Please rate your pain by marking the box beside the number that tells how much pain you have right now.
   □ 0 □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10
   No Pain

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7. What treatments or medications are you receiving for your pain?

8. In the last 24 hours, how much relief have pain treatments or medications provided? Please mark the box below the percentage that most shows how much relief you have received.

9. Mark the box beside the number that describes how, during the past 24 hours, pain has interfered with your:

A. General Activity
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10

B. Mood
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10

C. Walking ability
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10

D. Normal Work (includes both work outside the home and housework)
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10

E. Relations with other people
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10

F. Sleep
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10

G. Enjoyment of life
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10