ASSESSMENT OF PAIN MANAGEMENT COMPETENCIES AMONG HEALTHCARE PROFESSIONALS IN MERU TEACHING AND REFERRAL HOSPITAL AND ST THERESA MISSION HOSPITAL KIIRUA IN MERU COUNTY

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2025

DECLARATION

This thesis is my original work and has not been presented for a degree or any other award in any other institution.

NS401/203060/22

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DEDICATION

I dedicate this research thesis to my parents for their great support even when things were so tough, they constantly kept encouraging me to work extra hard, my husband for financial and moral support my family and friends for moral support and encouragement throughout my studies. Lastly, my colleagues and my head of department for creating an enabling environment to carry out this research.

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LIST OF ABBREVIATIONS

A&E	Accident & Emergency
AAPT	Acute Pain Taxonomy
ACTTION	Analgesic, Anesthetic and Addiction Clinical Translations, Innovations, Opportunities and Networks)
ANOVA	Analysis of Variance
APS	American pain society
CO	Clinical
DF	degrees of freedom
ED	Emergency department
FPS-R	Face Pain Scale – Revised
HCP	Health care providers
HHIS	Health and Human services
HND	Higher National Diploma
HSD	honestly significant difference
IAHPC	international association of hospice and palliative care
IASP	International Association for the Study of Pain
MeTRH	Meru Teaching and Referral Hospital
MIRERC	Meru University Institutional Research Ethics and Review committee
MO	Medical officer
MSc	Master of Science
NACOSTI	National Commission for Science, Technology & Innovation

NO	Nursing officer
NRS	Numerical Rating Scale
OPD	Outpatient department
OR	Operating Room
PACSLAC	Pain Assessment Checklist for seniors with Limited Ability to Communicate
PAINAD	Pain assessment in advanced dementia
PMI	Pain management index
PPSC	pain policy palliative care
QOL	Quality of life
Rho	Spearman's correlation coefficient
SPSS	Statistical package of social sciences
STMHK	St Teresa mission hospital kiirua
TENS	Transcutaneous Electrical Nerve Stimulation
UHHS	United states health and human services.
VAS	Visual Analogue Scale
VRS	Verbal Rating Scale
WHO	World Health Organization
WMA	World medical Association
WPCA	World palliative care allianc

OPERATIONAL DEFINITIONS

Competency	Healthcare professionals' capacity to assess and manage pain adequately under various conditions.
Healthcare Professionals	Doctors, Nurses and Clinical officers involved in clinical care of patients at Meru teaching and referral hospital and St Teresa mission hospital Kiirua in outpatient department, accident and emergency unit, medical and surgical ward.
Management	The act of Selecting and implementing appropriate pain management strategy, whether pharmacological or non-pharmacological based on pain management guidelines.
Pain assessment	Is a multidimensional objective evaluation of a patients' experience of pain by healthcare professionals.
Pain intensity	The measure of pain level on a pain assessment scale.
Pain management index (PMI)	A tool that correlates an individual patient's pain intensity to the appropriateness of the prescribed analgesics according to the WHO pain management ladder.
Pain management Strategies	A combination of methods used to categorize and rate pain based on a scale, identification and selection of the various planned approaches and techniques used to treat, reduce, and control pain, aiming to improve a person's

quality of life by addressing the pain's cause, its symptoms, or appropriate interventions used by healthcare professionals to relief pain.

ABSTRACT

Pain is a public health problem and affects millions of people globally. Analysed medical literature reveals a concerning gap of up to 30% of healthcare professionals lack training in pain assessment and management. Effective pain management is essential and possible through comprehensive pain management guidelines, trained healthcare professionals and adequate facilities. It helps ensure patient recovery, comfort and overall quality of life. However, studies suggest that health care professionals often demonstrate varying levels of competency in pain assessment and management. The objective of this study is to assess the healthcare professionals' competency in pain management in Meru Teaching and Referral hospital and St Teresa mission hospital Kiirua. Design was a Cross-sectional study (Mar 23 – May 5, 2025). Participants were 154 Health Care Professionals (22 doctors, 31 clinical officers, 101 nurses). Tool Used was Adapted KASRP questionnaire. The practice questions and observation checklist questions were developed from literature review. Ethics approval from MIRERC, NACOSTI, Meru County Research office, MeTRH and STAMHK administration and a consent from participants were sought. Analysis was by descriptive**,** Chi-square, logistic regression, and multinomial logistic regression at a Significance set at $p < 0.05$. N= 135. The Mean Knowledge on pain assessment total scores obtained by doctor, clinical officers and nurses were (32.7222, N=18), 28.4333, N=30), (30.4419, N=86) respectively. 17(89.5%) out of 19 questions assessing the HCPs skills in pain management were answered correctly. (41.5%) healthcare professionals use the pain assessment tool every time they meet the patients. Clinical officers used it more frequently as compared to doctors and nurses. A significant difference between the KASRP score, sample characteristics and the observation checklist result where ($p<0.001$) was noted. 48 (100%) of the sampled patient files had a prescription of pain medication, only 11(22.9%) of the files had pain classification and only 2 (4.2%) had finding according to assessment scale documented. Variation of practice exists among healthcare professionals in the utilization of pain assessment tools. Majority participants reported having and following pain management guidelines but only a small percentage use pain assessment tools and document the pain assessment findings. This study highlights the need of improvement in knowledge in order to improve the skills in Pain management among healthcare professionals at MeTRH and STMHK. Competency is contributed to by knowledge, skills and attitudes equally. With these findings, HCP had good knowledge practice and attitude in pain management but poor documentation practices.

CHAPTER ONE: INTRODUCTION

1.1 Background Information

Pain is "an unpleasant sensory and emotional experience typically caused by, or resembling that caused by actual or potential tissue injury (Raja et al., 2020). It is the major symptom experienced by patients and the cause for their hospital visits (O'brien & U.S Health & Health services(UHHS), 2022). Generally, Pain arises from tissue and nerve damage and from psychological factors as nociceptive, neuropathic and psychogenic pain respectively (International Association for the study of pain (IASP), 2021). It is classified according to duration as acute or chronic, according to intensity as mild, moderate and severe (Saling, 2023; IASP, 2020). Pain is a subjective phenomenon and each individual has its expression through experiences related to injury from early life and what the person says it is (Cooney & Quinlan-Colwell, 2020). This study will focus on competencies to manage chronic, acute and total pain.

Pain being a global health concern and a universal human experience, affects all races, genders, ages, geographical locations, and socioeconomic classes (Liyew et al., 2020; Umuhoza et al., 2019). According to Treede et al (2019), one in every five hospitalized patients experiences moderate to severe pain Approximately 30% of the world's population experience chronic pain (Saxena et al., 2018). Painful conditions cause over 70% of all emergency departments (ED) visits in the United States of America (USA) while in Canada, approximately 50–80% of hospitalized patients suffer chronic pain (Khawla et al., 2016; Liyew et al., 2020; Umuhoza et al., 2019). A meta-analysis review of 25 studies done among 52 countries to estimate the prevalence of chronic pain across countries and cultural groups in Europe, Asia, and America revealed that, overall weighted age and sex-standardized pain

prevalence across countries was at 27.5%. The review found substantial prevalence variation across countries (ranging from 9.9% to 50.3%). This variation was associated to social and economic factors of each country (Zimmer et al., 2022).

An estimated 20.9% of U.S. adults (51.6 million persons) experienced chronic pain in 2021, 6.9% (17.1 million persons) experienced high-impact chronic pain with a higher prevalence among non-Hispanic American Indian or Alaska Native adults (Rikard, 2023). A study done in Spain revealed pain prevalence to be 36.7% and according to intensity, moderate to severe pain was present in 20.4% of patients (Lorenzo Allegue et al., 2023). In 2021 China report, 24.34% of patients experienced pain, the percentage significantly reduced to that in 2011and the prevalence of moderate to severe pain decreased from 14.73% in 2011 to 4.98% in 2021(Yu et al., 2022). In India, pain prevalence was 19.3% (Saxena et al., 2018). In sub-Saharan Africa, pain prevalence in ED has been as high as 83% (Zhan et al., 2023). In Kenya, compounded data on pain prevalence is lacking.

A review of seven studies revealed that globally 20% of patients still experience undertreated pain due to competence inadequacies by healthcare professionals(Bisher et al., 2023). Morally all healthcare professionals have a vital role to play in alleviating the patient's pain as experts in pain assessment, management, and patient education in all healthcare settings. (Peng et al., 2018). Therefore, Suitable and effective pain treatment is a fundamental human right under the International Human Rights Law, and an essential step in enhancing the patient's quality of life (Brennan et al., 2019). International statements by various organizations and assemblies such as IASP chapters, WHO, The Panama Proclamation (2008), International Association of Hospice and Palliative Care (IAHPC), Worldwide Palliative Care Alliance (WPCA), World Medical Association (WMA),

Morphine Manifesto (2012), Pain Policy and Palliative Care (PPSC) all articulate pain management or palliative care as human rights (Brennan et al., 2019).

Professional competence refers to the ability of healthcare professional to serve effectively both the individual and the wider community according to the rules of clinical performance(Yaqoob et al., 2021). Pain management competency is the understanding of practices of pain management domains such as the multidimensional nature of pain, assessment and measurement of pain, strategies of pain management and clinical condition of pain (Neme et al., 2019). When aassessing competency, consideration on the cognitive, affective and psychomotor domains are required. However, eexplicit measurement of competence has been difficult partly due to an argument between the need for standardization and acknowledging the value of medical professionals as unique individuals. To address the argument, a three level multi-layered approach has been suggested (Olle ten et al., 2024). The first is a core layer of canon knowledge and skill, 'that every professional needs to possess' independent of the context of practice. It emphasizes on the multidimensional nature of pain. The second level is context-dependent knowledge, skill, and attitude, visible through practice in health care emphasizing on assessment and measurement of pain. The personalized competence includes personal skills, interests, habits and convictions, integrated with one's personality as the third layer (Olle ten et al., 2024). This study will therefore assess the knowledge, skills and attitudes of healthcare providers in pain management.

The United States 2019 Task force report suggests best practice for pain management to be, a thorough initial evaluation, that includes assessment of both medical and biopsychosocial factors causing or contributing to pain. It further suggests that this leads to development of a

treatment plan to address the causes of pain and to manage pain that persists despite treatment. Inadequate pain management in the healthcare setting is a challenge with marginal reports of how to improve pain management process (Jaleta et al, 2020). Deficient knowledge and practice regarding pain management among healthcare professionals also remains a pervasive problem (Chou et al., 2016). Therefore, Healthcare professionals managing patient with pain need to have adequate knowledge of pain assessment and management (Ayoub et al., 2022). They require an understanding on the concepts of current knowledge, an appropriate attitude, and effective skills related to the assessment and management of pain (Alkhatib et al., 2020). This competency is required irrespective of type or location of patients' pain (Umuhoza et al., 2019).

Adequate pain management relies on pain assessment based on clinicians' competence in identifying the pathophysiology of pain, making differential diagnosis while taking advantage of mono- and multi-dimensional pain scales to classify and define pain (Vittori et al., 2023).

Effective pain management remains a critical health concern worldwide (Alkhatib et al., 2020). It therefore requires a multidisciplinary and multimodal approach (Scher et al., 2018). Multidisciplinary involves collaborative team of Clinicians who assess pain and prescribe interventions, physiotherapists who provide physiotherapy, psychologists who provide individual counselling, and psychodynamic therapy and nurses who assess pain, assist in interventional procedures, patient education and administration of pain medication (Scher et al., 2018). Validated tools such as Pain Management Index (PMI) according to the World Health Organization (WHO) pain management ladder are used to assess the adequacy and appropriateness of pain management (Ayano et al., 2023). They can measure aspects of the

pain experience (e.g biological, psychological, spiritual and socio-emotional pain; impact on daily functioning) beyond its sensory component and establish realistic goals that align with patients' needs (Scher et al., 2018). A multimodal approach emphasizes the importance of assessing pain intensity, determining the underlying etiology, and utilizing evidence-based guidelines to optimize pain management outcomes (Alorfi, 2023). Therefore, an inter-professional team approach needs to utilize these assessment tools to competently assess and manage pain effectively (Peng et al., 2018).

Studies have shown that, knowledge deficit on the basic principle of pain management hinders healthcare professionals' ability to adequately manage pain which leads to inadequate treatment and poor quality of life (Ayoub et al., 2022; Liyew et al., 2020; Peng et al., 2018). Despite the available knowledge, guidelines, and advances in technologies hospitalized patients still experience pain (Liyew et al., 2020; Umuhoza et al., 2019). Mismanagement of pain not only leads to severe physical, psychological and social repercussions but also incurs substantial economic costs, both in terms of healthcare expenditure and lost productivity (Canfora et al., 2023). It is due to these reasons that screening for pain should be a routine assessment, and this has led the American Pain Society (APS) to declare pain as the "fifth vital sign" (Jensen, 2018).

A report by a visiting doctor to a facility in Kenyan revealed that 95% of patients who visit hospitals experience pain (Gordon et al., 2019). It is common practice among healthcare providers to prescribe interventions intuitively without assessment. For example, a study in Garissa County in Kenya revealed that about 83% of nurses never utilised the WHO pain management ladder while 78 % had no tool for pain assessment (Affey & Mutunga-Mwenda, 2019). A qualitative study done by Cherono (2021) in Longisa County referral hospital,

found inadequate knowledge on dosages, analgesic duration, and principles of pain management practices among the healthcare providers. A pilot study on Dietary correlates of chronic widespread pain revealed an abnormally high prevalence among residents where, from 89 individuals surveyed, 54 (61%) reported chronic pain lasting 3 months or longer pain in Meru, Kenya (Holton et al., 2018). While these previous studies conducted in Kenya and elsewhere suggest the existence of some pain management deficits, they did not explicitly evaluate the competencies based on validated pain management competency frameworks. This study aims to narrow this evidence gap by investigating HCPs pain competencies in Meru County

1.2 Problem Statement

In sub-Saharan Africa, a pain prevalence of 83% was reported (Ayano et al., 2023). More studies by (Alkhatib et al., 2020; Ayano et al., 2023; IASP, 2021; Saxena et al., 2018; Scher et al., 2018; WHO, 2020), attributed the pain treatment inadequacy to, healthcare professional's limited competence and patients fear of addiction to medication. In Kenya, a study done in Kericho county hospital, found 91% of clinicians to possess inadequate knowledge and negative attitudes towards pain management (Rop, 2023).

In a 2018 pilot study by Holton and Ndege on dietary correlates of chronic pain in Meru kenya a prevalence of chronic pain among 89 subjects surveyed was 60%. indicating a high number of patients suffering from pain. A reconnaissance survey in Meru Teaching and Referral hospital surgical ward, in the period between September and November 2023, records showed of 374 patients admitted, the 30 randomly sampled medical files lacked documentation as evidence of pain assessment yet all the patients were on pain medication. There was also no evidence of utilizing other pain relief strategies. This raised doubts about

the HCPs' capacity to effectively manage pain for patients. Therefore, this study aimed to illuminate on the capacity for pain management by investigating on the competencies of HCPs in the management of pain.

1.3 Study Objectives

1.3.1 General objective

To assess pain management competencies among healthcare professionals in Meru Teaching and Referral Hospital and St Teresa Mission Hospital- Kiirua.

1.3.2. Specific objectives

i. To assess the prevalence of different types of pain encountered by healthcare professionals in selected hospitals in Meru county.

ii. To assess healthcare professionals' knowledge on pain assessment in Meru Teaching and Referral Hospital and St Teresa Mission Hospital kiirua.

iii. To describe Healthcare professionals' skills in pain management in Meru teaching and referral hospital and St Teresa mission hospital Kiirua.

iv. To explore the Attitude of health care professional towards pain management in Meru Teaching and Referral Hospital and St Teresa Mission Hospital Kiirua.

1.4 Research Questions

i. What is the prevalence of different types of pain assessed and managed by healthcare professionals at MeTRH and STMHK?

ii. What is the level of knowledge on pain assessment of healthcare professionals at MeTRH and STMHK?

iii. How do healthcare professionals apply strategies of pain management at MeTRH and STMHK?

iv. What is the attitude of healthcare professionals towards pain assessment and management?

1.5. Significance of the Study

For research: It may enhance research skills of the scholar, the findings may provide evidence for reference by successive researchers on pain with insights of gaps in pain management, which warrants further investigation.

For Practice: The study results may be potential for use to improve on the health care provided to patients thus improve pain management. It may enlighten on importance of multidisciplinary collaboration in pain management among healthcare professionals and improve organizational performance thus reducing the negative effect of undertreated pain. The study findings may recommend adoption of approved pain assessment tools, the available policies and guidelines that need to be put in place and serve as a foundation for advocating for continuous medical education on pain management in the respective hospitals.

For policy: The study may foster for education programs on pain management and formation of pain management teams within the institution.

1.6. Justification

Studies on pain management have been carried amongst various cadres of healthcare professionals. Majority done on knowledge skills and attitudes towards pain management were among nurses, a few for doctors. However, scanty studies on clinical officer, this may be attributed limited geographical coverage by this cadre. Nevertheless, most of the study finding have found inadequate knowledge, poor practice and negative attitude towards pain management. While this evidence is provided mostly by studies done in the developed countries such as; United States of America, United Kingdom and some parts of Asia. The

few studies done in developing counties Kenya included also share the same findings. These studies suggested the existence of some pain management deficits, they did not explicitly evaluate the competencies based on validated pain management competency framework. Assessing the current competencies of healthcare professionals in pain assessment and management among these Healthcare professionals provided a general overview of the quality of care in relation to pain management in Meru.

1.7. Limitations and Delimitations

Limitation: Inadequate sample size due to strict work schedules of HCPS arising from staff shortage. Hence, not be representative of the whole county.

Delimitation: Healthcare professionals who will be on duty at the outpatient, accident and emergency units, Medical and Surgical in Meru Teaching and Referral Hospital, and ST Teresa Mission Kiirua at the time of Data collection

1.8. Assumptions

The researcher assumed that all health care professionals involved as study subject, had their basic training in respective cadres that encompassed pain management and responded according to the questions asked. It was assumed that the study area provided same level of care to patients hence consistence level of practice.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

A thorough search was done using a combination of keywords and Medical Subject Headings (MeSH) terms were used. The search terms were carefully selected considering variations in key concepts, such as “assessment” "pain management," "competencies," and "healthcare professionals from various data bases such as EBSCOHOST, google scholar, Taylor and Francis, Wiley online library and Medscape

2.1. Prevalence of Pain

Periodically assessing pain incidence helps determine the effectiveness of pain management to achieve better pain treatment for hospitalized patients. Using nationally representative data from 146 countries (N = 1.6 million respondents), a study found that, all over the world, the percentage of people in pain increased from 26.3 in 2009 to 32.1 in 2021. This rising trend was present in both higher- and lower-income countries (Macchia L et al, 2022). A study by Zhan et al., 2023, on Pain Prevalence and Management in a General Hospital through repeated Cross-Sectional Surveys in 2011 and 2021 revealed that, in 2021, 24.34% of patients experienced pain; lower than that in 2011. The prevalence of moderate and severe pain decreased from 14.73% in 2011 to 4.98% in 2021. In the same study, other indicators of pain management outcomes also improved such as the percentages of patients using painkillers, opioid analgesics, and multiple analgesics increase. These increased from 44.61 to 51.38%, 24.01% to 44.61%, and 6.82% to 14.11%, respectively(Thapa et al., 2022; Zhan et al., 2023).

From the 2019-2021 morbidity and mortality report, an estimated 50 million adults in the United States experienced chronic pain (i.e., pain lasting ≥3 months) in 2016, resulting in

substantial health care costs and lost productivity(Rikard, 2023). An estimated 20.9% of U.S. adults (51.6 million persons) experienced chronic pain, and 6.9% (17.1 million persons) experienced high-impact chronic pain (i.e., chronic pain that results in substantial restriction to daily activities) during 2021 survey(Rikard, 2023).

Neuropathic pain is caused directly by damage to the somatosensory system, affects a significant portion of the global population, with estimates for its prevalence ranging from 3% to over 10% in the general population, depending on the assessment method and population studied. The exact prevalence is difficult to determine due to variations in diagnostic tools, clinical evaluations, and the diverse causes of neuropathic pain. A widely cited range places neuropathic pain between 7-10%, though figures have been as high as 17%(Sharma et al., 2023). According to Baskozos et al (2023) UK study, the overall prevalence of Neuropathic was 9.2% and was significantly associated with worse health-related quality of life, having a manual or personal service type occupation, and younger age compared with no chronic pain. The same study noted that, Neuropathic pain was associated with diabetes and neuropathy, but also other pains (pelvic, postsurgical, and migraine) and musculoskeletal disorders (rheumatoid arthritis, osteoarthritis, and fibromyalgia).

Functional pain disorder is a chronic pain condition, most commonly in the abdomen, where pain signals from the body are amplified or misinterpreted by the brain, leading to real and disabling pain without an identifiable structural cause. In Asia, the prevalence of chronic pain was found to be 19.3% (n = 836). With a higher prevalence in females (25.2%). It was noted that the pain prevalence increased steeply beyond the age of 65 years old. There was a significant impact of chronic pain on work and daily function(Saxena et al., 2018).

In Africa specifically Sub-Sahara, documentation on pain prevalence is lacking, scanty data on individual institution is available. A study done in Kilimanjaro Christian medical centre Tanzania, revealed that acute pain is still inadequately managed at Kilimanjaro Christian Medical Centre leading to a high prevalence (73% on the first day after surgery) of reported postoperative pain in this study. It reflected the need for adequate postoperative analgesia, especially in low and middle-income countries (Ndebea et al., 2020)

In Kenya, data from Kenya demographic health survey (KDHS, 2022) and Kenya National Bureau of Statistics (KNBS, 2023) does not explicitly provide pain prevalence information. A study done in a referral hospital in western Kenya to assess the prevalence of pain found that, 80.5% of patients endorsed a nonzero level of pain and 30% of patients reported moderate to severe pain on averaged between the NRS and FPS-R, the study also reported that older patients, patients with HIV, and cancer patients had higher pain ratings. Sixty-six percent of patients had been prescribed analgesics at some point during their hospitalization, the majority of which were non opioids. A majority of patients (66%) had undertreated pain (negative scores on the PMI) (Huang et al., 2013)

2.2 Knowledge on Pain and Its Assessment

This comes under the first core competence layer of canonical knowledge and skill, which every healthcare professional should possess. According to Olle ten (2024), it is 'undisputed truths' that regards those elements needed for a clear understanding of human physiology and pathology. They are the truths that do not depend on any particular context. Olle argues that, although not sufficient to practice health care, canonical competence is regarded foundational; in principle which all practitioners should master and be ready to use and defend it. In this section, it encompasses the cognition of multi-dimensional nature of pain.

The domain focuses on the fundamental concepts of pain including the science, nomenclature, experience of pain, and pain's impact on the individual. This domain of competence also relates to how pain is assessed, quantified, and communicated, in addition to how the individual, the health system, and society affect these activities (UC Davis Centre, 2023).

2.2.1 Identifying and classifying pain

Broadly, pain is categorized as chronic or acute, it can be mild, moderate and severe arising from different pathophysiological process and causes.

Neuropathic Pain is nerve injury or nerve impairment associated with allodynia (a central pain sensitization that is a result of repetitive non-painful stimulation of the receptors). A study done in Iran among 5324 older adults found Chronic neuropathic pain prevalence of 13.7%, which was higher than similar studies in France, Morocco, and UK. A systematic review of epidemiological studies reported 6-10% prevalence for neuropathic pain (Salman Roghani et al., 2019). In neuropathy, pain and paresthesia typically follow the distribution of peripheral nerves in a dermatomal distribution. Descriptions of neuropathic pain include lancinating, episodic, numb, or tingling qualities. Targeting any underlying inflammatory process, treatments directed locally at nerves (e.g., surgery, injections, or topical treatments) or medications that target the central nervous system (CNS) may be useful(Liyew, Dejen Tilahun, Habtie Bayu, & kassew, 2020; Pritzlaff et al., 2023).

Nociceptive or Nociperceptive pain is the body's sensory nervous system response towards actual or potentially harmful stimuli. Nociceptive pain derives from tissue injury, with subsequent sensation of pain by nociceptors. It is usually well-localized and can be precisely described by patient. Pain resulting from palpation of actively inflamed joints in RA

demonstrates the localized nature of nociceptive pain. Generally, nociceptive pain responds to peripherally directed treatments such as nonsteroidal anti-inflammatory drugs, injections, and surgical interventions, and for acute nociceptive pain, opioids may also be effective.

Inflammatory Pain is a natural biological response produced by the body tissues as a reaction to the harmful stimuli to initiate the tissue repairing process and eradicate necrotic cells.

Functional pain occurs when there is no obvious injury or damage to the body. A person experiences pain associated symptoms and disability due to the pain.

Acute pain is of short duration (less than 3 months) and reversible with appropriate treatment (Cooney & Quinlan-Colwell, 2020). It is often protective and usually resolves within a predictable period. To refine the 2011 IASP taxonomy of acute pain, the ACTTION-APS-AAPM (Analgesic, Anesthetic and Addiction Clinical Translations, Innovations, Opportunities and Networks) acute pain taxonomy (AAPT) proposed the multidimensional classification. This classifies acute pain according to core criteria, common features, modulating factors, impact or functional consequences and putative pathophysiologic pain mechanism (Kent et al., 2017). Research studies have found acute pain management for adults in hospital settings inadequate with almost 80% of patients experiencing moderate to severe pain. (Cooney & Quinlan-Colwell, 2020). Poorly controlled acute pain induces physiological and psychological harmful effects on patients including the risk of delayed recovery and the development of chronic pain (McCabe et al., 2023).

Chronic pain affects an estimated 30% of the global population; it ranks as the predominant reasons for seeking medical care (Canfora et al., 2023). Chronic pain is complex and multidimensional and has a negative impact on the person’s function and quality of life (Cooney & Quinlan-Colwell, 2020). This multidimensional chronic pain classification

system includes the five dimensions similar to the acute system as; core diagnostic criteria, common features; common medical and psychiatric comorbidities, neurobiological, psychosocial and functional consequences; putative neurobiological and psychosocial mechanisms; risk factors; and protective factors (Fillingim et al., 2014). These dimensions of core criteria and common features including the temporal aspect of pain are instrumental in differentiating acute pain from chronic pain (Cooney & Quinlan-Colwell, 2020). Compared to other conditions with high mortality, chronic pain remains a leading cause of human suffering and disability. It thus surpasses many other health challenges in its impact on quality of life (Canfora et al., 2023). Signs and symptoms of pain manifests behaviorally and autonomically (Department of Health. Victoria, 2024)

A congruent foundational understanding of HCPs about pain is required to achieve consistent, evidence-based practices around pain assessment and management (Mahon et al., 2023). The level of pain relief depends on health care provider's competency to identify the type of pain. The largest obstacle to good pain management in many developing countries is the lack of training in skilled pain care for healthcare workers (IASP, 2021). Worldwide, healthcare professionals have shown varied competencies in pain assessment and management(Thapa et al., 2022). With a good knowledge on the mechanism pain transmission, healthcare professionals develop better skills and positive attitude in assessment and management of pain. Bakir (2023), found that majority of 578 allied health professionals at Mersin university hospital, had a limited understanding of the concepts and language related to pain management.

2.2.2 Assessing Pain

Pain is measured triadly, Self-report - what the patient says (the gold standard), Behavioral – how the patient behaves and Physiological –clinical observations by healthcare professional. Besides assessment tools, pain has seven dimensions, or core aspects: physical, sensory, behavioral, sociocultural, cognitive, affective, and spiritual that should be understood to perform a comprehensive pain assessment (Neme et al., 2019). The assessment of pain helps in understanding the cause of pain, the impact of pain on function and quality of life. It helps in identifying strategies to assist in selection of the most appropriate modalities to manage pain. Patients' self-report is considered the most reliable measure to assess the existence and intensity of patients' pain as recommended by The Joint Commission for Hospital Accreditation ((IASP, 2021). Pain Assessment is performed during activity as well as at rest. A comprehensive pain assessment is conducted during the admission or initial interview with the patient, with each new report of pain, and whenever indicated by changes in the patient's condition or treatment plan (Hinkle & Cheever, 2022). The frequency of reassessment depends on the stability of the patient and the timing of peak effect of the medication administered, which is generally between 15 and 30 minutes after parenteral administration and between 1 and 2 hours of oral administration (Chou, Gordon, de Leon-Cassola, et al., 2016). Periodical assessment of pain incidence helps determine the effectiveness of pain management thus achieve better pain treatment for hospitalized patients (Hinkle & Cheever, 2022). Healthcare professionals should be able to evaluate all dimensions accurately (silkman, 2008). Crowding Emergency departments and healthcare professionals' lack of knowledge may prevent healthcare professionals from performing adequate pain assessment (Hämäläinen et al., 2022).

According to Omotosho (2023), there is significant association between the unit in which healthcare professionals work and knowledge of pain management. It found that, Healthcare professionals working in surgical unit were less likely to have adequate knowledge because of structure that only physicians prescribe the administration and use of pain medications just like in medical wards.

Defining whether a patient's pain is either acute or chronic serves as the foundation for developing and evaluating the effectiveness of the pain treatment plan (Dydyk & Grandhe, 2024). It is paramount that HCPs have both pieces of knowledge in the mechanism of pain, harmful effects of unrelieved pain and the confidence to prescribe and administer analgesics in a multimodal fashion and non-pharmacological intervention (Hinkle & Cheever, 2022).

Previously pain management has concentrated on specific components of assessment of pain and provision of intervention. However, pain should competently be assessed wholesomely when all components and Characteristics of pain are considered during assessment (Hämäläinen et al., 2022).

Using the biopsychosocial dimensions, a thorough pain assessment provides the foundation for development of an effective multimodal pain management plan of care (Cooney & Quinlan-Colwell, 2020). The *sensory dimension* encompass both the severity and quality of pain. It includes the patient’s report of the location, quality, and intensity of pain. Assessing the dimension helps quantify the pain and clarify the extent of poorly localized or radiating pain. If the patient can’t communicate or otherwise express a numeric score, a behavioral rating scale is used to evaluate physical indicators (such as physical activity, positioning, and general appearance) for presence or absence of pain (Hays et al., 2015; Neme et al., 2019; silkman, 2008).

The *behavioral dimension is* the patient's verbal or nonverbal behaviors exhibited in response to pain and assessed by relying on direct observation and continued patient interaction. HCPs need to watch for common behaviors associated with pain, such as guarding, splinting, tensing up, massaging a specific body part, moaning, and crying. Subtle behaviors, such as forgetfulness, confusion, delirium, insomnia, anxiety, and depression, which sometimes reflect other medical conditions, they may arise from pain (Neme et al., 2019).

The *sociocultural dimension* is the effect of the patient's social and cultural background on perception of and response to pain. It can influence beliefs about pain medications, treatment options, hospitalization, and the roles and responsibilities of both healthcare professionals and the patient, which may influence pain-management decisions (Neme et al., 2019)

The *affective dimension* refers to feelings and sentiments in the presence of pain—how the patient feels emotionally because of pain. HCPs should ask about the patient's emotional state since pain can be emotionally draining and compromise emotional well-being (Neme et al., 2019)

The *cognitive dimension* are the thoughts, beliefs, attitudes, intentions, and motivations related to pain and its management. When assessing this dimension, the HCP needs to evaluate the patient's cognitive capacity and functioning by reviewing the medical history for diseases or conditions that may impair cognition; if any exists. Finally, the patient's educational and professional background may influence ideas about the causes, treatment, and prognosis of pain (Dydyk & Grandhe, 2024).

Eliciting the patient's views on the meaning or significance of self, life, and the presence of pain is important. Some healthcare professionals feel unprepared or ill trained to do this—

but simple, open-ended questions from a caring practitioner can help patients feel more comfortable sharing their motivations for living, surviving, and enduring pain (Neme et al., 2019). Using the dimensions of pain, HCPs learn about their patient's sociocultural background, enquire about pain-management preferences, previous methods used to manage pain, use of over-the-counter medication and holistic, homeopathic, or non-pharmacologic remedies. Family members, such as children or grandchildren, may provide sociocultural information and help communicate the benefits of pain-management options to the patient, thus involving the patient in decision-making (Rop, 2023; Thapa et al., 2022).

Based on pain characteristics such as*; Location(s) of pain* which allows determination of the possible cause where the patient is asked to state or point to the area(s) of pain on the body, or even make marks on a body diagram to help gain information. It may not always correspond to the site of injury or disease process since deep organ pains are particularly poorly located. It is clinically important as it can hinder the location of the disease since pain often occurs as reflected (projected), majorly because internal organs do not have pain receptors, only the overlying peritoneum has extensive sensory innervations. *Intensity* where the patient is asked to rate the severity of the pain using a reliable and validated pain assessment tool. The intensity of pain experienced by the patient is individual and is the most difficult feature to assess thus, the exponent of the intensity of pain is its tolerance. Men and children have the lowest tolerance compared to women. Visual or analogue scales and Numerical Rating scales are used to compare pain with the strongest pain which the patient ever suffered and most popular scale divides pain into very strong, strong, moderate, weak and no pain. *Quality* is assessed by asking the patient to describe how the pain feels. Descriptors such as "sharp," "shooting," or "burning" may help identify the presence of

neuropathic pain. It is useful in evaluation of the origin of pain. Rapid pain suggests neural origin, girdling pain, escalating while coughing, moving indicate core root, burning pain, provoked any stimulus indicates neuropathy and nerve damage. Vascular pain is pulsatory, deep pain is dull, sometimes combined with nausea and is derived from organs. *Onset and duration* where the patient describes when the pain started and whether it is constant or intermittent. It allows differentiation between acute and chronic pain. *Aggravating and relieving factors* allows the patient to describe what makes the pain worse and what makes it better. *Effect of pain on function and quality of life* is important with persistent pain, about how pain has affected the patient's life, what they could do before the pain began that they can no longer do, or what they would like to do but cannot do because of the pain. *Comfort–function goal (pain intensity)* is used for patients with acute pain to identify short-term functional goals and reinforce to the patient to achieve good pain control and lead to successful achievement of the goals. For example, surgical patients are told that they will be expected to ambulate or participate in physical therapy postoperatively. Patients with chronic pain can be asked to identify their unique functional or quality-of-life goals, such as being able to work or walk. Success is measured by progress toward meeting those functional goals (Topham & Drew, 2017). *Psychological* reaction is responsible for the degree of suffering and depends on the tolerance for the pain, which is individual. The reaction is different and varying with the state of the nervous system and patient situation. That is, acute pain reaction has – the form of anxiety, in chronic pain – depression**.** The muscle response expressed as intensification of paravertebral muscle tension, lead to equalization of lordosis or lateral curvature of the spine. This muscular defense is visible,

palpable and possible to register. It is indicated indirectly as suffering expression on a patient's face.

2.2.3 Knowledge on pain assessment scales

Healthcare professionals should have multiple tools at their disposal to define a patient's pain and treat their symptoms appropriately (Dydyk & Grandhe, 2024). Different reliable and validated scales have been developed to assess pain worldwide (Atisook et al., 2021; Santos et al., 2021).

Multidimensional tools for patients' self-report are used for an initial comprehensive pain assessment. They evaluate the sensory component of pain (what the person is feeling), the emotional response to pain (impact on the person's function and relationships, and the meaning of the pain) and quality of life (activities, mood, sleep). They include; Short-form McGill questionnaire, Brief pain inventory – short form, Brief pain inventory – long form and Pain disability index. Observational scales such as Pain assessment checklist for seniors with limited ability to communicate (PACSLAC), Pain Assessment in Advanced Dementia (PAINAD) and Abbey Pain Scale are recommended for older people with severe cognitive or communication difficulties (Department of Health. Victoria, 2024).

PAINAD (*P*ain *A*ssessment *IN* *A*dvanced *D*ementia): Indicated for use in adults with advanced dementia who are not able to verbalize their needs. Patterned after the FLACC, this tool was developed by the U.S. Department of Veterans Affairs for patients who have dementia.

CPOT (Critical Care Pain Observation Tool):- indicated for use in patients in critical-care units who cannot self-report pain, whether or not they may be intubated. It is also patterned after then FLACC.

CAPA (Clinically Aligned Pain Assessment Tool)- is used to assess various degrees of comfort, pain control, function, and sleep (Topham & Drew, 2017).

Unidimensional pain assessment tools evaluate only the sensory component of pain. They are used for ongoing evaluation of pain intensity and response to treatment. Some patients prefer to use numbers to describe their pain, while others prefer words (Department of Health. Victoria, 2024). They include; Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), Numerical Rating Scale (NRS), and Faces Pain Scale-Revised (FPS-R) (Cooney & Quinlan-Colwell, 2020). Each scale has evidence supporting its test-retest reliability with demonstrated strengths and weaknesses in different populations and their ratings correlate strongly with each other, supporting their validity (Atisook et al., 2021). Tools used are recognized by pain specialists to be clinically effective in assessing pain. They share a common numeric figure recorded as values 0-10. The numeric value (0-10) is that the number relates to the same pain intensity in each tool (IASP, 2020).

Numeric Rating Scale (NRS): Presented as a horizontal 0- to 10-point scale, with word anchors of “no pain”at one end of the scale, “moderate pain” in the middle of the scale, and “worst possible pain” at the end of the scale. It may also be put on a vertical axis, which may be helpful for patients who read from right to left.

Wong–Baker FACES Pain Rating Scale: Consists of six cartoon faces with word descriptors, ranging from a smiling face on the left for “no pain (or hurt)” to a frowning, tearful face on the right for “worst pain (or hurt),” and numbered using a 0, 2, 4, 6, 8, 10metric or 0 to 5 can also be used. Patients are asked to choose the face that best reflects their pain. The FACES scale is used in adults and children as young as 3 years (McCaffery et al., 2011). FACES scales are self-report tools and clinicians should not attempt to match a face shown on a

scale to the patient's facial expression to determine pain intensity. Patients may understand the tool better if it is displayed vertically with no pain as the anchor at the bottom.

Faces Pain Scale—Revised (FPS-R): has six faces to make it consistent with other scales using the 0 to 10metric. The faces range from a neutral facial expression to one of intense pain and are numbered 0, 2, 4, 6, 8, and 10. As with the Wong–Baker FACES scale, patients are asked to choose the face that best reflects their pain. Faces scales have been shown to be reliable and valid measures in children as young as 3 years of age; however, the ability to optimally quantify pain (identify a number) is not acquired until approximately 8 years of age (Spagrud, Piira, & Von Baeyer, 2003). Ongoing research suggests that the FPS-R is preferred by both patients who are cognitively intact and older adults who are cognitively impaired, and by minority populations (Kang & Demiris, 2018).

Verbal descriptor scale (VDS): Uses different words or phrases to describe the intensity of pain, such as "no pain, mild pain, moderate pain, severe pain, very severe pain, and worst possible pain." The patient is asked to select the phrase that best describes pain intensity

Visual Analogue Scale (VAS): is a horizontal (sometimes vertical) 10-cm line with word anchors at the extremes, such as "no pain" on one end and "pain as bad as it could be" or "worst possible pain" on the other end. Patients are asked to make a mark on the line to indicate intensity of pain, and the length of the mark from "no pain" is measured and recorded in centimetres or millimetres. VAS is impractical for use in daily clinical practice and rarely used in that setting but commonly used in research.

FLACC- Indicated for use in young children. Scores are assigned after assessing Facial expression, Leg movement, Activity, Crying, and Consolability, with each of these five categories assigned scores from 0 to 2, yielding a total composite score of 0 to 10. Scores of

“0” are interpreted as reflecting that the patient is relaxed and comfortable, scores of “1” to “3” are interpreted as consistent with mild discomfort, scores from “4” to “6” are considered consistent with moderate pain, and scores from “7” to “10” are considered consistent with severe discomfort or pain.

The Hierarchy of Pain Measures is the recommended framework for assessing pain in patients who are nonverbal (Herr et al., 2011; McCaffery et al., 2011). The key components of the hierarchy require the healthcare professionals to: attempt to obtain self-report, consider underlying pathology or painful conditions and procedures (e.g., surgery), Observe behaviors and evaluate physiologic indicators, then conduct an analgesic trial.

An understanding by healthcare professionals of these assessment tools is required in order to utilize them effectively. According to Odile (2018), Seventy-five (75%) of the nurses reported that they had adequate knowledge on the tools used in pain management. A study by Al khatib (2020) on Healthcare Professionals in Ethiopian primary Medical Centers revealed unavailability of and inadequate knowledge on assessment tools. A visiting doctor to one facility in Kenya noted that, 95% of hospital visits consists of patients in pain yet pain assessment scales are unavailable (Gordon et al., 2019). Two studies, one in Longisa county referral hospital and Tenwek hospital in Kenya revealed inadequacy in terms of proper training of their healthcare professionals on pain management, inadequacy in availability of assessment and therapeutic resources, and lack of dedicated pain management programs in hospitals (Cherono et al., 2021; 2019; Rop, 2023).

Effective management of pain is an important and sensitive indicator of the quality of nursing and healthcare (AL-Sayaghi et al., 2022). This is partly because nurses are often the first health care professional that patients encounter and mostly the only one that patients

may be able to report to, their ability to respond to them will determine the patients' outcome (Alkhatib et al., 2020; Umuhoza et al., 2019), they must therefore be equipped with adequate knowledge and a positive attitude toward pain assessment and management (AL-Sayaghi et al., 2022.). Low level of Knowledge and practice among nurses towards pain management was noted in various studies around the World (AL-Sayaghi et al., 2022; Atthayasai et al., 2023; Jaleta et al, 2020; Samarkandi, 2018). In Sub-Sahara Africa, a Gambia study at Edward Francis small teaching hospital, found (60.9%), of the nurses had inadequate knowledge towards pain assessment, similarly in Ethiopia, poor knowledge towards pain assessment were reported among nurses in Gonder university specialist hospital (Andualem et al., 2018; Mahon et al., 2023).

Different studies have shown that generally many HCPs especially nurses, lack adequate knowledge about pain assessment, which led to under treatment of pain (Alkhatib et al., 2020; Gelaye Wondimagegn et al., 2021; Rop, 2023; Samarkandi, 2018). In addition, lack of knowledge, dealing with special groups of patients such as the elderly and the very young led to under treatment or even no treatment of pain in such cases (Hämäläinen et al., 2022; Thapa et al., 2022; Zhan et al., 2023). In sub-Sahara Africa, majority of healthcare providers rarely assess pain prior to prescription of interventions (IASP, 2021). While in Kenya, a study done in Longisa county referral hospital revealed that, a large number of healthcare providers do not assess pain prior to interventions (Cherono et al., 2021). These studies in part highlight the need to assess healthcare providers' competencies regarding pain assessment in each country and provide training and support as per the local needs.

2.3 Skills in Application of Pain Management Strategies

The competence domain focuses on collaborative approaches to decision-making, diversity of treatment options, the importance of patient agency, risk management, flexibility in care, and treatment based on appropriate understanding of the clinical condition (uc davis centre, 2023). Due to the complexity of pain, it is recommended to use a multimodal approach to manage pain. This involves using a combination of non-pharmacological strategies such as, positioning, and relaxation techniques and pharmacological interventions mainly analgesics to address pain

2.3.1. Use of pain management guidelines

This requires pain management to be an ongoing process with frequent reassessment and evaluation of treatment effectiveness, patient observation, regular communication with the patient's healthcare team and adjustment of the pain management plan based on feedback and changing circumstances(International Association for the study of pain (IASP), 2021; Saleh, 2023). Effective pain management requires healthcare professionals to know the myths and misconceptions about pain medication, how to assess pain, understand patients' behaviors when in pain, pharmacological and non-pharmacological pain management methods and ethical issues in pain management (McCabe et al., 2023a). Reassessing regularly and adjusting pain treatment plan based on observed responses are essential. Recognizing that pain experiences and responses are individuals, helps to tailor the pain management approach to each patient's specific need(Saleh, 2023). The absence of international guidelines on pain management in medical and nursing programs reduces the ability of healthcare professionals to evaluate and respond to patient pain (Department of Health. Victoria, 2024; Pritzlaff et al., 2023) Pain management should be an ongoing

process with frequent reassessment and evaluation of treatment effectiveness. Regular communication with the patient's healthcare team, patient observation, and adjustment of the pain management plan based on feedback and changing circumstances are crucial. Pain management should be an ongoing process with frequent reassessment and evaluation of treatment effectiveness. Regular communication with the patient's healthcare team, patient observation, and adjustment of the pain management plan based on feedback and changing circumstances are crucial.

023). Effective treatment modalities for acute, chronic, centralized, or neuropathic pain are often different (Dydyk & Grandhe, 2024; Liyew et al., 2020). Optimal pain relief begins with initial pain assessment then identification and administration of analgesic agent, followed by continued prompt assessment, and non-pharmacologic interventions during the course of care to safely achieve pain intensities that allow patients to meet their functional goals with relative ease, (Hinkle & Cheever, 2022). Older people who have severe cognitive impairments or communication difficulties, their behavior may be the only external indicator of pain (Department of Health. Victoria, 2024).

2.3.2. Utilize pain assessment scales

HCPs ability to use pain assessment tools to assess patient pain and implement appropriate pain strategy and health education in daily clinical work improves pain relief(Department of Health. Victoria, 2024; Pritzlaff et al., 2023).They should apply the knowledge of the dimensions of pain assessment and classify patients' pain. This will facilitate choice of appropriate intervention for pain relief(Jaleta et al, 2020). In recent years, the accuracy of pain assessment records and the implementation rate of pain health education have become important indicators for monitoring the quality of healthcare (Hinkle & Cheever, 2022). A

study by Nguyen (2022) in Vietnam showed that 44.8% of the participants never or rarely used pain assessment tools. A study done in Nepal on Assessment of the practice of healthcare professionals on pain management reveals that only 96 (29%) of them used the pain assessment tool every time during their consultation. Doctors (37%) and nurses (32%) used it more frequently as compared to pharmacists (10%) (Thapa et al., 2022).

2.3.4. Multi-disciplinary approach

Collaborative discussions and regular communication within the team can help ensure a comprehensive and holistic approach to pain treatment (Saleh, 2023). Different pain management members on a team provide different therapeutic approaches to pain management based on their scope of practice(Cooney & Quinlan-Colwell, 2020). According to outpatient surgical service center in Nebraska, doctors have the expertise and knowledge to evaluate, diagnose, and provide comprehensive treatment options to address various types of pain. Clinical officers provide comprehensive care, from initial assessment to treatment and referral. They assess patients' pain, diagnose the underlying cause, develop and implement pain management plans, and educate patients and their families. The Maryland Nurses' board stipulates that "the nurse is responsible and accountable to ensure that a patient receives appropriate evidence-based nursing assessment and intervention which effectively treats the patient's pain and meets the recognized standard of care" to do so, the nurse must poses knowledge of self, of pain and knowledge of the standards of care (Peng et al., 2018). A study done on Ethiopia found that, regarding the level of practice, only 111 (25.8%) of nurses had good pain management practices while 118 (27.4%) and 201 (46.7%) had moderate and poor pain management practices respectively(Fekede et al., 2023).

In this context, doctors and clinical officers prescribe while nurses administer the prescribed therapy. Multidisciplinary approaches that integrate medical and complex psychosocial care, are more effective for chronic pain than any single therapy(Peng et al., 2018)

The treatment of pain whether acute or chronic should be multidirectional, incorporating both pharmacological and non-pharmacological methods of treatment such as physical, rehabilitation, neuromodulation, psychological methods and in some cases, invasive techniques. Being mindful to ensure comprehensive care for the patient is key in clarifying and obtaining acceptance of the chosen method of treatment from the patient (Santos et al., 2021).

2.3.3. Multi- modal approach

A Multi-modal analgesia or multimodal pain management is the recommended approach for the treatment of all types of pain in all age groups (Cooney & Quinlan-Colwell, 2020). This model intentionally and simultaneously combines medications with different underlying mechanisms, along with non-pharmacologic interventions allowing for lower doses of each of the medications in the treatment plan and reducing the potential for adverse effects. Multimodal analgesia can result in comparable or greater pain relief with fewer adverse effects than can be achieved with any single analgesic agent (Cooney & Quinlan-Colwell, 2020).

The primary method of pain treatment is pharmacotherapy. In 1986, The World Health Organization (WHO) developed and introduced guidelines for pain management, which have since been revised to a four-step ladder from three. This pain ladder promotes a stepwise approach to pain management to minimize inadequate analgesia. Although it refers to the treatment of cancer pain, it’s also commonly used to treat chronic pain with different

substrate (Jaleta et al, 2020; Yam et al., 2018). It recommends use of acetaminophen or a nonsteroidal anti-inflammatory drug for mild pain. If the pain persists or if the patient has moderate pain, a weak opioid should be prescribed. For severe pain or pain inadequately treated with weak opioids, a strong opioid should be prescribed(Anekar et al., 2024). In Kenya, a study done in a national referral hospital, revealed that, only 41% of the nurses reported that they had sufficient knowledge to assess and manage post-operative pain(Kituyi et al., 2011).

Oral route is the preferred method for analgesic administration and should be used whenever feasible (Chou et al., 2016). A more invasive method used to manage pain is accomplished using neuraxial analgesia, which involves administering medication in the epidural or subarachnoid space (American Society of Regional Anesthesia and Pain Medicine, 2016).

Pharmacological pain management: Encompasses a wide range of approaches based on a person's preferences, a doctor's expertise, and other factors, such as the location of the pain and underlying condition. Pharmacotherapy should always be selected individually, because what helps one person does not necessarily help another, and may even be harmful(Anekar et al., 2024). The choice of drug should be based on appropriate assessment and diagnosis, currently used analgesic treatment, taking into account possible side effects, which occurred during the previous use of the drugs, possible interaction of the proposed drug with other medicines used by patient for other diseases (Santos et al., 2021). A combination of drugs with different mechanisms of action are used to obtain an effective pain control. Analgesics are also available in the form of ready-prepared formulations containing a combination of two or more components. Prescription medications include non- opioid, opioids, steroids, antidepressants and other pain medications (Alorfi, 2023).

Achieving then maintaining optimal pain management that is safe, effective, and progress toward realistic functional goals requires; patient education, continuing reassessment of analgesic effect and development of any untoward effects (Chou et al., 2016) by, giving the mainstay analgesic agent on a scheduled around-the-clock (ATC) basis, rather than PRN (as needed) and maintain stable analgesic blood levels when pain is continuous (Hyland et al., 2021). ATC dosing regimens are designed to control pain for patients who report pain being present 12 hours or more during a 24-hour period. PRN dosing of analgesic agents is appropriate for intermittent pain, such as prior to painful procedures and for breaks through (BTP) “the pain being managed by the mainstay analgesic agent” for which supplemental doses of analgesia are provided (Palat, 2018)

Non-Pharmacological Pain Management: Psychological therapies – Psychological factors have a big influence on the perception of pain, as well as the effectiveness of the treatment. Patients experiencing chronic pain should to take advantage of professional psychological help, which can affect the emotional aspect of pain. Among the psychological methods that can be effective as a technique supporting the treatment of chronic pain, the most commonly used are: Cognitive therapy, Behavioral therapy, relaxation techniques and hypnotherapy(Santos et al., 2021)**.**

Behavioral therapy - Behavior therapy may help with pain management. It is suggested in conjunction with pain medication and other therapies to help relieve pain. Cognitive behavioral therapy (CBT focuses on helping a person understand the connection between their thoughts, feelings or emotions, and behaviors. CBT for pain helps a person focus on a problem-solving, active approach to facing the challenges associated with living with chronic and other types of pain(Saleh, 2023; Santos et al., 2021).

Physical therapy - A physical therapist works with a person experiencing pain for various reasons. To provide effective, long-term pain management that help improve a person's strength, flexibility, and mobility, hence find pain relief. The most popular methods of physical treatment are: thermotherapy (heat), cryotherapy (cold), laser therapy, Hydrotherapy, electrotherapy, kinesitherapy, medicinal extracts and manual technics. If used in an appropriate and effective manner, they may improve life and mobility of some patients and may help a person avoid taking excessive pain medication or further complications that require surgical intervention.

Neuromodulator – Neuromodulating treatments are aimed at stimulating the pain systems. Several neuromodulator methods such as percutaneous nerve electrostimulation (TENS), peripheral nerve stimulation, acupuncture and vibration are currently used. It supports pain treatment methods by activating the pain inhibitory mechanisms thus reduce pain and improve the quality of life for patient with chronic pain(Cooney & Quinlan-Colwell, 2020; Santos et al., 2021).

Invasive methods–. Range from individual nerves blocks, by intrathecal administration of drugs (e.g. epidural anesthesia during childbirth) to neurodestractive methods (Thermolesion, necrolysis) and neurosurgery. Modern medicine offers more and more ways to treat pain. This makes it possible to bring relief to people suffering from various ailments. Invasive methods of pain management should be implemented and enforced by experienced specialists in specific cases(Alorfi, 2023; Cooney, & Quinlan-Colwell, 2020).

More Studies done in Turkey and Saudi Arabia, found that 60.1 % and 60 %, of nurses respectively reported to have inadequate knowledge about pain assessment and management (Ayoub et al., 2022; Samarkandi, 2018). A study done among 578 HCPs in a university

hospital showed that participants had a higher awareness of the WHO analgesic ladder after the training course (60.4% vs. 29.3%). However, only a small percentage of both groups (13.9% and 12.9%, respectively) correctly answered the detailed WHO analgesic ladder question. The lack of appropriate responses to some questions may have been beyond the employees' professional knowledge scope (Bakir et al., 2023). According to Thapa, (2022) study on knowledge, skills and attitudes, low scores of competencies among HCPs were obtained on key aspects of pain management such as initial assessment, treatment plan, reassessment, and knowledge of the pharmacology of medications, especially narcotics and non-pharmacological interventions.

Having one's pain managed can lead to better control of the pain, improve how one feels and functions in life on a personal and professional level. It can also improve the sense of overall well-being and reduce or prevent a sense of despair.

2.4 Attitudes Towards Pain Management

Attitude towards pain management refers to healthcare professionals' beliefs, emotions, and behaviors concerning the assessment and treatment of pain. With formal training and education, Studies indicate a positive correlation between increased knowledge and favorable attitudes towards pain management (Omotosho et al., 2023). Experience and specific demographic characteristics like age, level of education, and prior work experience in pain management are often found to influence attitudes (Liyew, Dejen Tilahun, Habtie Bayu, & Kassew, 2020). Ferrell and Logan as quoted by Cherono (2022), stated that failure to carry out pain assessment, poor pain assessment and lack of using pain assessment tools by health care workers leads to poor pain management more so by healthcare providers who

do not always accept patients' self-report of pain unless it is accompanied by other signs of pain like grimacing. The aspects of attitudes towards pain management include:

Misconceptions towards pain: Beliefs and Emotion shape attitudes by what a healthcare provider believes about pain, such as the necessity of pain as a spiritual experience, or their emotional responses to a patient in pain (Alshehri et al., 2024). Behavior and Actions proof that a provider's attitude influences their approach to pain, including whether they consistently use tools for pain assessment or document their pain management strategies. A continuing narrative regarding the opioid is that even short-term (7 days or less) use of opioids under medical supervision to treat acute pain will often lead to opioid use disorder (OUD) and/or addiction (Bumpus, 2025)

Influence on Patient Care where negative attitudes lead to withholding pain medication, underutilizing non-pharmacological interventions, or failing to document care adequately, all of which negatively impact the patient (Alshehri et al., 2024).

Discrepancies between patients and clinicians' assessment of pain are the main contributors to inadequate pain management. This occurs when clinicians question the accuracy of patients' self-report of pain intensity, when incongruence exists between patients' report and the observation of the clinician, the management and documentation of pain level does not correspond with the patients' self-report (Cooney & Quinlan-Colwell, 2020). Two meta-analyses of pain assessment accuracy that included 90 peer-reviewed articles between 1894 and 2016, it was reported that healthcare providers (doctors and nurses) significantly under estimated patients' pain while caretakers (parents and others) were most likely to overestimate pain. The study also found acute pain underestimated than chronic pain, and older, male adults were more likely to have pain underestimated (Ruben et al., 2018).

Healthcare professionals past personal experience of pain and medication use is an important factor in changing their attitude towards pain management by helping them achieve optimal pain management outcome in their pain management competency (Neme et al., 2019). In Ethiopian health institutions, inappropriate attitude towards pain management were reported among nurses (Andualem et al., 2018). A study done in Jordan revealed that, healthcare professionals have negative attitudes towards pain management, the findings also revealed a discrepancy between knowledge and practice (Alkhatib et al., 2020). Studies had also shown that Healthcare Professionals bear misconceptions and myths about pain that impede proper pain assessment and management (Ayoub et al., 2022; Nuseir et al., 2016).

Studies done among healthcare professionals in different countries such Gambian Edward Francis small hospital, Mersin University hospital in Turkey and in western Nepal, have revealed varying responses ranging from sufficient to inadequate level of knowledge, practice and negative attitude on pain management (Omotosho et al., 2023; Thapa et al., 2022; Wurjine & Nigussie, 2018). Majority 69.6% of Gambian nurses had an unfavorable attitude toward pain management. They believe that Gambians are very strong and are capable of bearing pain even without receiving pain medication (Omotosho et al., 2023).

At Kenyatta National hospital majority (90%, n = 140) of the healthcare workers showed an overall poor attitude on procedural pain management attributed to the ratio of patients to healthcare workers in Kenyatta National Hospital (Mugane, 2022). From the same study, some healthcare workers disagreed especially the clinical officers (14%) and pathology doctors (25%), while majority (63%) believed that pain from medical procedures is avoidable (Mugane, 2022). Barriers to optimal pain management include difficulties in identifying and assessing pain, improper attitude towards pain among healthcare and

patients themselves, as well as communication barriers between nurses and doctors (Latina et al, 2015). Negative attitudes towards patients' pain, may cause those who have been prescribed mostly non-opioids not to receive their pain medicines as prescribed hence inadequate pain management (Mugane, 2022).

2.5 Theoretical Framework

Competency – based framework**:** Pain management is one of the recurrent healthcare service provided by healthcare professional (Alzghoul & Abdullah, 2020). A theoretical framework for competencies in pain management involves outlining the essential components that healthcare professionals need to effectively assess, treat, and manage pain in patients(Olle ten et al., 2024). Based on the proposition of the competency framework, knowledge, skills and attitudes can affect healthcare professionals work, their confidence and their ability to manage the patients' discomforts, which consequently affect their ability to apply pain management practices (UC Davis Centre, 2023). The competencies address the fundamental concepts and complexity of pain; how pain is observed; collaborative approaches to treatment options; and application of competencies in the context of various settings, populations and care teams (UC Davis Centre, 2023).

According to (Augeard et al., 2022) core competencies required for effective pain management are: Firstly, Knowledge base that encompasses an understanding of pain physiology, including nociceptive and neuropathic mechanisms, familiarity with pharmacological and non-pharmacological treatment options and awareness of psychological and social factors influencing pain perception and management is required. Secondly the Assessment Skills to include; proficiency in using standardized pain assessment tools (e.g., numerical rating scale, visual analog scale); Ability to conduct

comprehensive pain assessments considering physical, psychological, and social aspects and competence in evaluating pain intensity, location, quality, and impact on daily activities are also expected. Thirdly the treatment Planning and Implementation which involves skill in developing individualized pain management plans based on assessment findings; Competency in prescribing and adjusting pharmacological interventions (e.g., analgesics, adjuvant medications) and Proficiency in implementing non-pharmacological therapies (e.g., physical therapy, cognitive-behavioral techniques, complementary therapies) (Augeard et al., 2022).

Supportive professional competencies include first Communication and Patient-Centered Care: healthcare professionals require effective communication with patients to understand their pain experience and treatment preferences. They should have the ability to educate patients and caregivers about pain management strategies and expectations and have skill in addressing cultural and linguistic factors affecting pain perception and treatment. Second, ethical and Legal Considerations: HCP need to have Knowledge of ethical principles related to pain management, including autonomy and beneficence and be aware of legal regulations governing the prescription and administration of controlled substances for pain relief. Third is Team Collaboration: Collaboration with interdisciplinary teams to optimize pain management outcomes and effective referral and consultation skills to involve specialists when needed (e.g., pain specialists, psychologists) (Augeard et al., 2022; Yaqoob Mohammed Al Jabri et al., 2021).

Continuous Improvement and Quality Assurance is another supporting competence as HCPs display Evidence-Based Practice by having the ability to integrate current research and evidence-based guidelines into clinical practice and Participation in continuing

education and professional development activities related to pain management. They should be involved in quality Improvement by monitoring and evaluating outcomes of pain management interventions and finally have skill in implementing quality improvement initiatives to enhance patient care and safety in pain management practices (Alzghoul & Abdullah, 2020; Augeard et al., 2022; (UC Davis canter, 2023).

Leadership and Advocacy is also required to includes, advocacy for Pain Management where HCP should be able to advocate for effective pain management policies and practices at institutional and community levels and provide leadership in promoting a culture of compassionate pain care within healthcare settings. Finally, the evaluation and Competency Maintenance such as Self-Assessment and Reflection portrayed as regular self-assessment of personal competencies in pain management, reflection on clinical experiences and patient interactions to identify areas for improvement. Peer Review and Feedback including Participation in peer review processes to receive constructive feedback on pain management practices and collaboration with colleagues to share knowledge and best practices in pain management (Augeard et al., 2022).

Application of the Framework: This theoretical framework provides a structured approach to defining competencies in pain management across various healthcare disciplines. It emphasizes the integration of knowledge, skills, and attitudes necessary for providing comprehensive and effective pain care. Healthcare professionals can use this framework to guide curriculum development, continuing education programs, and performance evaluation in clinical practice settings, ensuring that patients receive optimal pain management tailored to their individual needs.

Improving healthcare professionals' level of knowledge positively influences their attitudes and practice for effective management of patients' pain. However, most of the studies with these outcomes were conducted in developed countries such as in Asia (Yu et al., 2022); United Kingdom (dale et al., 2023) and United States of America (Rikard, 2023). In the African region, information regarding knowledge, attitudes and practices, surmounting to competencies of healthcare professionals about assessment and management of patients with both acute and chronic pain is scanty. This study seeks to reduce this gap by assessing pain management competency among healthcare professionals in Meru Teaching ad referral hospital and St Theresa mission hospital Kiirua in Meru County.

2.6 Optimal Pain Management

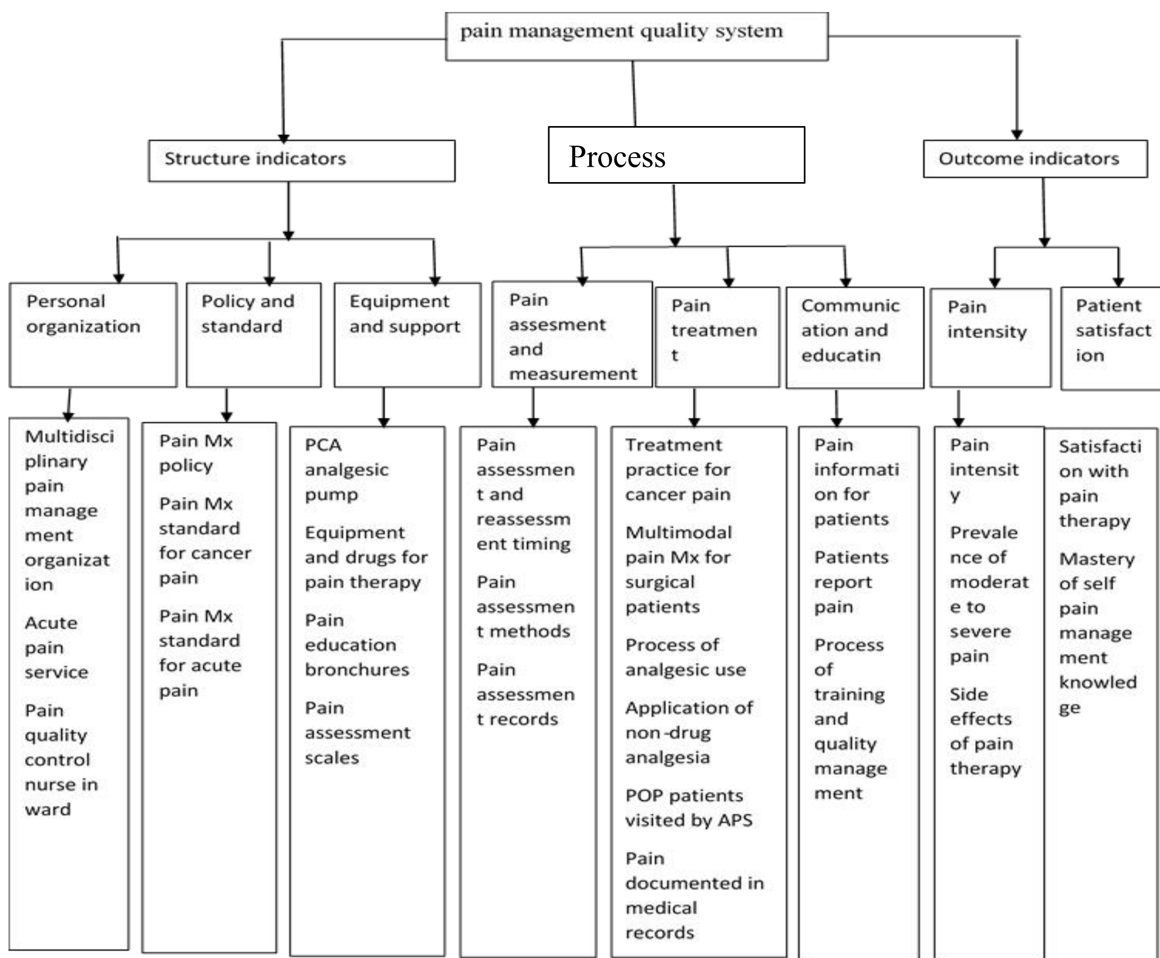
Achieving optimal pain relief is best viewed on a continuum, with the primary objective being to provide both effective and safe analgesia (Pozek, De Ruyter, & Khan, 2018). This can be achieved by having pain management quality system as by the following framework.

The pain management quality system framework uses established quality indicators to monitor and improve pain care, focusing on the structure, process, and outcomes of care. Key components include frequent assessment using standardized scales, implementation of multimodal and personalized treatment plans, monitoring for adverse events, ensuring patient safety and education, and measuring patient satisfaction to achieve effective pain relief, improve function, and enhance quality of life (Zhan et al., 2023). From the same study a hospital in china implemented this framework and achieved great pain control in patients, process indicators and the outcome measures were mainly patient pain intensity and satisfaction with analgesia. According to the current situation, there is a need

for improving pain treatment; focusing on quality indicators is appropriate for achieving this goal.

Figure 2. 1

Pain quality management system based on the "structure-process-outcome"



Source: Adopted from (Zhan et al., 2023)

2.7 Summary of Literature Review

2.7.1 Knowledge on pain assessment

The literature review was the foundational knowledge and skills required for healthcare professionals (HCPs) in pain management. The first section starts with knowledge, the term "canonical competence," is essential for understanding human physiology and evidence-based practices in diagnosing and treating pain. It focuses on pain types where pain is

categorized into chronic, acute, nociceptive, neuropathic, inflammatory, and functional. Each type has distinct characteristics and mechanisms, such as nociceptive pain resulting from harmful stimuli and neuropathic pain stemming from nerve damage.

Second is pain assessment where accurate pain assessment is crucial and involves understanding various dimensions—sensory, behavioral, sociocultural, affective, cognitive, and spiritual l. Tools like Visual Analogue Scales (VAS) and brief Pain inventories are used to evaluate pain. Self-reporting is considered the gold standard, but behavioral and physiological observations are also important.

Third are the inadequacies in pain management where many HCPs, especially in developing countries, lack adequate training in pain management. Studies indicate that pain is often under assessed and inadequately managed due to insufficient knowledge and training among healthcare professionals.

Fourthly is the benefit of effective Management: Proper pain management improves patient outcomes and quality of life. It requires HCPs to have a thorough understanding of pain mechanisms, use appropriate assessment tools, and address all dimensions of pain. Continuous education and training are necessary to enhance competencies in pain management. Overall, comprehensive pain assessment and management are fundamental to effective healthcare, highlighting the need for ongoing training and improved practices among HCPs**.**

2.7.2 Skills in application of pain management strategies

The section outlines key aspects of pain management for healthcare professionals, emphasizing collaborative decision-making, diverse treatment options. patient-centered care first is the Core Competencies required, it states that effective pain management requires a

comprehensive understanding of pain myths, assessment techniques, patient behaviors, and treatment methods (both pharmacological and non-pharmacological). Healthcare professionals must be knowledgeable about ethical issues and appropriate interventions for various types of pain, including acute, chronic, centralized, and neuropathic pain. Second is the assessment and Treatment skills, Pain management begins with accurate pain assessment, followed by the selection and administration of appropriate analgesics. Continued assessment and non-pharmacological interventions are necessary to manage pain effectively and help patients achieve their functional goals. For older patients with cognitive impairments, behavior may be the primary indicator of pain.

Next is the pain Management Approaches focusing on Multimodal Analgesia which Combines medications with different mechanisms and non-pharmacological interventions to provide better pain relief with fewer side effects. The Pharmacological Treatments starts with the WHO pain ladder that suggests a stepwise approach, from non-opioids for mild pain to strong opioids for severe pain. Oral administration is preferred, while neuraxial analgesia is used when necessary. The non-Pharmacological Treatments includes psychological therapies such as, cognitive behavioral therapy, physical therapy, neuromodulations like TENS (Transcutaneous Electrical Nerve Stimulation), and invasive methods like nerve blocks. The literatures identified that many healthcare professionals lack sufficient knowledge and training in pain management, which affects their ability to assess and manage pain effectively. There is a lack of international guidelines and standardized training, leading to inconsistent pain management practices in some facilities. The studies have shown varying levels of pain management knowledge and attitudes among healthcare

professionals globally, with some displaying inadequate knowledge and negative attitudes towards pain management.

2.7.3 Attitudes towards pain management

It was cited that Healthcare professionals' attitudes towards pain management can significantly impact patient care. Misconceptions, negative attitudes, and communication barriers can hinder effective pain management. The discrepancies between patients' self-reports of pain and clinicians' assessments contribute to inadequate pain management.

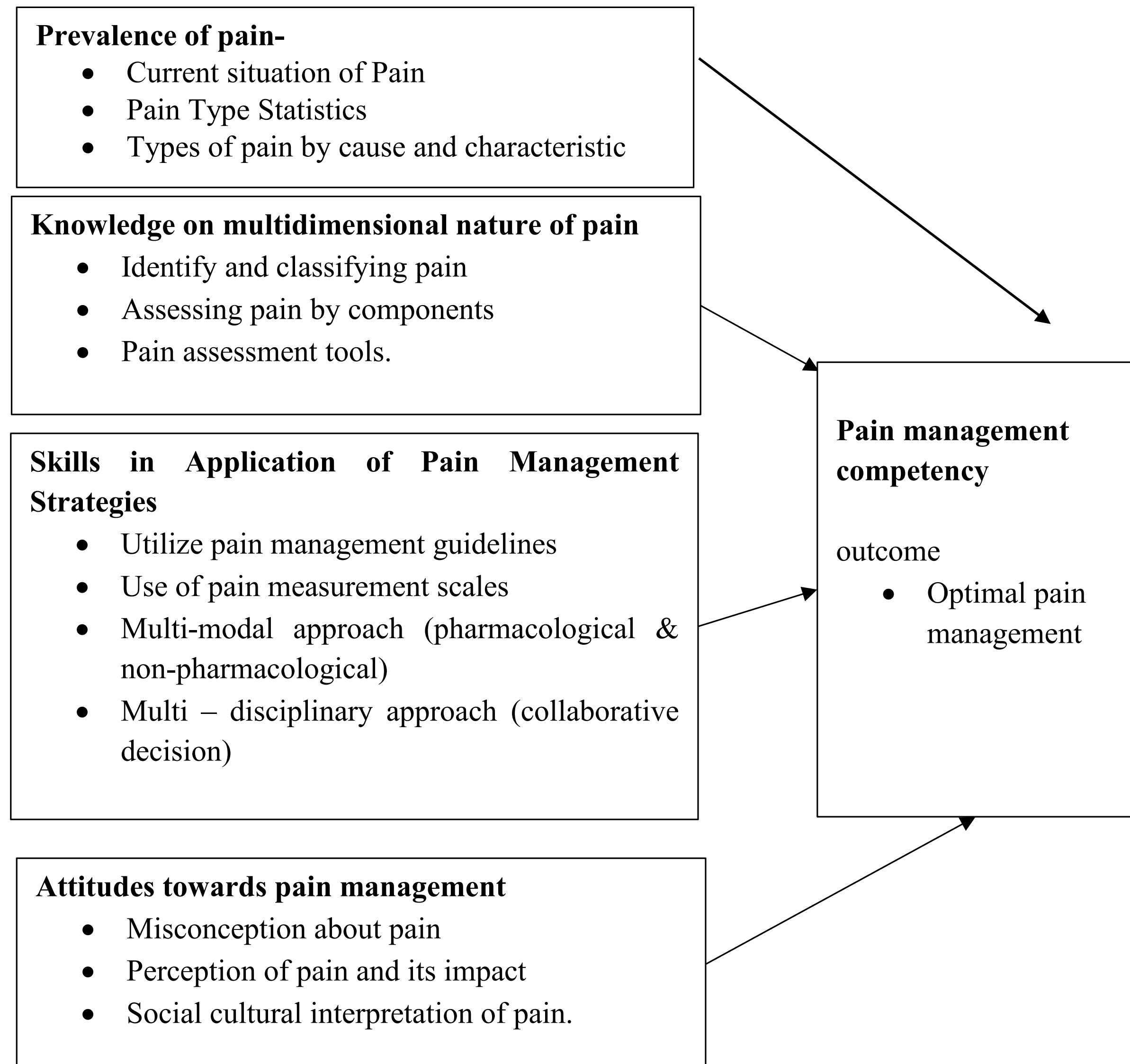
Therefore, effective pain management involves continuous education, reassessment, and patient education to ensure safe and effective pain control. Implementing scheduled dosing regimens for continuous pain and addressing barriers to optimal pain management are essential for improving patient outcomes.

2.8 Conceptual Framework

Core competencies of healthcare professionals lie at the heart of healthcare delivery efficiency and transformation. The multi-dimensional nature of pain makes it subjective to warrant an understanding of pain, ethical issues surrounding pain, its assessment and management. Health care professionals will demonstrate competency by applying professionalism, teamwork, communication, leadership and advocacy for patient, and then utilize research evidence to collaboratively manage patient's pain effectively. With competence and shared decision-making, they are able to develop positive attitudes towards pain management hence assess, classify and manage pain for patients.

Figure 2. 2:

Conceptual framework



Source: Researcher (2025)

Dependent variable competency in pain management

Independent variable Healthcare professionals' level of knowledge, skills and attitudes

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section deals with the description of research methodology of the study. It encompasses the research design, target population, sample and sampling procedures, research instruments pilot study, data collection procedures and data analysis then ethical consideration.

3.2. Research Design

A cross-sectional design was utilized. The design was ideal, as data was collected at a certain point in time in order to evaluate pain management competencies among healthcare professionals in selected Hospitals (Polit & Beck 2018). The researcher intended to describe health care professional's knowledge skills and attitude, and quantify their practice in pain assessment and management

3.3 Study Area

The study was conducted at the Meru Teaching and Referral Hospital (MeTRH) and St Teresa Mission Hospital- Kiirua. The hospitals were selected because of high patient case load and diverse cadres to meet the sample size.

Meru Teaching and Referral Hospital is located in Meru County and serves as a catchment population of 250,000 households. It has a bed capacity of 360 beds, 22cots and 9 incubators. The average daily outpatient attendance is approximately 1000 patients and daily bed occupancy rate of 150% translating to an average of 450 in-patients with over 700 staffs (doctors, clinical officers, nurses and other allied health workers).

St. Teresa Mission Hospital – Kiirua (STMHK) is a Level V Faith Based Hospital owned and operated by the Catholic Diocese of Meru. The hospital is located off Meru- Nanyuki

road in Buuri East Sub-County and it has been in existence since 1967. St. Theresa Mission Hospital has a bed capacity of 235 with 350 staffs (doctors, nurses and clinical officers and other allied health workers).

The two hospitals offer a range of services to include; outpatient, inpatient, imaging, laboratory, pharmacy, dental, rehabilitative, promotive, preventive and specialized services such as oncology, ICU/HDU, Renal, Dermatology, Urology, maxillofacial surgery, endoscopic surgery among others. Surgical ward was selected because most patient who undergo surgery experience pain, medical ward has patients in pain and majority of patients in pain visit both outpatient and accident and emergency. Therefore, healthcare professionals from these units encounter more patients in pain.

3.4 Study Population

The study population were resident doctors, clinical officers and nurses working at MeTRH and St Teresa Kiirua Mission hospital**.** Meru Teaching and referral hospital had 63 medical doctors, 51 clinical officers and 216 nurses (Meru County public service, 2024) while St Theresa had 6 doctors, 16 clinical officers and 138 nurses (St Teresa Mission Hospital Kiirua Human Resource, 2024). This gives a total of 490 healthcare professionals.

Another data source were medical files of patients who were attended to, at the outpatient, accident & emergency units and admitted in Medical and surgical wards in Meru Teaching and referral hospital and at St Teresa mission hospital Kiirua at the time of data collection The files were used to assess documented information on pain assessment and management and validate the actual practice of what HCPs reported.

3.5 Inclusion Criteria

Eligible participants was a doctor, a clinical officer and a nurse, who was working at MeTRH and St Teresa's Mission hospital Kiirua for at least six months and had given consent to participate in the study. Medical records of adult patients who were attended to, at the outpatient, accident & emergency units and admitted in Medical and surgical wards in Meru Teaching and referral hospital and at St Teresa mission hospital Kiirua at the time of data collection.

3.6 Exclusion Criteria

Doctors, clinical officers and nurses engaged on temporary basis at the two facilities and those who were on annual and sick leave. HCPs who did not consent to participate.

Medical files of discharged patients, patients who were not on pain medication were also be excluded.

3.7 Sample Size Determination

Since the target population was mixed and variable, the researcher utilized percentage of the target population of each cadre to ensure equal representation in the study. Sample size was determined using fisher's formula as follows.

$$n = \frac{Z^2pq}{d^2} \quad (1)$$

Where:

n - Desired sample size

Z - Standard normal deviation set at 1.96

p – at 50% (0.5)

q = 1-p

d- Level of statistical significance set at 0.05 Therefore: $(1.96^2 \text{ x } 0.5\text{x}0.5)/0.05^2 = 384.16$ and since my accessible 11population (220) is less than 10,000, final sample size (nf) may be estimated by:

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

Where: N- Estimate of the population or the population sample mean

This was calculated as 384/1+ (384/220) = 139.89 ~ 140 participants. To get e representative of each cadre, a percentage of each category of the total population was tabulated as follows: From the total of 494 healthcare professionals each cadre was calculated as a percentage of the total per cadre to get an accessible population of (220: 32 Drs, 145 Nurses and 43Cos) from which to get participants.

Table 3. 1

Sample distribution across the two hospitals under study

	Hospital	**Drs**	**N=69**	**Nurse**	**N=354**	**Cos**	**N=67**	**Total**	**N=490**
Target population	MeTRH	63	91%	216	61%	51	72%	330	67%
	STMHK	6	9%	138	39%	16	28%	160	33%
Accessible population	Surgical	16 +2	11%	35+16	19%	6+2	2.3%	n=77	16%
	Medical	12+ 2	10%	20+14	14%	6+2	2.3%	n=56	11%
	outpatient	0		20+8	4.5%	17+ 6	9.1%	n=51	10%
	A & E	0		22+10	10.9%	4+0		n=36	7%
Accessible population total	**Totals**	**32**	**46%**	**145**	**41%**	**43**	**64%**	**220**	**45%**

Source: Researcher (2025)

From the accessible population of 220, now the cadre percentage was used to calculate the required sample size of 140 participants as shown owing to 10% attrition (2 drs, 3cos and 9 Nurses were added to get a sample size of 154 participants.

Table 3. 2

Sample size for each cadre representation from accessible population

Cadre	Doctors (32)	Clinical officers (43)	Nurses (145)
Percentage of Total n= 220	14.5%	19.5%	66%
Sample per cadre n= 140	0.145x 140=20.3	0.195 x 140 = 27.3	0.66 x 140= 92
Total sample size	**20+2=22**	**28+3=31**	**92+9=101**
Sample size per hospital	19 3	22 9	61 40

Source: Researcher (2025)

The total sample size was 20+28+92= 140 owing to 10% attrition to make it 154 participants. 48 patient records were drawn from patient's records which was 31% of the human sample size.

3.7.1. Sample size of patient's medical files

Thirty (30%) of the human sample size was used to sample 48 files of the patients who were admitted in medical and surgical ward, and those of patients who were attended to at the OPD and A & E. Fifty (50%) was used to ensure equal representation of 24 files from each hospital. This was further subdivided by the units (surgical& medical wards, OPD and A&E) to get six files per unit.

3.7.2 Sampling technique for healthcare professionals

Purposive sampling of Meru Teaching and Referral hospital and St Theresa mission hospital Kiirua was employed. Purposive sampling was used in this quantitative research to select hospitals with specific characteristics relevant to the research question. The method enabled the researchers to gain focused, accurate, and in-depth insights from a targeted subset of the

population. It ensured the sample aligned with the research aims and examined specific variations or unique cases within healthcare professionals.

The hospitals shared the same characteristics and had the wards where patients experiencing pain were taken care. Stratification of units and cadre to select Doctors, Clinical officers and nurses in outpatient, emergency, medical and surgical wards was used. A simple random sampling was used, where raffles were made using HCPs numbers. All Hcps on duty selected a raffle and those who picked yes were included in the study. To avoid selecting same participant this was done without replacement. The process was repeated on different days until 154 participants was achieved.

3.7.3. Sampling technique for patients medical Files

Medical records of patients that had a pain prescription were selected; they were arranged according to cubes and bed numbers and selected using a systematic random sampling method in the medical and surgical wards. The file of patient on every third bed was selected for inclusion into the study. The process was repeated to get six files from each unit to get 24 files from wards. In outpatient OPD and accident and emergency, all the files of patients attended to and had a prescription of pain medication on the day of data collection were identified. The files were then arranged according to Op number and simple random sampling was used to select every 3rd file until 24 files were selected from both hospitals.

3.8 Study Instrument

A self-administered questionnaire (Appendix B) was used to collect the data. The Knowledge and Attitudes Survey Regarding Pain (KASRP) was used to assess the knowledge and attitudes of healthcare professionals towards pain assessment and management. The tool was adopted from the originally standardised questionnaire

developed by Ferrell and Mc Caffery (1987) and revised in 2021 by the international association for the study of pain. The original standardised tool was developed to assess the knowledge and attitude towards pain. The original tool has a test-retest reliability of $r > 0.8$ and an internal consistence reliability of $r > 0.7$. The tool, which is available for use in the public domain and has been adopted by several studies. The adopted tool was modified with attributes to accommodate competency domains from the studies in literature. Modification enabled HCPs to self-report their responses to items designed to assess their knowledge and attitudes concerning pain assessment and pain management. Since attitudes influence the choice of actions, the researcher evaluated the attitudes questions and changed them into practice questions. The researchers selected knowledge and practice questions, which were only applicable to general pain assessment and management applicable to MeTRH and STMHK. The instrument was administered in English since all healthcare professionals could read, comprehend and understand the language.

The modified questionnaire was divided into five sections according to the research questions. Section described the personal characteristics of study participants. Section two had closed ended questions related to general knowledge of pain with focus on multidimensional nature of pain. The participants were required to select appropriate response whether true or false. Section three had questions on pain assessment with a focus on how pain is assessed, quantified and communicated in the format of True or False. The true practice answer was given a value mark of 2, while the wrong practice answer (false) was given a value of 1. Section four had question true and false statements on application of skills in pain management competencies. The part B of this section, focused on collaborative approaches to decision-making and diversity of treatment options. Section five had

statements on attitude rated on a Likert scale. They will be graded from strongly agree to strongly disagree, a favourable response was given a higher score and the least favourable response was given a lower mark.

3.9 Validity and Reliability of the Instrument

Content Validity was ensured by using the adopted and modified instrument to suit the Kenyan context and specifically selected health facilities in Meru County. Inclusion of items obtained from literature ensured content validity of the research instrument.

The modified research tool was pre-tested using data from six health care professionals from Consolata hospital, Nkubu. This was 4% of the total sample size, two from each cadre for equal representation. They were used as a practical choice to explore initial patterns or variability before scaling up to more rigorous sampling. The pre-testing helped with feasibility assessment that determined the practicability of the main study's protocol for successful implementation. It also helped to test and improve questionnaires and the procedures for using them. Pre-testing also helped in problem identification by uncovering potential challenges with the research design, participant recruitment, or data entry and allowed for corrective action plans before the main study. It helped the researchers to modify and adapt the study design and data collection instruments to better suit the specific research context.

During pre-test, a validity analysis was performed on the modified instrument by modifying or removing questions that did not answer the research question to make the instrument a good measure of competencies in pain assessment and management among healthcare professional.

The patient records were evaluated using a checklist (Appendix C) focusing on actual practice: (1) the frequency of assessing standardised pain scores; (2) the severity of the pain by pain scores; and (3) interventions taken in the case of moderate to severe pain (pain score). A documented patient self-reported pain score, which was obtained with a Numeric Rating Scale (NRS) or a Visual Analogue Score (VAS), was defined as a standardised pain assessment.

3.10 Data Collection Procedures

The researcher obtained an introductory letter from the school of Nursing that she formally presented to the administrative management of the two hospitals indicating the purpose of the visit. The researcher visited the selected hospitals on different days and times from March to May, 2025 to collect data from participants after a written approval from MIRERC, NACOSTI, Meru County research office, MeTRH and STMHK administrations.

The researcher introduced herself to the respective unit in- charges and explained the aim of her visit, then to the participants. The researcher provided yes and no raffles to participants, sought consent and distributed a self-administered questionnaire to healthcare professionals working in outpatient, accident and emergency departments, Medical and surgical units in Meru Teaching and Referral hospital and St Theresa mission hospital- Kiirua who met the inclusion criteria and had consented. The researcher waited for the participants who were able fill the questionnaire immediately, however those that were not be able, the researcher requested for their contacts to use for reminder and request them to fill at their free time then leave the filled forms with the designated in-charges.

Using the same approval and introduction, the researcher requested access to patient's file. The researcher checked the files and filled in the checklist for required documented information.

3.11 Ethical Considerations

The researcher observed all ethical consideration by seeking ethical clearance from Meru University of Science and Technology (MUST) Institutional Research Ethics Review Committee (MIRERC). Obtained a research permit from NACOSTI, sought permission from Meru County research office and a written approval from MeTRH and St. Teresa mission hospital Kiirua administration. The study participants were requested to read the introduction that detailed the purpose of the study and terms of their participation before giving their consent, they were informed that participation was voluntary, they were free to withdraw from the study at any time and no consequence were to follow their withdrawal. Participants signed an informed consent (Appendix A); without using their names, personal numbers or initials when filling the questionnaire for anonymity. The questionnaire had codes and numbers according to the designation of participants.

Patient's file number were not recorded when filling the checklist, however for traceability of the data, hospital and department codes were assigned. The collected data was handled confidentially; filled questionnaires are kept in lockable cabinets to control accessibility.

3.12 Data Management

Data management involved handling information with confidentiality and maintaining anonymity. The filled questionnaires were filed and stored in lockable lockers to ensure data security; they were accessible to the researcher only. The questionnaires were checked for completeness and data cleaning done to ensure that all questions were answered. Data

coding was done before entry into Statistical Package for the Social Sciences (SPSS) version 29.00.

3.13 Data Analysis

Descriptive statistics were used to describe the demographic characteristics of participants, determine the prevalence of different types of pain, and describe level of knowledge and practice of healthcare professionals regarding pain assessment and management. Categorical data was expressed in the form of numbers and percentages. Inferential statistics such as chi-square were used to identify factors associated with knowledge and practice. A correlation was established using Pearson regression to check the effect of these characteristics on competency in pain management. Simple linear regression analysis was employed to explain the contribution of knowledge to practice. Further, Multiple regression analysis was computed on the factors associated with skills and practice of healthcare professionals for the purposes of controlling confounding factors. Binary logistic regression analyses helped predict the strength of association between independent and dependent variables and analysis of variance (ANOVA) determined the significance of the results at 95% confidence. Comparison between different cadres and relationships between workstation was also established and ranking done by cadre.

Findings were analyzed and reported based on the level achieved as being knowledgeable on pain for research question two, able to apply and comply to practices on pain assessment and management for research question three and having positive or negative attitudes towards pain management for research question four. A computation of these three variables (knowledge, skill and attitude) was done to determine the competency levels. Those with favorable outcome were termed competent while those with unfavorable outcome were

categorized as needing improvement and incompetent. Research findings were presented in figures, tables and charts.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter provides results from the statistical analysis conducted on a dataset of 135 responses of 154 from two locations, METRH and STMHK. This was 87.6% response rate. The analysis aimed to determine the demographic and professional profile of the participants, the prevalence of different pain types, and the associations between knowledge levels, reported pain types, and various demographic and professional factors.

The descriptive statistics were used to describe the variable as they appeared while different inferential statistics were used to generalize the results from a Sample to a Population, Make Predictions and Inferences and assess Significance of the findings. In this study, they helped determine if there were observed differences between healthcare professionals' knowledge, skills and attitudes or their relationship are statistically significant with regard to pain assessment and management.

Table 4. 1

Number of Respondents per Hospital.

Data Setting	**Frequency**	**Percent**	**Valid percent**	**Cumulative percent**
MeTRH	86	63.7	63.7	63.7
STMHK	49	36.3	36.3	100
Total	**135**	**100**	**100**	

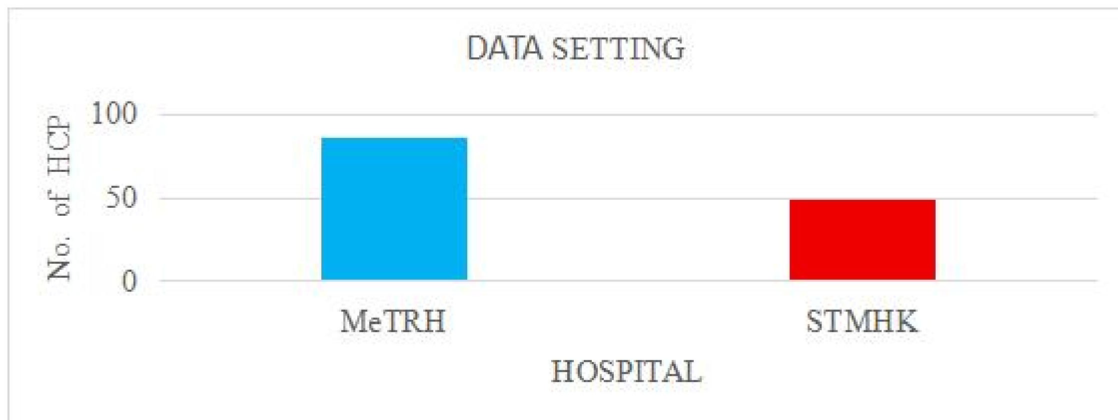
Source: Researcher (2025)

The sampling of participants from each hospital was by percentage of the total based on the study population. Out of 154 sampled healthcare professionals, 135 filled and returned the

questionnaire of which, 86 (63.7%) of participants were from MeTRH and 49(36.3%) from STMHK.

Figure 4. 1

Distribution of participants per hospital



Source: Researcher (2025)

4.2 Participants' Demographic Information

The demographic characteristics are shown in table below.

Table 4. 2

Participant's demographic data

Age in years	Gender	Designation	Years of experience	Education level	work area	Pain mx course
N=135 (f) (%)	(f) (%)	(f) (%)	(f) (%)	(f) (%)	(f) (%)	(f) (%)
21-30 – 45 (33.3%)	M- 71 (52.6)	Mo -18 (13.3)	<1 yr -13 (9.6)	Dip- 84 (62.2)	Surg- 31 (23.0)	Yes-56(41.5)
31-40 60 (44.4%)	F - 64 (47.4)	Co –30 (22.2)	1-5yrs -56 (41.5)	Hnd- 23 (17.0)	Med- 30 (22.2)	No- 79(58.5)
40-50 30 (22.2%)		NO -87(64.4)	6-10yrs 35 (25.9)	Bsc- 24 (17.8)	A&E- 37 (27.4)	
			>11yrs- 30 (22.0)	Msc- 4 (3.0)	OPD- 37 (27.4)	

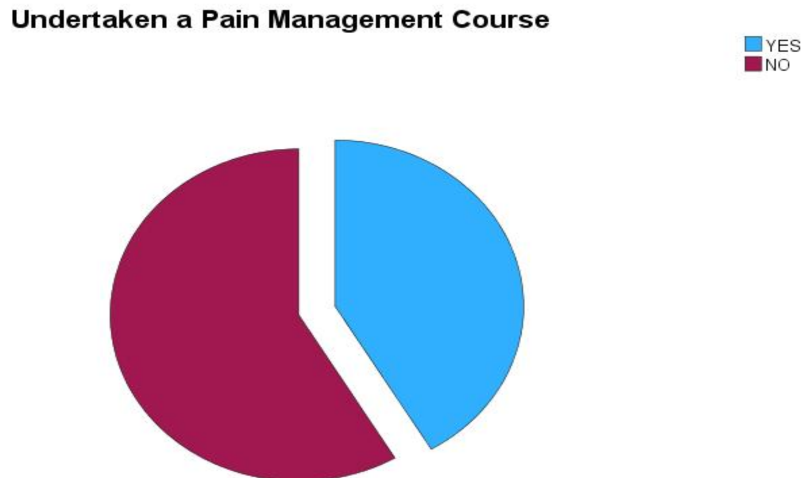
Source: Researcher (2025)

A total of 135 questionnaires were completed by nurses (64.4%, n=87), by clinical officers (22.1%, n=30) and medical doctors (13.3%, n=18) from MeTRH and STMHK hospitals. Most of the respondents were male (52.6%, n=71,), and almost half of them (44.4%, n=60) were young adults aged 31–40 years old. Following closely are those aged 21-30 years, making up 33.3%, and individuals aged 41-50 years, accounting for 22.2%. Educational attainment shows that the majority of participants hold a Diploma (62.2%, n= 84).

Bachelor's degrees are held by 17.8%, n= 24 and Higher National Diplomas (HND) by 17.0%, n=23. A small proportion, 3.0%, n=4 have obtained a Master's degree. Regarding professional years of experience, the most frequent category had 1-5 years, encompassing 41.5%, n=56 of the sample. 25.9%, n=35 of Participants had 6-10 years of experience, while those with more than 11 years were 22.2%, n=30. A smaller group (9.6%, n=13) had less than 1 year of experience. Participants were distributed across various work areas. Surgical and Medical areas each account for roughly 23.0%, n=31 and 22.2%, n=30 of the sample, respectively. Accident & Emergency (A&E) and Outpatient Department (OPD) areas are slightly more represented, each making up 27.4%, n=37 of the participants as shown in the table below.

Figure 4. 2:

Pie chart of those who have undertaken pain management course



Source: Researcher (2025)

Finally, when asked about prior training, a significant majority of participants (58.5%, n=79) reported that they had not taken a pain management course. Only 41.5% (n=56) indicated that they had taken such a course.

4.3 Prevalence of Type of Pain Assessed by Healthcare Professionals

The participants were asked to select the type of pain ever assessed and managed in their practice. Out of 135 participants, a substantial proportion of the sample reported assessing and managing at least more than one type of pain. Neuropathic pain was assessed by 97 (71.9%), inflammatory by 100 (74.1%), acute and chronic pain were equally assessed by 102 (75.6%) of participants. Nociceptive pain was encountered by less than half of the participants (45.9%, n=62), while functional pain was managed by approximately one-third of the sample (34.8%, n=47). The number was reducing with the complexity of pain.

Table 4. 3

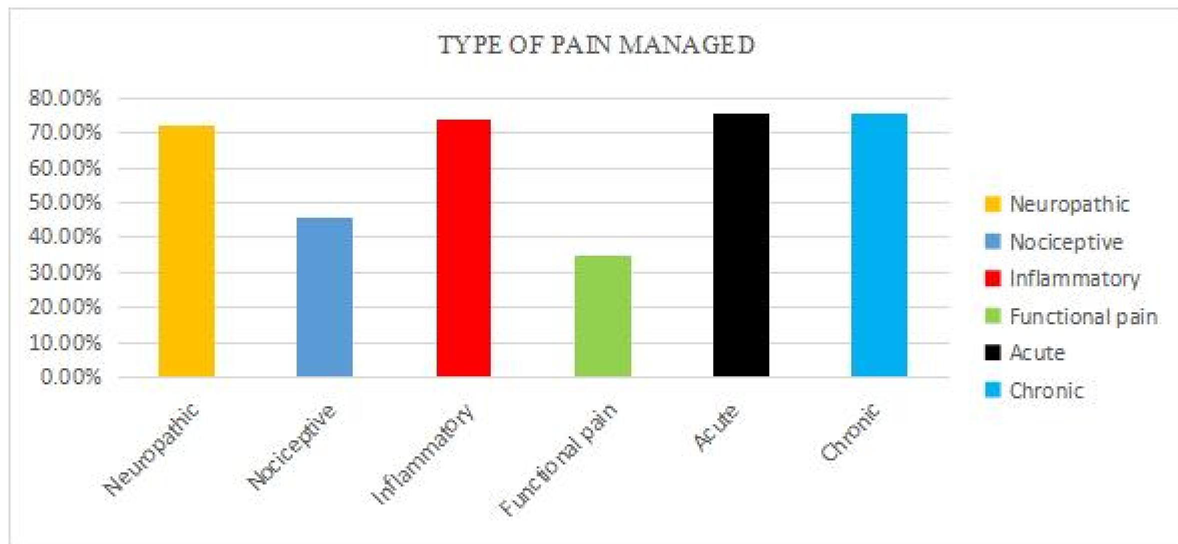
Types of Pain Assessed and Managed by HCP

N= 135	Neuropathic	Nociceptive	Inflammatory	Functional pain	Acute	Chronic
Yes	97 (71.9%)	62 (45.9%)	100 (74.1%)	47 (34.8%)	102 (75.6%	102(75.6%
No	38 (28.1%)	73 (54.1%)	35 (25.9%)	88 (65.2%)	33 (24.4%)	33 (24.4%)

Source: Researcher (2025)

Figure 4. 3

Type of Pain assessed and managed by HCP



Source: Researcher (2025)

The most common pain assessed and managed by Hcps at MeTRH and STMHK is inflammatory and neuropathic pain and may either be Acute or chronic. This indicates that majority of patients being attended to come with either inflammatory or neuropathic pain.

4.3.1 Type of pain assessed and hcps characteristic

Neuropathic pain: From the total number of participants N= 135, 97(71.9%) assessed and managed neuropathic pain of which, majority of them were of the ages 31-40 (45.4%, n=44), females (71.9%, n=46,), majority of the doctors (83.3 %, n=15), those with masters were (n=3, 75%), those with >11 y ears of experience (80%, n= 24) and 42 (74.7)% of them had attended a pain mx course. Neuropathic pain was assessed much more frequently by those working in A&E (89.2%) and OPD (75.7%) compared to Surgical (58.1%) and Medical (60.0%) areas

Nociceptive Pain: Majority of the 62 participants who assessed and managed nociceptive pain (n=24) 38.7% were from ages 41-50yrs, 36 (59.4%) females, 77.7%, n=14 doctors, 18(69%) had >11yrs of experience, had a master's degree 4(100%) and 53.4% of them had attended a pain management course. It was identified by fewer participants at STMHK (n= 17, 4.7%) compared to MeTRH (52.3%, n= 45).

Inflammatory Pain; Of the 100 participant who assessed and managed inflammatory pain, Majority of them were ages 41-50yrs (n=46, 46%), males (n= 54, 54%), they were nurses (62%), n=43(43%) had 1-5yrs of experience, n=60 (60%) with a diploma and working in A&E (n=31, 31%). A higher percentage of participants at STMHK n= 42 (85.7%) reported compared to MeTRH n=58 (67.4%). Those who had taken the course were able to assess and manage Inflammatory pain (82.3%) compared to those who had not taken the course (62.5%).

Functional Pain: Among the 47 participants that assessed and managed functional pain, majority were ages 31-40 (n=19, 40.4%), were males (57.4%, n=27), were nurses (n=28,

59.6%), had 1-5yrs of experience n=21, 44.7%, majority were working in accident and emergency n=13, 27.6% and 31.6% had attended a pain management course.

Acute Pain: 102 of participants assessed acute pain, majority of them were ages 31-40 n= 47, 46.1%), (n=53, 51.9%) were females, nurses n= 72, 70.5%, holding a diploma n=55, 53.9%, working in A&E n=28, 27.4% and had attended a pain x course (57.8%, n= 59). It was reported more at STMHK (85.7%) than at MeTRH (69.8%). managed more by HND (95.7%) and Bachelor degree holders (87.5%) compared to Diploma holders (65.5% YES

Chronic Pain of the 102 participants who assessed and managed chronic pain, majority were ages 31-40yrs (n=49, 48.3%), males n=52, 50.9%, were also nurses n=68, 66.6%, 43, 42.1% had 1-5yrs of experience, had a diploma n=54, 52.9% working in A&E n=28, 27.4% and 41, 40.1% had attended a pain management course. Chronic pain was reported more at STMHK (85.7%) than at MeTRH (69.8%). At the conventional threshold, the percentages suggest Doctors (88.9%) and Nurses (78.2%) reported chronic pain more often than Clinical Officers (60.0% YES).

4.3.2. Association between demographics and type of pain assessed and managed

A series of Chi-Square tests were performed to assess associations between each assessed pain type and various participants' demographic variables.

For association with neuropathic pain a chi-square showed a statistically significant association with location (Pearson Chi-Square = 4.295, p=.038). MeTRH (77.9%) compared to STMHK (61.2%). There was moderate association with designation (p=.452), the level of education (p=.906) respondent's years of experience (p=.066, with work area (Pearson Chi-Square = 10.764, p=.013). the Cramer's V was .282 But there was no association with age in

years, (p=.604) with gender (p=.995) and having attended a pain Management Course where the Chi-square value is (p=.385).

The near-by-Linear Association was statistically significant (p=.047, suggesting a potential trend, where recognition of neuropathic pain increased with years of experience (38.5% for <1 year, 75.0% for 1-5 years, 71.4% for 6-10 years, 80.0% for >11 years).

Nociceptive Pain with designation there was a moderate association where (Pearson Chi-Square = 9.793, DF=2, p=.007). Doctors (77.8%), Clinical Officers (50.0%) then by Nurses (37.9%) and the Cramer's V of .269. The level of one's education had a statistically significant association with a (Pearson Chi-Square = 9.020, p=.029). Individuals with Bachelor (54.2%) or Masters Degrees (100.0%) reported nociceptive pain more often than those with Diplomas (46.4%) or HNDs (26.1%). The Cramer's V was .258, indicating a moderate association. The Linear-by-Linear Association was statistically significant (p=.011), suggesting a positive linear trend where reporting of Nociceptive pain recognition increased with years of experience) (<1 year: 15.4%, 1-5 years: 44.6%, 6-10 years: 45.7%, >11 years: 60.0%, 6 years: 100.0% for N=1

There was no association between inflammatory Pain and **t**he age of a respondent, gender, designation, years of experience, education level and work area as the chi-square results was more than .05 However, Inflammatory pain had a statistically significant association with location and having taken a pain management course as (Pearson Chi-Square = 5.427, p=.020) the Cramer's V was .200, and (Pearson Chi-Square = 6.675, p=.010) respectively. Those who had taken the course were more likely to have managed Inflammatory pain (82.3%) compared to those who had not taken the course (62.5%).

Functional Pain has no association with location, age, gender, designation, education level, work area and those who have taken pain management courses. The Chi-square p-value of more than 0.05 was realized in the listed items, indicating a statistically significant association with years of experience (Pearson Chi-Square = 11.027, p=.026) and the Linear-by-Linear Association (p=.016). No participants with less than 1 year of experience reported Functional pain (0.0%), while those with more experience reported it more frequently (1-5 years: 37.5%, 6-10 years: 31.4%, >11 years: 46.7%). This shows a clear difference based on experience level, particularly the low reporting in the novice group.

The chi-square analysis of age, gender, years of practice (experience), work area and those that have taken a pain management course showed that there was no statistically significant association with assessing and managing acute pain. It had a statistically significant association with location (Pearson Chi-Square = 4.298, p=.038), designation (Pearson Chi-Square = 13.642, p=.001), education level (Pearson Chi-Square = 12.798, p=.005). The Cramer's V was .178, indicating a weak association, by nurses (82.8%) and Doctors (83.3%) than by Clinical Officers (50.0%). The Cramer's V was .318 a moderate association, it was managed more by HND (95.7%) and Bachelor degree holders (87.5%) compared to Diploma holders (65.5% YES). The Cramer's V was .308, indicating a moderate association respectively.

The chi-square analysis on the association between chronic pain and age, gender, years of experience, work area and if someone had taken a course on pain management indicated no significant association. Chronic Pain has a statistically significant association with location (Pearson Chi-Square = 4.298, p=.038). Chronic pain was reported more at STMHK (85.7%) than at MeTRH (69.8%). The Cramer's V of .178, indicates a weak association, borderline

statistically significant association (Pearson Chi-Square = 5.983, p=.050). Between Chronic Pain with education level (Pearson Chi-Square = 16.366, p=.001). HND (100.0%), Bachelor (87.5%), and Master's degree holders (100.0%) compared to Diploma holders (64.3% YES). The Cramer's V of .348.

Generally, Neuropathic, inflammatory acute and chronic pain are the most common types of pain reported to be assessed and managed by HCPs at MeTRH and at STMHK. However, information elicited by the checklist from the sampled patients' files has no evidence that pain was ever assessed or even classified.

4.4 Knowledge of Health Care Professionals (HCPS) Regarding Pain

To answer the question; what is the level of knowledge on pain among healthcare professionals at MeTRH and STMHK? The section had 27 questions on knowledge of multidimensional nature of pain specifically, broad categories, duration and prognosis of pain. It also had questions on knowledge of the effects of poorly controlled pain and the HCPs understanding of the dimensions of pain. This section also explored if the HCP know what to use pain management, when pain is assessed, what to consider when assessing pain, and what affects pain and the validity of pain measurements, HCPs knowledge of available pain assessment tools and the need for collaborative decision making regarding pain assessment**.**

4.4.1 Knowledge on multidimensional nature of pain

This section sought to assess knowledge on multidimensional nature of pain, categories of pain and effects of uncontrolled pain. Where participants qualified statements as either true, false or were not sure. Majority (94.8%, n=128) of participant know that pain is broadly categorized as acute or chronic. 76.3%, n=103 agree that acute pain is less than three months

and 96.3%, n= 130 know that acute pain is reversible. While few (10.4%n=14) do not agree with the effects of poorly controlled pain, Majority (93.3%, n= 126) agree that pain has both physical, sensory, behavioral, social-cultural, cognitive, affective and spiritual aspects, 86.7%, n= 117and 88.1%, n=119 agree that chronic pain is also multidimensional and has a negative impact on a person's life and quality of life respectively.

Table 4. 4

Knowledge on nature of pain

Statement on knowledge of pain	**TRUE N (%)**	**FALSE N (%)**	**NOT SURE N (%)**
Pain is broadly categorized as acute or chronic. (T)	128 (94.8)	5 (3.7)	2 (1.5)
Acute pain is of short duration (less than 3 months).(T)	103 (76.3)	28 (20.7)	4 (3.0)
Acute pain is reversible with appropriate treatment.(T)	130 (96.3)	2 (1.5)	3 (2.2)
Poorly controlled acute pain induces physiological and psychological harmful effects on patients.(T)	121 (89.6)	7 (5.2)	7 (5.2)
Chronic pain is complex and multidimensional.(T)	117 (86.7)	12 (8.9)	6 (4.4)
Chronic has a negative impact on the person's function and quality of life.(T)	119 (88.1)	11 (8.1)	5 (3.7)
Pain has many dimensions; physical, sensory, behavioral, sociocultural, cognitive, affective, and spiritual used for holistic assessment.(T)	126(93.3)	3 (2.2)	6 (4.4)

Source; researcher (2025)

4.4.2 Knowledge on Pain Assessment

This section sought to assess whether the healthcare providers at MeTRH and STMHK know what to use in assessing, when to assess and what to assess when managing pain. Participants were asked to qualify statement as either true, false or were not sure about it.

One hundred and thirty-five (100%) participants responded on knowledge on assessment of multidimensional nature of pain. Ninety six point three percent (96.3% n=130) agree that pain management guidelines should be used in assessment and management of pain, 92.6%, n=125 say that pain should be assessed frequently before and after interventions, while 98 (72.7%) acknowledge that, patient's self-report is the gold standard, 123(91.1%) agree that behavioral and physiological are other measurements in pain management, still 55(40.7%) disagree that Vital signs are always reliable indicators of the intensity of a patient's pain. Majority (80%, n=108) agree that patients should be individually assessed to determine cultural influences, while 69.5%, n=89 disagree that the sensory pain threshold is the same for all patients, a few (38.5%, n=52) disagree with Estimation of pain by a healthcare professional is as valid a measure of pain as a patient's self-report. This indicates a divided opinion on the equivalence of HCP estimation and patient self-report. Majority (82.8%, n= 108) agreed that cultural influence plays a role, 14.9%, n=23 disagreed, and 2.2%, n=4 were unsure. 63.4%, n=84 agreed with the concept of reduced pain tolerance, 35.8%, n=50 disagreed, and 0.7%, n=1 were not sure on the role of culture in pain assessment.

Overall, these frequencies suggest a generally high level of agreement with many fundamental concepts of pain, such as its categories, the impact of poor control, complexity of chronic pain, importance of guidelines and assessment, and the influence of culture.

However, there is less consensus regarding vital signs as reliable indicators, the equivalence of HCP estimation to self-report, and whether everyone has the same sensory threshold.

4.4.3 Total knowledge scores

The total knowledge score on pain and pain assessment was computed by binning several questions on knowledge of pain and knowledge of pain assessment and scaling the answered questions by age, education level and by years of experience. The cut off mark was 70%, which 24 correct responses as the minimum. The computation was recorded as binned categories of: <24 LOW, >=24-29 MEDIUM, >=29-34 HIGH, >=34 EXTREMELY HIGH). Out of the 134 respondents, among those with <1year of experience, 3(23%) of participants exhibited total low knowledge of <24, 3(23%) medium => 24-29respctively, 6 demonstrated high=>29-34 total knowledge and only 1 had extremely high total knowledge across all ages. Among those with 1-5years of experience N= 55, 3 (5%) had low knowledge, 15 (27%) medium 28(50.9%) high and only 9(16.4%) with extremely high total knowledge score across all ages. Those who had 5-10 years of experience N=35, 2(5.7%0 had low, medium 9(25.7%), high 18(51.4%) and only 6(17.1%) between ages 31-40 had extremely high total knowledge score. Finally, those with more than 11years of experience N=30, 3(10%) had low total knowledge, 15(50%) had medium while 7(23.3%) and 5(16.7%) had high and extremely high total knowledge on pain respectively.

Table 4. 5

Binning on Knowledge of Pain

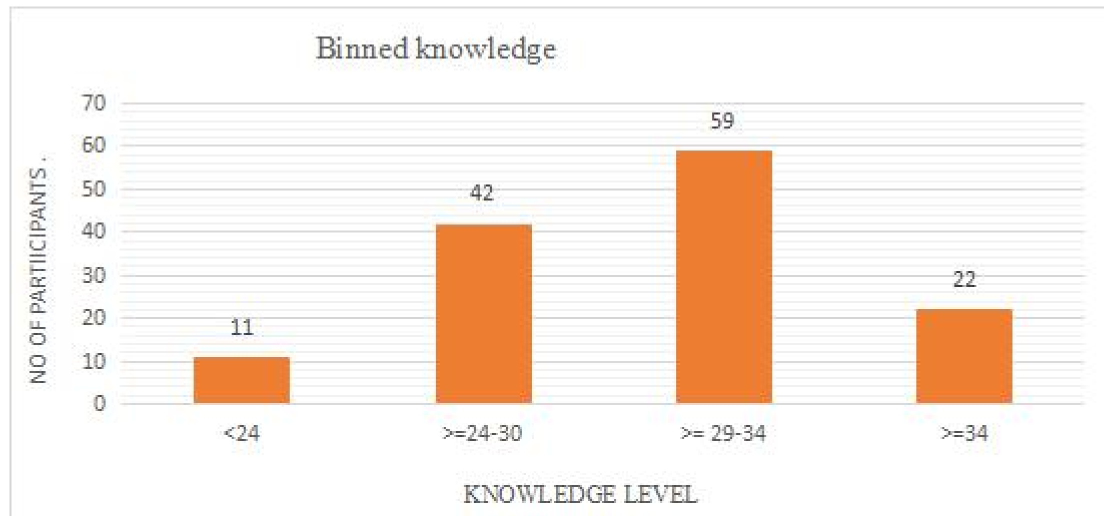
Yoe	Total Knowledge	Category	Age In Years			Total
			21-30	**31-40**	**41-50**	
<1	Knowledge_Total	<24 Low	1	1	1	3

	(Binned)	>=24 - 29 Medium	3	0	0	3
		>=29 - 34 High	6	0	0	6
		>=34extremely High	1	0	0	1
	Total		11	1	1	13
1-5	Knowledge_Total (Binned)	<24 Low	2	1	0	3
		>=24 - 29 Medium	6	8	1	15
		>=29 - 34 High	16	11	1	28
		>= 34 Extremely High	5	3	1	9
	Total		29	23	3	55
6-10	Knowledge_Total (Binned)	<24 Low	0	2	0	2
		>=24 - 29 Medium	1	6	2	9
		>=29 - 34 High	3	12	3	18
		>= 34 Extremely High	0	6	0	6
	Total		4	26	5	35
>11	Knowledge_Total (Binned)	<24 Low		2	1	3
		>=24 - 29 Medium		5	10	15
		>=29 - 34 High		1	6	7
		>= 34 Extremely High		1	4	5
	Total			9	21	30
	Knowledge_Total (Binned)	>= 34 Extremely High		1		1
	Total			1		1
Total	Knowledge_Total (Binned)	<24 Low	3	6	2	11
		>=24 - 29 MEDIUM	10	19	13	42
		>=29 - 34 HIGH	25	24	10	59
		>= 34 EXTREMELY HIGH	6	11	5	22
	Total		**44**	**60**	**30**	**134**

Source; Researcher (2025)

Figure 4. 4

Binned knowledge levels among HCPs



Source; Researcher (2025)

Majority 59(44%) of participants were categorized to have high total knowledge score of pain. Only 8.2%, n=11 had low knowledge.

4.4.4. Comparison between participant characteristics and total knowledge scores

An ANOVA conducted to compare the mean total knowledge score across different designations (Doctor, Clinical officer, Nurse) showed a statistically significant difference in mean knowledge total scores among the designation groups. The F-statistic was 6.285, and the significance (p-value) is .002, less than the conventional alpha level of 0.05, indicating that, at least one designation group has a significantly different mean knowledge score from the other. Doctors had a mean of (32.7222, N=18), Clinical officers (28.4333, N=30), and Nurse (30.4419, N=86).

The Tukey HSD post hoc test used to determine which specific groups differed significantly, revealed a statistically significant mean difference between doctors and clinical officers (Mean Difference = 4.28889, p = .002), with doctors having a higher mean knowledge score.

The mean difference between doctors and nurses (Mean Difference = 2.28036, p = .085) was not statistically significant at the 0.05 level. The mean difference between clinical officers and nurses (Mean Difference = -2.00853, p = .058) was also not statistically significant at the 0.05 level. The ANOVA results indicate that Doctors, as a group, exhibit a statistically significant higher level of overall pain knowledge compared to Clinical officers based on the total knowledge total score, while the differences between doctors and nurses, and clinical officers and nurses were not statistically significant at the 0.05 level.

Table 4. 6

Multiple Comparisons by designation

Dependent Variable: Knowledge of Pain Assessment Total

(I) DESIGNATION	**(J) DESIGNATION**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
DOCTOR	CLINICAL OFFICER	4.28889*	1.22407	.002	1.3870	7.1907
	NURSE	2.28036	1.06418	.085	-.2424	4.8032
CLINICAL OFFICER	DOCTOR	-4.28889*	1.22407	.002	-7.1907	-1.3870
	NURSE	-2.00853	.87057	.058	-4.0723	.0553
NURSE	DOCTOR	-2.28036	1.06418	.085	-4.8032	.2424
	CLINICAL OFFICER	2.00853	.87057	.058	-.0553	4.0723

**. The mean difference is significant at the 0.05 level.*

Source: researcher (2025)

Chi-Square tests were performed to assess the association between total knowledge score and demographic variables.

Association of Total Pain Knowledge and Professional Designation

A Pearson Chi-Square = 15.921, p = .003 suggests that knowledge about the duration of acute pain, believing that poor pain control leads to effects (The Pearson Chi-Square = 12.945, p = .012), the perception of cultural influence on pain (a Pearson Chi-Square = 13.429, p = .009) and beliefs about reduced pain tolerance (Pearson Chi-Square = 12.576, p = .014) are significantly associated with professional designation. Associations that were not statistically significant ($p > 0.05$) with designation include; Vital signs are always reliable indicators of the intensity of a patient's pain (p=.456), Pain is broadly categorized as acute or chronic (p = .289), Acute pain is reversible with appropriate treatment (p = .174), Chronic pain is complex and multidimensional (p = .289), Chronic pain has a negative impact on the person's function and quality of life (p = .289), Pain has many dimensions; physical, sensory, behavioral, sociocultural, cognitive, affective, and spiritual used for holistic assessment (p = .138), Pain should be frequently assessed in patients before and after interventions (p = .470), Pain measurement ways include Patients' Self report, Behavioral and Physiological (p = .406), The gold standard in pain assessment is the patient's self-report (p = .320), The sensory pain threshold is the same for all patients (p = .479), Estimation of pain by a healthcare professional is as valid a measure of pain as a patient's self-report (p = .500) and Pain management guidelines should be used in assessment and management of pain (p = .352).

For the significant associations, the significant Chi-Square values suggest that the distribution of responses for these items is not the same across the three designation groups. Further analysis, beyond what is presented, would be needed to understand *how* the distributions differ (e.g., which group is more likely to answer TRUE or FALSE).

Association between total knowledge score and years of experience

For the total sample (N=134 valid cases), the Pearson Chi-Square test shows a value of 5.823 with 6 degrees of freedom, resulting in an asymptotic significance (p-value) of .443. This indicates that there was no statistically significant association between total knowledge score level and years of experience across the entire group. However, the Cramer's V value was .147, suggested a very weak association. Among participants with less than 1year experience group (N=13), the Pearson Chi-Square was 7.879 (DF =6, p=.247) and the Linear-by-Linear Association was statistically significant (p=.037). For those who had worked between 1 and 5 years (N=55), the Pearson Chi-Square was 2.328 (DF=6, p=.887). For those with 6 to10 years of experience group (N=35) and more than 11 years (N=30), the Pearson Chi-Square was 3.881 (DF=6, p=.693) and 3.061 (DF=3, p=.382) respectively, showing no significant association. Despite some hints of association in those with less than 1 year experience, the linear-by-linear association indicates a significant association where p=.037, the overall analysis indicated no significant link between binned total knowledge score level and years of experience**.**

Association between Total knowledge score and Education Level

Chi-Square tests were also performed to examine the association between binned total knowledge score level and education level (Diploma, HND, Bachelor, and Masters). The Pearson Chi-Square test yielded a value of 5.823, resulting in a p-value of .443. This indicates that there was no statistically significant association between total knowledge score and education level across the entire group. The Cramer's V value was .147, suggesting a very weak association. Nevertheless, within specific education levels: **t**he DIPLOMA holders: Pearson Chi-Square = 4.112, p=.662, HND = 2.624, p=.854, Bachelors = 5.723, p=.455, and masters = 1.333 (DF=1, p=.248 revealed no significant association. Analysis for

the Master's group involved a very small number of cases (N=4), with 100.0% of cells having expected counts less than 5. The analysis did not find a statistically significant association between total knowledge score and education level.

4.4.5. Correlation analyses for level of knowledge score in pain assessment and demography

Correlation analyses were performed to investigate the linear relationships between the total knowledge score and several demographic and professional variables.

Between total knowledge score with gender and education level

For gender, the Spearman correlation coefficient was -.029 with a p-value of .738, -.087 with a p-value of .316, -.086 with a p-value of .321, for education level, The Pearson correlation coefficient is .150 with a p-value of .083 and the Spearman correlation coefficient is .122 with a p-value of .160; for work area, The Pearson correlation coefficient is -.163 with a p-value of .060. The Spearman correlation coefficient is -.162 with a p-value of .062 neither correlation was statistically significant at the 0.05 level. This suggests no statistically significant correlation between total pain knowledge score and respective characteristic. However, the Pearson correlation coefficient is .277, statistically significant at the 0.01 level (p = .001). The Spearman correlation coefficient is .258, also significant at the 0.01 level (p = .003) results indicated a weak positive, statistically significant correlation between total pain knowledge score and having attended a pain management course. This suggests that individuals who attended a pain management course tend to have higher total knowledge scores on pain.

Table 4. 7

Correlation between total knowledge, gender and education level.

		Knowledge	Gender	Education level
Knowledge	Pearson correlation	1	.087	
	Sig (2-tailed)		316	
	N	134	134	
Gender	Pearson correlation	.087	1	
	Sig (2-tailed)	316		
	N	134	135	
Knowledge	Pearson correlation	1	-	150 .
	Sig (2-tailed)			083
	N	134		134
Educational level	Pearson correlation	150 .		1
	Sig (2-tailed)	053		
	N	134		135

Source; Researcher (2025)

In summary of correlations, total pain knowledge is significantly positively correlated with the data setting and attending a pain management course, but not significantly correlated with years of experience, gender, education level, or work area.

4.5 Skills Application in Pain Management

On the question; how do healthcare professionals apply strategies of pain management at MeTRH and STMHK? The section had 21 questions, which concentrated on HCPs practice. The section starts with asking the available pain assessment scale and the frequency of utilizing these scales in their practice, this was then followed by how they consider treatment modalities for different types of pain, if they follow guidelines for prescription,

administration to effectively manage pain, their understanding and consideration of equianalgesia and whether they individualize treatment for patients and their application of PMI.

4.5.1 Available pain assessment scales

Majority (85.9%, n=116) reported to have access to the Numeric Rating Scale (NRS) while the Pain Assessment in Advanced Dementia Scale (PAINAD) was reported to be available to only 8.1%, n= 11of participants. The Pain Assessment Checklist for seniors with Limited Ability to Communicate (PACSLAC) had the lowest reported encounter at 0.7%, n=1. This may be associated with fewer patient with limited ability that need evaluation with the tools or even lack of knowledge on the existence of such scale.

Table 4. 8

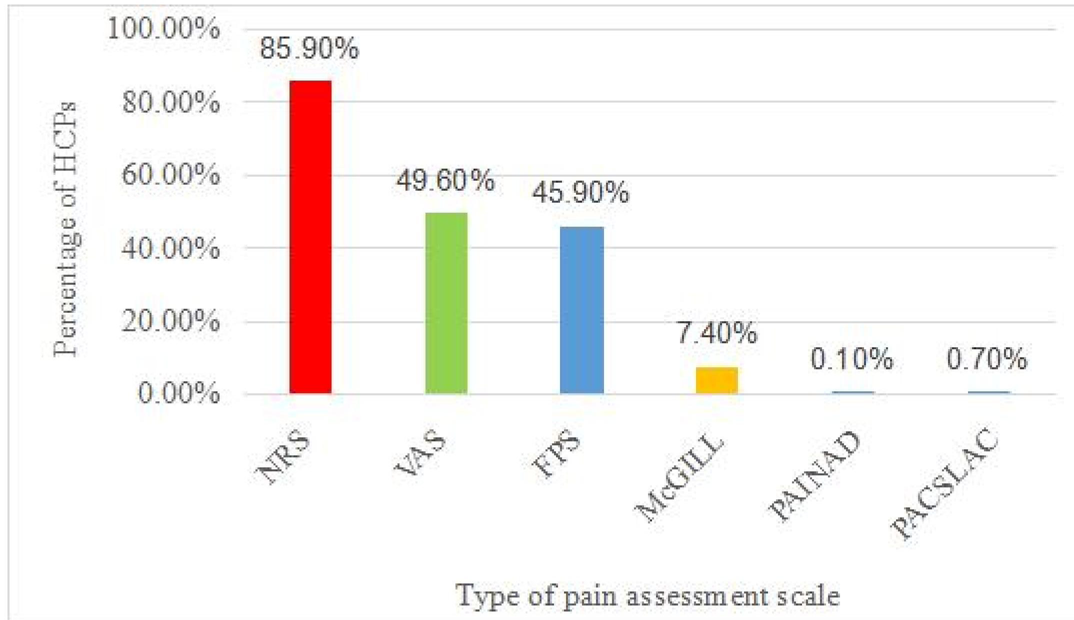
Frequency table on available pain measurement scales

Tools as coded	YES	NO
NRS	116(85.9%)	17(12.6%)
VAS	67(49.6%)	66(48.9%)
FPS	62(45.9%)	71(52.6%)
McGill	10(7.4%)	123(91.1%)
PAINAD	11(8.1%)	122(90.4%)
PACSLAC	1(0.7%)	131(97.0%)

Source: Researcher (2025)

Figure 4. 5

Bar graph on types of pain assessment scales used



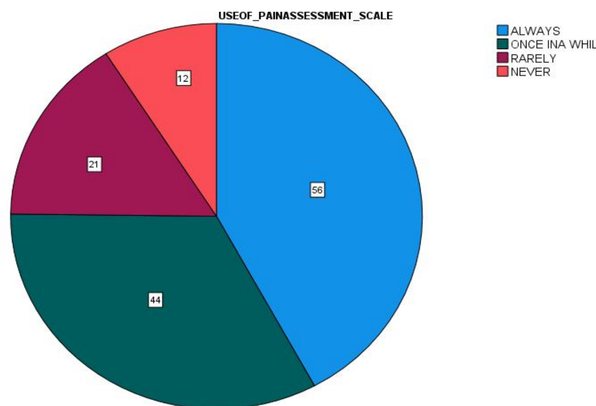
Source: Researcher (2025)

4.5.2 Utilization of pain assessment scales

Participants were asked on the frequency of using pain assessment scales, 56(41.5%) of them reported always using a pain assessment scale as seen in the pie chart

Figure 4. 6:

Pie chart on use of pain assessment scale utilization



Source: Researcher (2025)

4.5.3 Cross tabulation of use pain assessment scale and demography

Majority of HCPs who reported to always use pain assessment scale were clinical Officers (53.3%) followed by Nurses (41.2%), then doctors (27.8%). 22.2% of doctors reported to rarely use pain assessment scale, 50% of them reported to use it once in a while. 6.7% of clinical officers rarely or never used it and 33.3%use it once in a while. A big number of nurses (11.8%) have never used pain scale and 29.4% of nurses, reported to use pain assessment scale once in a while.

Table 4. 9

Designation versus use of pain assessment scale

			Always	Once in a while	Rarely	Never	Total
Designation	**Doctor**	Count	5	9	4	0	18
		% Within designation	27.8	50.0	22.0	0.00	100%
	Clinical officer	Count	16	10	2	2	30
		% within designation	53.3	33.3	6.7	6.1	100%
	Nurse	Count	35	25	15	10	85
		% within designation	41.2	29.4	17.6	11.8	100%
Total		Count	56	44	21	12	133
		% within designation	42.1	33.1	15.8	9.0	100%

Source: researcher (2025)

The cross tabulations examined the relationship between 'DESIGNATION' and use of various pain assessment scales. For many pain scales (NRS, VAS, FPS, PAINAD, PACSLAC), there was no statistically significant association with DESIGNATION based on the Pearson Chi-Square test ($p > .05$). However, the relationship between DESIGNATION and the use of the McGill pain scale was highly statistically significant (Pearson Chi-Square

p < .001), suggesting its use varies significantly by designation. A statistically significant association was also found between DESIGNATION and the use of Multidimensional Tools for initial comprehensive pain assessment (Pearson Chi-Square p = .036).

Despite reports on the available pain assessment scales and their utilization by majority of healthcare professionals, results from the validation checklist did not depict evidence of the presence or use of these scales.

4.5.4. Pain assessment skills

This was assessed in two parts, in the first part, healthcare professional were asked to quantify statements commensurate to what, when and how they carry out their pain assessment and management. The second part involved using an observation check list to validate this reported information by auditing patients file. Frequency analysis was performed on the total score of all individual recoded variables used in the total skill score computation to provide a descriptive overview of the distribution of what participants reported to be doing.

4.5.5 Frequency of response on individual variables for assessing skills in pain management

The frequencies indicated varying levels of, demonstrated skill across the specific items. 96.3% (130) consider treatment modalities of different types of pain to be different, 95.6% (129) often follow pain management guidelines, 90.4%(119) frequently determined pain treatment methods according to patients' pain intensity, 77.8%(105) agreed to use pain management index. As 87.9% (118) considered "equianalgesia", 21.5%(29) and 32.6%(44) still considered that opioids can be more or less addictive in short time and that elderly patients cannot tolerate opioids respectively. Majority 81(60%) preferred giving narcotics on

a regular schedule to PRN and 128(95%) considered the time to peak effect of IV morphine to be 15mins. Majority 109(80.7%) consider, combining analgesics with different mechanism for better pain control and few side effects. 101(74.8%) ensure that stable analgesics blood levels are maintained through round-the-clock. Only 9(6.7%) are not sure, 7(5.9%) disagree with adjusting subsequent doses of opioids analgesics according to patient's response, 46(34.1%) disagreed that anticonvulsant drugs could produce optimal pain relief with a single dose while 73(54.1%) agreed that benzo diazepam are not effective pain relievers unless pain is due to muscle spasm and 116(85.9%) used distraction to decrease patient's pain perception.

On sharing patient information, majority 100(74.1%) of HCP know what was explained to the patient, 103(76.3%) shared patient information to verify the effects of pain management treatment. Only 43(31.9%) of HCP had no same understanding of the future direction of patient's pain management and only 34(25.2%) identified patient as the key person in pain management. With majority of participants agreed to take right actions, it indicated high skill application. However, data collected through the checklist to validate participant's information revealed otherwise.

4.5.6 Total score on skills in pain management

New variables were computed to represent different aspects of pain management skill. The total score skill in pain management was computed by summing up several recoded variables that represent different components related to pain management practices in two sub-scores as clinical practice skills and collaborative skills in pain management. The clinical skill score is a sum of fifteen recorded variables, primarily related to clinical practices and knowledge about pain management. Collaborative score was a sum of four

recoded variables: what HCPS know about the patient, shared information among HCP, shared understanding by HCP and identification of patient as key person in pain management by HCP. These steps indicate an intention to analyze not just an overall skill score but also potentially distinct domains of clinical practice and collaborative practice.

Item sixteen (16) to thirty-four (34) comprised question on clinical skill action, of which item 26, 28, 30 and 34 were answered correctly by majority of participants, while the remaining 35-38 had collaborative management statements. This categorization of skill confirms that HCPs at MeTRH and STMHK claim to have good practices as pertains to pain management.

Table 4. 10

Computation of Total score skill in pain management

	Frequency	Percent	Valid percent	Cumulative percent
Valid 16	1	7	8	.8
17	1	7	8	1.7
18	1	7	8	2.5
20	4	3.0	3.3	5.8
22	5	3.7	4.2	10.0
23	1	7	8	10.8
24	7	5.2	5.8	16.7
25	1	7	8	17.5
26	12	8.9	10.0	27.5
27	1	7	8	28.3
28	17	8.6	14.2	42.5
29	9	6.7	7.5	50.0
30	21	15.6	17.5	67.5
32	9	6.7	7.5	75.0
33	2	1.5	1.7	76.7
34	12	8.9	10.0	86.7

35	3	2.2	2.5	89.2
36	3	2.2	2.5	91.7
37	1	7	.8	92.5
38	9	6.7	7.5	100.0
Total	**120**	**88.9**	**100.0**	

Source: Researcher (2025)

4.5.7 Comparison of mean total score with designation

A one-way ANOVA was conducted to compare the mean total scores on skills in pain management across different professional designations. The Designation has three categories: Doctor, Clinical officer, and nurse.

The F-statistic was calculated as the ratio of the mean squares, resulting in F = 0.820 and the significance level was 0.443, greater than the conventional alpha level of 0.05 Indicating no statistically significant difference in the mean total score on skill in pain management among the different designation groups.

Table 4. 11

ANOVA table on mean total score of skills in pain management

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39.123	2	19.562	.820	.443
Within Groups	2790.468	117	23.850		
Total	**2829.592**	**119**			

Source: Researcher (2025)

Post hoc tests using turkey's HSD: Post hoc tests using turkey's HSD (honestly significant difference) were used to explore pairwise differences if the overall ANOVA was significant found (p = 0.443), confirming the lack of significant pairwise differences. Doctor vs clinical officer: mean difference = 1.52222, sig. = 0.573, doctor vs nurse: mean difference = 0.15079,

sig. = 0.992 and clinical officer vs nurse: mean difference = -1.37143, sig. = 0.444. All pairwise comparisons show significance levels greater than 0.05, supporting the conclusion from the ANOVA that there are no significant differences in the mean total pain management skill score based on designation.

4.5.8 Multiple Comparisons of variables on skills in pain management

To examine the relationship between each of the individual recoded pain management skill variable and whether a respondent has taken a pain management course, Cross tabulation, analysis was conducted. The primary statistic reported a Pearson Chi-Square of 8.197, DF = 2, Sig. = 0.017, the Likelihood Ratio Chi-Square of 12.132, DF = 2, Sig. =0.002 and Linear-by-Linear Association (7.755, df =1, Sig. =0.005) which are highly significant, suggesting a relationship between course attendance and reported skill on specific determinants of pain management.

An analysis on collaborative score by shared decision making was where HCP in these hospitals were asked whether in their units, Nurses, clinical officers and the doctors all knew what was explained to a patient about his/her condition or treatment of pain (Sig. = 0.860), whether they shared information to verify the effect of pain management (Sig. = 0.485), had the same understanding of the future direction of the patient's pain management (Sig. = 0.776), identified the patient as the key person in pain management (Sig. = 0.128).

The Linear-by-Linear Association, which tests for a linear trend across ordered categories where the recoded variable categories had a meaningful order, such as $0<1<2$, showed significance for multiple variables, providing stronger evidence of an association where higher scores on the recoded variable were associated with course attendance. This confirms

that those who attended pain management course participated in multi-disciplinary decision making on pain management.

4.5.9 Correlation Analysis for assessing skills in pain management

Correlation analysis was conducted using both Pearson and Spearman methods to examine the relationships between total score on skill in pain management, knowledge total score, and the years a respondent has worked. Pearson correlation measures linear relationships, while Spearman's rho measured monotonic relationships, which was more appropriate for ordinal data or when assumptions of normality were violated. The Pearson Correlation of 0.564, Sig. (2-tailed) = 0.000 and significant ($p < 0.01$) indicated a moderate to strong positive linear correlation between the total pain management skill score and the total knowledge score. The Spearman's rho of 0.532, Sig. (2-tailed) = 0.000. Confirms the moderate to strong positive monotonic relationship, which is statistically significant ($p < 0.01$) meaning that, individuals with high knowledge scores had better skills in pain management.

Table 4. 12

Correlations of knowledge and skills in pain management

		Total score skill in pain management	**Total knowledge score**	**Years of experience**
Total score skill in pain management	Pearson correlation	1	.564	.143
	Sig (2-tailed)		<.001	.119
	N	120	120	120
Total knowledge score	Pearson correlation	.564	1	.026
	Sig (2-tailed)	<.001		.768
	N	120	134	134

Years of experience	Pearson correlation	.143	.026	1
	Sig (2-tailed)	.119	.768	
	N	120	134	135

Correlation is significant at 0.001 level (2-tailed).

Source: Researcher (2025)

4.5.10 Regression Analysis for total score on skill in pain management

To predict total score on skill in pain management, multiple linear regression analysis was conducted using the responses on those who have taken a pain management course, knowledge total score, and designation as predictor variables. The highly significant F-statistic ($p < 0.001$) indicates that the regression model as a whole significantly predicts Total Score Skill in Pain Management. The predictor variables together explain a statistically significant proportion of the variance in the total skill score

Table 4. 13

Regression model summary

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.570[a]	.325	.308	4.05782

a. Predictors: (constant) designation, Pain Mx Course & Knowledge Total

Source: Researcher (2025)

The model summary table above provides metrics for evaluating the overall fit of the regression model. R of 0.570 is the multiple correlation coefficient, representing the correlation between the observed total skill scores and those predicted by the model. R square = 0.325.s indicates that approximately 32.5% of the variance in total score on skill in pain management is explained by the predictor variables included in the model (designation,

pain mx course, and knowledge total), adjusted r square = 0.308 is a modified r-squared that accounts for the number of predictors and the sample size, providing a less biased estimate of the population r-squared. 30.8% of the variance was explained after adjustment. std. error of the estimate = 4.05782. that was the standard deviation of the residuals, representing the typical distance between the observed total skill scores and the scores predicted by the model

The ANOVA table for the regression model tests the overall significance of the model. Regression Sum of Squares = 919.546 with 3 df. Residual (Error) Sum of Squares = 1910.046 with 116 df. Total Sum of Squares = 2829.592 with 119 df. (Note: This Total Sum of Squares matches the one from the One-way ANOVA, confirming the number of cases used in the regression is 120 - 1 = 119 df Total). The F-statistic is 18.615 with a significance level (Sig.) of 0.000. This highly significant F-statistic ($p < 0.001$) indicates that the regression model as a whole significantly predicts Total score skill in pain management. The predictor variables together explain a statistically significant proportion of the variance in the total skill score.

Table 4. 14

ANOVA Regression model

Model	Sum of squares	df	Mean square	F	Sig.
1.Regression	919.546	3	306.515	18.615	.000[b]
Residual	1910.046	116	16.466		
Total	**2829.592**	**119**			

**Dependent variable: Total score on skill in pain management.*

Source: Researcher (2025)

Coefficients: The Coefficients table provides the estimated regression coefficients for each predictor and the constant (Intercept): B = 8.427, Sig. = 0.007. The intercept is statistically significant, representing the predicted total skill score when all predictor variables are zero. The coefficient for course attendance is 0.149, Std. Error = 0.790, Beta = 0.015, Sig. = 0.851. This means that, holding other variables constant, attending the pain management course is associated with an increase of 0.149 in the total skill score. However, this coefficient is not statistically significant ($p = 0.851$). Based on this model, there is no statistically significant evidence that course attendance, as a single predictor in this model alongside total knowledge and designation, significantly predicts the total pain management skill score. The coefficient for total knowledge is 0.641, Std. Error = 0.091, Beta = 0.567, Sig. = 0.000.

This indicates that for every one-unit increase in the total knowledge score, the total pain management skill score is predicted to increase by 0.641 units, holding other variables constant. This predictor is highly statistically significant ($p = 0.000$). The standardized coefficient (Beta = 0.567) indicates the relative strength of this predictor compared to others in the model; KNOWLEDGE_TOTAL score is the strongest predictor in this model. The coefficient for professional designation is 0.525, Std. Error = 0.502, Beta = 0.080, Sig. = 0.298, indicating that DESIGNATION is not a statistically significant predictor of the total pain management skill score in this model, holding total knowledge and course attendance constant. This finding aligns with the non-significant result from the one-way ANOVA which compared the total skill score means across designations.

Table 4. 15

Regression coefficient for skill prediction

Coefficients'

Model		Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.427	3.074		2.742	.007
	Pain_Mx_Course	.149	.790	.015	.188	.851
	knowledge_Total	.641	.091	.567	7.068	<.001
	Designation	.525	.502	.080	1.046	.298

a. Dependent variable: total score in pain management skill.

Source: Researcher (2025)

The regression analysis indicated that the total score in pain management skill is significantly predicted by the total knowledge score.

Variables representing pain management course attendance and professional designation were not found to be significant predictors in this specific model. This suggests that, within the context of these variables, the level of knowledge was the most influential factor in determining the total pain management skill score. 17(89.5%) out of 19 question assessing the HCPs skills in pain management were answered correctly. In this study, the psychomotor component of competence was directly determined by the cognitive component. However, this finding differ with the results from clinical audits of the patients file using a checklist to assess the real practice.

4.6 Results from Observation Checklist to Validate Practice in Pain Management

48 files of patients were audited using a checklist with 10 checkpoints. 24 files were studied from each facility from the four units under the study setting as shown below. Out of 48

sampled files, 24 were from MeTRH of which 7 were from surgical unit, 5 from medical and 5 from accident and emergency and 7 from OPD. 24 files were from STMHK of which majority were from medical unit, 7 from OPD and 4 from surgical and accident and emergency respectively.

Table 4. 16

Cross tabulation of frequencies for the source of data

		Surgical unit	Medical unit	A&E	OPD	total
Data setting	MeTRH	7	5	5	7	24
	STMHK	4	9	4	7	24
Total		**11**	**14**	**9**	**14**	**48**

Source: Researcher (2025)

Documented practices on pain management: All (100%) of the files had patients' identification details and diagnosis well documented. All the sampled patients' files had a prescription of pain medication. Only 11(22.9%) of the files had pain classification and only 2 (4.2%) had finding according to assessment scale documented. With these findings, it can be concluded that HCPs in these two hospitals are knowledgeable on the variables on pain management, and poor documentation practice as regards to pain management thus affecting their competency. Only one file (2/1%) had pain assessment tool used to assess pain written. This could be attributed to lack of the pain assessment tools in the respective unit.

Table 4. 17

Findings for documented information

	Item being checked	Yes (1)	No(0)
1	Patients' identification details were written.	48(100%)	0(0%)
2	Patients' diagnosis was clearly documented.	48(100%)	0(0%)

3	Patient prescription had pain medication.	48(100%)	0(0%)
4	Pain classification was well indicated.	11(22.9%)	37. (97.1%)
5	Time of pain assessment was written.	5(10.4%)	43(89.6%)
6	Pain assessment tool used to assess pain was written.	1(2.1%)	47(97.9%)
7	Pain assessment findings according to scale were documented.	2(4.2%)	46(95.8%)
8	Communication about patients' pain among HCPs	23(52.1%)	25(47.9%)
9	Nursing care plan has a pain diagnosis.	7(14.6%)	41(85.4%)
10.	Available pain assessment scale in each unit from two hospitals N= 8	0	8(100%)

Source: Researcher (2025)

These data suggested that basic patient identification, diagnosis, and medication documentation are consistently performed. However, more detailed pain documentation was missing, there was no evidence of pain assessment tools. Differences existed between the two data settings (MeTRH and STMHK) for specific pain documentation practices like indicating pain classification, writing assessment time, and documenting communication about pain. Despite these isolated differences related to data setting, the overall average documentation score does not significantly differ across the two hospital units.

Attending a pain management course is positively associated with improved knowledge and skills in specific applied areas of pain management. However, course attendance does not appear to significantly impact broader conceptual understanding or inter-professional communication aspects of pain management. This suggests that while such courses enhance certain competencies, there may be gaps in comprehensive or integrative pain education, indicating a need to revise or expand the curriculum to include broader, interdisciplinary, and conceptual content. Considering the lack of evidence on the psychomotor domain, it is difficult to conclude that HCPs at MeTRH and STMHK competently manage pain.

4.7 Results on Attitude of Healthcare Professionals Towards Pain Management

Descriptive Statistics: Frequencies of Attitude/Belief Items: To explore the Attitude of health care professional towards pain management in Meru Teaching and Referral Hospital and St Teresa Mission Hospital Kiirua Frequencies and means were calculated, presented as 5-point Likert-scale items (Strongly Disagree to Strongly Agree) related to attitudes and beliefs about pain management. There are typically 133 valid cases for these items.

Table 4. 18

Response on attitude towards pain management

Attitude Items	Strongly Disagree (1) Freq (%)	Disagree (2) Freq (%)	Neutral (3) Freq (%)	Agree (4) Freq (%)	Strongly Agree (5) Freq (%)
Distracted patients from pain usually do not have severe pain.(1)	22 (16.3%)	30 (22.2%)	21(15.6%)	48(35.6%)	14(10.4%)
Lack of pain expression does not mean lack of pain.(5)	5(3.7%)	9(6.7%)	6(4.4%)	70(51.9%)	45(33.3%)
Patients' spiritual beliefs may lead them to think pain and suffering are necessary. (4)	13 (6%)	5(3.7%)	24(17.8%)	58(43.0%)	35(25.9%)
Children < 11 years have	40(29.6%)	39(28.9%)	16(11.9%)	28(20.7%)	12(8.9%)

no reliable pain report so rely solely on the parent's assessment of the child's pain intensity. (D)					
Placebo is a useful test to determine if the pain is real. (A)	32(23.7%)	1712.6%	36(26.7%)	3928.9%	11(8.1%)
Use opioids in unknown patient pain source(A)	13(9.6%)	20(14.8%)	18(13.3%)	47(34.8%)	37(27.4%)
A patient should experience discomfort prior to giving the next dose of pain meds. (D)	57(42.2%)	38(28.1%)	15(11.1%)	19(14.1%)	6(4.4%)
Severe chronic pain needs high dose. (D)	26(19.3%)	34(25.2%)	24(17.8%)	37(27.4%)	12(8.9%)
25% of patients receiving narcotics around the clock become addicted. (D)	13(9.6%)	21(15.6%)	22(16.3%)	38(28.1%)	39(28.9%)
Sedation assessment is recommended during opioid pain management	11(8.1%)	19(14.1%)	14(10.4%)	38(28.1%)	50(37.0%)

Source: Researcher (2025)

A mean of 4.07, where Majority 115(85.2%) agreed that lack of expression does not mean lack of pain and a mean of 3.74, where 93(68.9%) still agreed that patients' spiritual beliefs may lead them to think pain and suffering are necessary. A mean of 2.50, had 79(57.7%) disagreed, only 40(29.6%) agreed showing a tendency towards disagreement with the statement that children have no reliable pain report, suggesting belief in children's ability to report pain. The distribution is somewhat mixed, with a notable proportion disagreeing or strongly disagreeing.

A mean of 3.68 where, 35.3% Agree and 27.8% strongly agree, 9.6% strongly disagreed and 14.1% disagreed. This shows a majority agree with using opioids in cases of unknown pain origin. A mean of 2.32 where 42.9% Strongly Disagree and 27.8% Disagree, only 14.1% agreed and 4.4% strongly agreed suggests a strong disagreement with the idea that patients should experience pain before their next dose, suggesting a preference for scheduled pain relief. A mean of 2.88 where 27.8% Agree and 9.0% strongly agree, 19.3% strongly disagreed and 25.2% disagreed. Responses are relatively spread out, with a noticeable proportion disagreeing as well as agreeing. With a mean of 3.94 where 28.6% Agree and 29.3% strongly agree, 9.6% strongly disagreed and 15.6% disagreed. This shows a majority agreement with the concept of scheduled narcotics. The mean of 4.07 where, 28.8% Agree and 37.9% strongly agree, 8.1% strongly disagreed and 14.1% disagreed. This indicates strong agreement with the need for frequent sedation assessment.

These findings highlight some key positive attitudes: a belief in children's ability to report pain, strong disagreement with allowing pain before the next dose, and majority agreement

with scheduled narcotics and frequent sedation assessment. Attitudes towards placebo use and higher doses for severe chronic pain are more mixed.

Comparison of attitude variables with demography: Attitude with gender - An independent sample t-test was conducted to compare the mean of the composite score attitude total between male and female participants. The sample size was 71 males and 60 females. The mean attitude total for males was 32.4789 (std. deviation = 4.83694), and for females was 33.2000 (std. deviation = 4.54656).

Table 4. 19

Independent samples t-test for attitude total by gender

Gender		N	Mean	Std. deviation	Std. error mean
Attitude total	Male	71	32.4789	4.83694	.57404
	female	60	33.2000	4.54656	.58696

Source: Researcher (2025)

Levene’s test for equality of variances is not significant (f = .373, sig. = .543), indicating that the assumption of equal variances between the groups is met, yielding a t-value of -0.874 with 129 degrees of freedom. The significance (p-value is .386) greater than the conventional alpha level of 0.05 this concluded that, there was no statistically significant difference in the mean attitude total score between male and female participants in this sample.

Attitude with age and total knowledge on pain: Spearman's rank correlation was used to examine the relationship between attitude, age in years and knowledge total. the spearman correlation coefficient for the relationship between attitude total and age in years was -.101, with a p-value of .251; between attitude total and knowledge total was .063, with a p-value

of .478 and between age in years and knowledge total was -.099, with a p-value of .253, all showing no statistical significance. These results indicate no statistically significant monotonic relationships among attitude total, age, and total pain knowledge score in these participants.

Table 4. 20

Nonparametric correlations for attitude total, age, and knowledge total

			Attitude total	**Age in years**	**Knowledge total**
Spearman's rho	Attitude total	Correlation coefficient	1.000	-.101	.063
		Sig. (2-tailed)	-	.251	.478
		N	131	131	131
	Age in years	Correlation coefficient	-.101	1.000	-.099
		Sig. (2-tailed)	.251	.	.253
		N	131	135	134
	Knowledge total	Correlation coefficient	.063	-.099	1.000
		Sig. (2-tailed)	.478	.253	.
		N	131	134	134

Source: Researcher (2025)

Factor analysis of attitude: A Principal Component Analysis (PCA) with Varimax rotation was performed on the 10 attitude/belief items to explore underlying factors or dimensions within these items. The analysis included 127 valid responses using MINEIGEN (1), extraction criterion, 4 components had eigenvalues greater than 1: 2.372, 1.638, 1.180, and 1.078 and were retained, collectively explaining the 62.687% of the total variance in the 10 items.

Table 4. 21

Transformation matrix for attitude

	Initial Eingenvalues			Extraction sum of squared loadings			Rotation sum of squared loadings		
component	**Total**	**% of variance**	**Cumulative %**	**Total**	**% of variance**	**Cumulative %**	**Total**	**% of variance**	**Cumulative %**
1	2.372	23.723	23.723	2.372	23.723	23.723	1.808	18.085	18.085
2	1.638	16.378	40.100	1.638	16.378	40.100	1.649	16.494	34.579
3	1.180	11.805	51.905	1.180	11.805	51.905	1.460	14.599	49.178
4	1.078	10.752	62.687	1.078	10.782	62.687	1.351	13.509	62.687
5	.817	8.172	70.858						
6	.711	7.114	77.972						
7	.693	6.928	84.901						
8	.534	5.341	90.241						
9	.514	5.151	95.393						
10	.461	4.607	100.000						

Extraction method: principal component analysis. Source: Researcher (2025)

The Factor Analysis suggests that the 10 attitude/belief items are not measuring a single attitude dimension, but rather tap into four distinct factors or components related to pain management beliefs representing different facets of attitudes, such as beliefs about chronic pain and dosing strategies (Component 1), scheduled narcotics and specific patient populations (Component 2), interpreting patient behavior and certain treatment modalities (Component 3), and the significance of non-verbal cues (Component 4).

Component 1: Has high positive loadings from patients with severe chronic pain need higher dose (.790), frequent sedation assessment is recommended for patients on opioids (.723), patient should experience pain before next dose (.496), placebo use to determine if pain is real (.496), and use of opioids in unknown source of pain (.233, weaker). This component is related to beliefs about the management of severe/chronic pain, scheduled vs prn dosing, and opioid use/placebo use.

Table 4. 22

Component transformation matrix

Component	1	2	3	4
1	.706	.383	.530	-.273
2	-.369	.812	.129	.434
3	.293	-.360	.298	.834
4	.528	.256	-.783	.204

Source: Researcher (2025)

Component 2: Had a high positive loading from patients on narcotics round the clock become addicted (.806), patient's spiritual beliefs may lead them to think pain and suffering is necessary (659), and children have no reliable pain report (.608). This component was related to beliefs about effects of scheduled narcotic use, spiritual factors, and children's pain reporting.

Component 3: Had a high positive loading from distracted patients have no severe pain (.860), placebo use (.539), and use of opioids in unknown pain source (.505). This component was related to beliefs about whether distracted patients experience severe pain and the use of placebos and opioids for unknown pain.

Component 4: has high positive loadings from lack of expression doesn't mean lack of pain (.791). This component appears to be primarily associated with beliefs about the interpretation of patients' pain intensity; lack of expression in pain assessment.

4.7.1. Regression analysis: predicting attitude total

A linear regression analysis was conducted to predict the composite attitude total score using knowledge total, designation, and pain management course as predictor variables.

Table 4. 23

Correlations

Correlations

		Attitude total	Knowledge_Total	Designation	Pain_Mx_Course
Pearson Correlation	Attitudetotal	1.000	.085	-.269	.008
	Knowledge_Total	.085	1.000	-.065	.294
	Designation	-.269	-.065	1.000	-.069
	Pain_Mx_Course	.008	.294	-.069	1.000
Sig. (1-Tailed)	Attitudetotal	.	.167	.001	.466
	Knowledge_Total	.167	.	.231	.000
	Designation	.001	.231	.	.218
	Pain_Mx_Course	.466	.000	.218	.
N	Attitudetotal	131	131	131	131
	Knowledge_Total	131	131	131	131
	Designation	131	131	131	131
	Pain_Mx_Course	131	131	131	131

Source: Researcher (2025)

significant negative correlation with designation (-.269, p=.001), indicating that certain designations (presumably lower coded designations) are associated with higher attitude

scores. The predictors knowledge total, designation, and pain management course together predicts attitude but not as a single entity

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.279[a]	.078	.056	4.56854

a. Predictors: (Constant), PAIN_MX_COURSE, DESIGNATION, KNOWLEDGE_TOTAL

b. Dependent Variable: ATTITUDETOTAL.

The ANOVA table for the regression model showed that the overall model was statistically significant (F= 3.570, DF = 3, 127, p = .016), indicating that knowledge total, designation, and pain management course significantly predicts attitude total.

Table 4. 24

Regression coefficient model

Source: Researcher (2025)

The Coefficients table provides the unstandardized (B) and standardized (Beta) regression coefficients for each predictor. Knowledge Total: b = .085, p = .386. This predictor is not statistically significant in the model. Designation: b = -1.719, p = .002. This predictor is statistically significant. The negative coefficient suggests that for a one-unit increase in the designation variable code, attitude total decreases by 1.719 units, holding other predictors constant. Interpretation depends on the coding of designation (e.g., 1=doctor, 2=clinical officer, 3=nurse would mean lower designation codes are associated with higher attitude scores). Pain mx course: b = -.319, p = .708. This predictor is not statistically significant in the model.

Table 4. 25

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	223.537	3	74.512	3.570	.016[b]
	Residual	2650.692	127	20.872		
	Total	2874.229	130			

a. Dependent Variable: ATTITUDETOTAL *Source: Researcher (2025)*

b. Predictors: (Constant), PAIN_MX_COURSE, DESIGNATION, KNOWLEDGE_TOTAL

Table 4. 26

Coefficients A

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	34.655	3.299		10.504	.000
	Knowledge Total	.085	.098	.078	.870	.386
	Designation	-1.719	.553	-.266	-3.109	.002
	Pain_Mx_Course	-.319	.850	-.033	-.375	.708

a. Dependent Variable: Attitudetotal

Source: Researcher (2025)

The regression analysis indicates that, collectively, total knowledge, designation, and pain management course attendance significantly predict attitudes towards pain (attitude total). However, only professional designation is a statistically significant individual predictor in this model, suggesting that different professional roles are associated with different overall attitude scores, independent of total knowledge or pain management course attendance. The negative coefficient for designation implies that groups coded with lower values on the designation variable tend to have higher attitude total scores.

4.8 Competency Computation

The Competence Score was explicitly computed as the mean of the three standardized variables: Z score of (pain knowledge total- cognitive), Z score of (total score in skill in pain management - psychomotor) and Z score of (attitude total- Affective). This underpinned all the observed statistical relationships meaning that, competence score was not merely predicted or explained by the three standardized independent variables of the three Z-scores but it was mathematically derived from them. This resulted in a perfect linear relationship where the variables collectively explained 100% of the variance in Competence Score, with each contributing an equal one-third portion. This is an inherent definitional relationship rather than a typical statistical predictive relationship where unmeasured factors or unexplained variance would typically exist

The regression analysis demonstrates that the three standardized independent variables perfectly predicted and explained the Competence Score. The Model Summary showed an R-value of 1.000 and an R Square of 1.000, with an Adjusted R Square also at 1.000. This indicated that 100% of the variance in Competence Score is accounted for by these three predictors. The Standard Error of the Estimate is reported as .00000, signifying no residual error and a perfect fit between the predicted and actual Competence scores.

Table 4. 27

Competency model summary

Model	R	R square	Adjusted R square	Std. Error of the estimate
1	1.000[a]	1.000	1.000	.0000

Predictor: (constant), Z score of (knowledge total, Total skill score and Attitude total)

Source: Researcher (2025)

The ANOVA showed a Residual Sum of Squares of .000, reinforcing that there is no unexplained variance in the model. For the contribution of each variable, the unstandardized coefficients (b) for z score (knowledge total, z score (total score in skill in pain management), and z score (attitude total), were all .3333. This is precisely 1/3, which is consistent with Competence Score being calculated as the mean (sum divided by 3) of these three standardized variables. All three variables are highly statistically significant predictors (Sig. = .000), with extremely large t-values, reflecting their direct and exact contribution to the Competence Score.

4.8.1 Correlations

Each standardized independent variable, showed a strong positive Pearson correlation with competence score: Z score (knowledge total) were at .795, Z score (total skill score in pain management), at .763, and Z score (attitude total) at .572. All these correlations are statistically significant (sig. (1-tailed) = .000).

Relationship between the Dependent Variable (Competence Score) and Socio-Demographic Features.

Analysis with, gender revealed no statistically significant difference in Competence Score between males (Mean = .0238, N=71) and females (Mean = -.0462, N=63)5, and across

different work areas (F = 1.962, Sig. = .123). The independent samples t-test yielded a significance (2-tailed) value of .574 for gender, which was above the conventional alpha level of .055 and the post-hoc tests confirmed no significant pairwise differences among Surgical, Medical, A&E, and OPD. There was a statistically significant difference in Competence Score among different professional designations (F = 7.085, Sig. = .001), across different education levels (F = 8.156, Sig. = .000), and based on whether individuals have completed a pain management course (Sig. (2-tailed) = .023).

The Post Hoc Tests (Tukey HSD) revealed specific differences in designation: Doctors (Mean = .4990) had significantly higher Competence Scores than Clinical Officers (Mean = -.2681) (Mean Difference = .7671, Sig. = .001) and Nurses (Mean = -.0251) (Mean Difference = .5241, Sig. = .011). For education level it indicated that: Individuals with a Master's degree (Mean = 1.5131, N=4) have significantly higher Competence Scores than those with a Diploma (Mean = -.1278, N=83) (Mean Difference = 1.64094, Sig. = .000), HND (Mean = .1191, N=23) (Mean Difference = 1.39397, Sig. = .001), and Bachelor's degree (Mean = .0249, N=24) (Mean Difference = 1.48821, Sig. = .000). Notably, there was no significant difference in Competence Score between Clinical Officers and Nurses (Mean Difference = -.24304, Sig. = .221), as well as among Diploma, HND, and Bachelor's degree holders. However, individuals who had taken a pain management course (N=55) had a higher mean Competence Score of .1597 compared to those who had not (N=79) with a mean of -.1266. The mean difference was -.2862.

Competency was not influenced by gender of a healthcare provider. However, taking a pain management course increases the competency of a health care provider. There was a difference in competence between doctors and clinical officers and nurses, but no difference

in competence between nurses and clinical officers. Doctors were more competent than the other two professions. Finally, the level of education influences pain management competency starting from masters' level as the other levels exhibit close mean differences. A person who had a master's degree course was likely to be more competent compared to their counterpart with a diploma, HND and degree. Therefore, a higher score in attitude score, knowledge score and skills score results to high competence and the opposite holds.

CHAPTER FIVE: DISCUSSION

The main objective of this study was to assess pain management competency among healthcare professionals. The competency domains in this study included the cognitive, psychomotor and affective. The analysis of the 135 responses provided insights into the demographic and professional characteristics of the participants and their reported experiences with various types of pain. The findings suggested good theoretical knowledge and attitude, however practice gap about pain management among healthcare professionals working in MeTRH and STMHK hospital, particularly with regard to pain assessment documentation was noted. Moreover, having attended formal course on pain management and using pain assessment tools frequently were associated with higher pain knowledge.

5.1 Demographic Characteristics

The sample was predominantly within the 31-40 age range, had 1-5 years of professional experience, held Diplomas, and worked across Surgical, Medical, A&E, and OPD areas. This may be attributed to effect of exodus of older age staff to greener pastures causing institutions to replace. The higher number of respondents from OPD and A&E was because they are mainly clinical officers and nurses in a shift. A majority of participants had not undertaken a pain management course.

5.2 Prevalence of the Types of Pain

Pain is an unpleasant sensory and emotional experience associated with actual and potential tissue damage. The study finding reported high pain prevalence across most pain types managed. Particularly neuropathic, inflammatory, acute and chronic pain each was reported by over 70% of HCPs. This suggests a potentially high burden of these pain experiences

within patients managed by the studied population, or perhaps reflects a high level of awareness or sensitivity to and ability to identify and classify these pain types.

These findings concur with a study done among 5324 Iranian older adults and found chronic neuropathic pain prevalence of 13.7%, which was higher than similar studies in France, Morocco, and UK(Baskozos et al., 2023b; Salman Roghani et al., 2019). Similarly, a systematic review of epidemiological studies reported 6-10% prevalence for neuropathic pain (Salman Roghani et al., 2019). To be able to identify this type of pain, one has to have an understanding of the mechanism of pain transmission. This explains that HCPs at MeTRH and STMHK are competent enough to identify the types of pain by cause, location and duration. It is contrary to a study by (Bakir et al., 2023), which found that majority (578) allied health professionals at Mersin university hospital, had a limited understanding of the concepts related to pain management. It also confirms the finding that 1 I every five persons experience pain.

Total knowledge level was not associated with these factors, however, reporting of *specific pain types* demonstrated several significant associations with demographic and professional variables. Location emerged as a significant factor for Neuropathic, Nociceptive, Inflammatory, Acute, and Chronic pain, with differences observed between participants from MeTRH and STMHK. Designation was significantly associated with reporting nociceptive pain (more common by Doctors/Clinical Officers vs. Nurses) and acute pain (more common by Nurses/Doctors vs. Clinical Officers). This may be attributed to the primary professional training which agree with (Augeard et al., 2022) who suggested the canonical base that every professional possess regardless of the level of training. The study finding agrees with (Bakir et al., 2023; Mao et al., 2022; Thapa et al., 2022, Bartely"s 2020)

study that pain assessment and treatment decisions may be impacted by the health care providers' demographic characteristics, effects which may contribute to pain management disparities.

A borderline significant association was seen for chronic pain with designation. Education level showed significant associations with reporting Nociceptive, Acute, and Chronic pain, generally indicating higher reporting rates among those with Bachelor or HND/Masters degrees compared to Diploma holders. The difference may be related to complexity of the type of pain necessitating higher knowledge to be able to identify and classify the type of pain. The very high reporting rates among the small Masters group for Nociceptive and Chronic pain were notable.

Years of experience was significantly associated with reporting Functional pain, which was not reported by participants with less than one year of experience. This is attributed to its complex nature. There were also trends (supported by significant linear-by-linear associations) suggesting that reporting of Neuropathic and nociceptive pain may increase with years of experience, even though the overall categorical Chi-Square tests were not significant for these associations.

Work area was significantly associated with reporting neuropathic pain, which was much more prevalent in A&E and OPD settings compared to Surgical and Medical areas, this may be because health care professional at A&E and OPD meet patients before an intervention has been done, they are able to relate and classify pain.

Having taken a pain management course was significantly associated with reporting inflammatory pain, specifically, those who had taken the course were less likely to report encountering this type of pain. It may be related to getting used to pain and taking lightly as

something simple not worth reporting. This is an interesting finding that warrants further investigation to understand the directionality and potential implications.

5.3 Knowledge on Pain Assessment

On the multidimensional nature of pain, the assessment of the canonical knowledge about pain revealed that majority of healthcare providers exhibited the foundational principles in pain management. Contrary to previous studies, this study has found that majority had good knowledge on the multidimensional nature of pain which agrees with (Augeard et al., 2022; Varsi et al., 2021) that knowledge base is required. Majority agreed that pain is broadly categorized as acute or chronic, that acute pain is of short duration and may be reversible. This concurs with guideline (IASP, 2020) and a study by (Cooney & Quinlan-Colwell, 2020) who found that acute pain is protective and usually resolves within a predictable period.

Majority of the participants also agreed that, poorly controlled acute pain induces physiological and psychological harmful effects on the patient, this explains the shared understanding with (McCabe et al., 2023b) on the consequences of poorly managed pain. Subsequently majority of respondents also agreed with Cooney & Quinlan-Colwell, 2020 study that chronic pain is complex and multidimensional, has a negative impact on the patient's quality of life. Crucially, almost all participants agreed that, Pain has many dimensions; physical, sensory, behavioral, sociocultural, cognitive, affective, and spiritual used for holistic assessment.

This is an indication of the ability to identify the fundamentals pertaining to pain. It supported the analogy that, using the biopsychosocial dimensions, a thorough pain assessment provides the foundation for development of an effective multimodal pain management plan of care (Cooney & Quinlan-Colwell, 2020). It is expected that with this

canonical understanding of the effects of pain, its assessment and management be given the priority it deserves to improve QOL of patients. The analysis did not find a statistically significant association between participants' total knowledge level and either their years of experience or their education level across the overall sample. This suggests that within this sample, having more professional experience or a higher formal education level was not associated with a higher total knowledge score on pain as measured by the Chi-square tests.

On knowledge of assessing the multidimensional nature of pain, it focused on what guides pain assessment, frequency of pain assessment, how to quantify pain. Majority of participants had a good understanding of this variables, they agreed that pain management guidelines should always be used in its assessment and management, that pain should be frequently assessed in patients before and after interventions, this concurs with (Alkhatib et al., 2020; Bakir et al., 2023; Hinkle & Cheever, 2022) that effective pain management, guidelines should be followed to help the Healthcare professionals remain objective while utilizing evidence in practice.

An understanding by healthcare professionals of these assessment tools is required in order to utilize them effectively. Most of the HCP in this study demonstrated were knowledgeable of the pain assessment scale which agrees with Odile's (2018) study, where Seventy-five (75%) of the nurses reported that they had an adequate knowledge on the tools used in pain management. The study finding are contrary to Al khatib's (2020) findings that Healthcare Professionals in Ethiopian Primary Medical Centers revealed unavailability of and inadequate knowledge on assessment tools. Additionally, Multidimensional tools for patients' self-report are used for an initial comprehensive pain assessment, however, they

are not common to most of the participants just as it was found by the department of human health Victoria (2020).

5.4 Skills in Application of Pain Management Strategies

Pain assessment scales is an objective way to measure and manage pain effectively. The study found that the Numeric Rating Scale (NRS) was commonly used by majority (85.9%) of healthcare, this agrees with several studies(Bakir et al., 2023; Cooney & Quinlan-Colwell, 2020; Saleh, 2023). which found NRS to be the most common assessment scale used in pain management by all cadres of healthcare professionals, this could be attributed to its simplicity and easy-to-use. However, the findings that qualify the availability of this tool at both hospitals were not elicited. Pain Assessment in Advanced Dementia Scale (PAINAD) was available to only 8.1%of participants. Majority of whom were doctors or have more years of experience, same to the Pain Assessment Checklist for seniors with Limited Ability to Communicate (PACSLAC) had the lowest reported encounter at 0.7%.

This study also found that, majority 77(57%) of HCPs did not use the assessment scales once in a while or never in their practice, agreeing with several studies (Awe & Owoyemi, 2024; Santos et al., 2021; Thapa et al., 2022). This could be attributed to the unavailability of pain assessment scales. A study in Nepal on Assessment of the practice of 332 healthcare professionals on pain management revealed that only 96 (29%) of them used the pain assessment tool every time during their consultation. Since the scales were reported to be available and HCPs knowledge about them, their disuse could be attributed to other factors rather than skills and practice or perhaps the scales were unavailable based on the checklist findings.

The healthcare professional's skills were assessed by qualifying the statement on what they do rather than observing their actions. The total score skill in pain management was computed by summing up several recoded variables that represent different components related to pain management practices. The two sub-scores: clinical skills and collaborative skills in pain management were established. Because, the study was to assess the skills, these steps used indicated an intention to analyze not just an overall skill score but also potentially distinct domains of clinical skills and collaborative practice. Majority of questions on clinical skills were answered correctly, giving an impression of good practice in pain management, however, inferential statistics to compare and correlate the answers on skills to characteristics showed contrary results. This finding agree with several studies (Awe & Owoyemi, 2024; McCabe et al., 2023b; Santos et al., 2021; Scher et al., 2018) that found healthcare professionals to effectively manage pain.

ANOVA showed no differences in the mean total pain management skill score based on professional designation hence no difference in skills application across all cadres under study. Collaborative decision making involves multidisciplinary teams working together towards the same goal. In this context it involved different cadres working together and making decisions that will benefit the patient as regards pain management. The findings showed that less than half of the participant shared information about the patient, their pain and pain management plan. The results indicated that, only few of only a few of the nurses, clinical officers and the doctors all knew what was explained to a patient about his/her condition or treatment of pain, less than a third of the participants shared information to verify the effect of pain management, they had the same understanding of the future direction of the patient's pain management and identified the patient as the key person in

pain management. Half of the participants who attended pain management course could participate in multi-disciplinary decision making, this concurred with a study in Canada to assess the role of different cadres and found that, different health care professionals play a variety of important roles in MPTF in Canada.

However, less than 20% are involved on a full-time basis and the extent to which pain is assessed and treated in a truly multidisciplinary manner was questionable (Peng et al., 2018; Penlington et al., 2024). The study also found that, less than 50% of the nurses and the physicians had a mutual understanding of the reasons for the change of pain management, they checked with each other concerning whether a patient has any signs of side effects or complications on pain management, shared information about a patient's reaction to explanations of his/her disease status and treatment methods, and that they had the same understanding of the patient's wish for cure and care. This finding are contrary to the standard by pain association that effective pain management requires multi- disciplinary team (International Association for the study of pain (IASP), 2021).

An assessment of pain management skills among healthcare professionals reveals significant gaps in knowledge and practice, it may be linked to inadequate training, lack of formal organizational support, and insufficient documentation of pain assessments. Study consistently showed low adoption of standardized pain assessment tools and poor communication of pain scores in patient files reports, which negatively impacts patient care by leading to prolonged pain and delayed recovery. To improve these skills, continuous professional development, enhanced organizational support for pain management initiatives, and stronger institutional guidelines are crucial.

5.5 Attitudes Towards Pain Management

The five point Likert scale on 11 items, ranged from strongly disagree being the lowest score to strongly agree as the highest score. The attitude computation was not based a single item, but a mean calculated on the sum of the scores as responded to. Those who scored highly above the mean were considered to have positive attitude and vice versa.

There is no statistically significant difference in the mean attitude total score between male and female participants in this sample. Contrary to Cherono et al, 2020 study where clinicians questioned patient's report, majority of participants in this study agree that patient's self-report is gold standard measure of pain. Studies had also shown that Healthcare Professionals bear misconceptions and myths about pain that impede proper pain assessment and management (Ayoub et al., 2022; Nuseir et al., 2016).

Another study done in Jordan revealed that, healthcare professionals have negative attitudes towards pain management, (Alkhatib et al., 2020). Just like Gambian healthcare professionals who believed that Gambians are very strong and are capable of bearing pain even without receiving pain medication (Omotosho et al., 2023) more than half of the participants in the study also believe in strength of people contributing to inadequacy of pain management at MeTRH and STMHK. These results indicate no statistically significant monotonic relationships among attitude total, age, and total pain knowledge score among participants. This means that HCPs attitude should not be judged based on a single item but a combination.

The negative coefficient for designation implies that groups coded with lower values on the designation variable tend to have higher attitude total scores, doctors>clinical officers > nurses. This may be attributed to work performed by each cadre in patient care, this agrees

with Mugane's (2022) study at KNH that overall poor attitude on procedural pain management attributed to the ratio of patients to healthcare workers.

Factor analysis with four components pain assessment, pharmacological, consideration, non-pharmacological and cultural consideration all revealed high positive loadings thus positive attitude towards pain management. The results indicated in Component 1 reflects attitudes concerning the management of severe or chronic pain, especially regarding opioid dosing strategies. It captures beliefs about the necessity of higher opioid doses for chronic pain, the importance of monitoring sedation, and the use of placebos as a diagnostic tool to verify pain authenticity. It also touches on cautious opioid use when the pain source is unclear; Component 2 Items highlights how addiction fears, spiritual perspectives, and patient population characteristics (children) influence attitudes toward pain management Component 3 reflects skepticism about pain reports based on patient behavior and cautious opioid prescribing in ambiguous cases and Component 4 items suggests a belief that patients may be in pain even if they do not outwardly express it, emphasizing the need for careful interpretation beyond visible signs. However, those who had attended a pain management course, have good knowledge of pain are more likely to have positive attitude towards pain management.

5.6 Competency in Pain Management

Competence assessment involves looking at the cognitive (knowledge), psychomotor (skills) and affective (attitude) components in practice. In this study Competence Score was explicitly computed as the mean of the three standardized variables: Score of pain knowledge total, Z score of (total score in skill in pain management) and Z score of (attitude total). This direct mathematical definition underpinned all the observed statistical

relationships. The competence score was not merely predicted or explained by the three standardized independent variables (z score (total score in skill in pain management), z score (attitude total), and z score (knowledge total)); it was mathematically derived from them. This resulted in a perfect linear relationship where the variables collectively explained 100% of the variance in Competence Score, with each contributing an equal one-third portion. This is an inherent definitional relationship rather than a typical statistical predictive relationship where unmeasured factors or unexplained variance would typically exist.

This computation found that, the gender of a healthcare provider does not influence their competence. However, taking a pain management course increases the competency of a health care provider. It also found a difference in competence between doctors and clinical officers and nurses; doctors seem to be more competent than the other two professions. But there is no difference in the competence between nurses and clinical officers. Finally, the study found that the level of education influences competence starting from master's level as the other levels exhibit close mean differences. A person who has undertaken a master's degree course is likely to be more competent compared to their counterpart with a diploma, HND and degree. Existing valid and reliable instruments may address core competency themes (in whole or in part) and be suitable for integratively assessing the competence of both nurses and physicians. Just as teamwork and collaboration, research and evidence-based practice, personal and professional development, and patient centered care were the themes identified by(Yaqoob Mohammed Al Jabri et al., 2021), knowledge, skills and attitude were identified by this study, although these themes were sometimes referred to using different synonyms. Therefore, a higher score in attitude score, knowledge score and skills score results to high competence and the opposite holds theoretically because the

finding from the checklist differ due to lack of proper documentation. This raises a question whether healthcare professionals manage pain effectively.

5.7 Strengths and Limitation of the Study

Limitation- Selection of only two hospitals in Meru County may affect the generalizability of the results. Strength – The hospitals have a vast range of services which are universal to all other facilities, so random selection of participants helped in ensuring the significance of the results which could make them applicable to even lower-level hospital.

Limitation- Use of subjective information from participants that could introduce knowledge bias since responses were based on what they should do and not their real practice. Tendency to mask the actual practice by participants, this led to discrepancy between participant responses and documented information

Strength- Use of different data collection tools, formulation of closed ended questions which were categorical and use of checklist to assess documented information which helped to identify the gap between reported responses and actual practice with regard to pain management.

Triangulation method was used to equalize the finding from the two hospitals and different methods of data collection from both hospitals. It helped reduce research bias that arose from the questionnaire responses. It also enhanced validity of the study by approaching the same topic with different tools. It also stablished credibility by giving you a complete picture of the research problem.

CHAPTER SIX: CONCLUSION, RECOMMENDATIONS AND PUBLICATION

6.1 Conclusion

Healthcare professionals at MeTRH and STMHK generally demonstrated knowledge of basic pain concepts, including types of pain, consequences of poor control, importance of assessment and guidelines, and cultural factors. However, there is less consensus regarding vital signs as pain indicators, the equivalence of HCP estimation and self-report, and the uniformity of pain thresholds. Total pain knowledge is significantly positively correlated with having attended a pain management course, but not with years of experience, gender, education level, or work area.

Variation of practice exists among healthcare professionals in the utilization of pain assessment tools. More than half of participants reported having and following pain management guidelines but only a small percentage use pain assessment tools and document the pain assessment findings. This study highlights the need of improvement in knowledge in order to improve the skills in Pain management among healthcare professionals at MeTRH and STMHK.

Majority of the participants reported what favored them in regard to pain management practices but not what they actually do, leading to discrepancy between the reported responses and validated information. This difference raises a question on their competency in pain management.

Attitudes towards pain management are complex, with professionals generally believing in children's ability to report pain and favoring scheduled over prn prescriptions for pain relief. Overall attitudes (attitude total) do not significantly differ based on gender or age. There is also no significant correlation between overall attitudes and total knowledge. The analyses

highlight disparities in pain knowledge across professional roles and suggest that professional designation is a more robust predictor of overall pain attitudes than total knowledge or participation in pain management training. Professional designation was a significant predictor of overall attitude, even when accounting for knowledge and pain management course attendance. A factor analysis of attitude items revealed four underlying dimensions of beliefs, suggesting attitudes are multi-faceted rather than forming a single construct. The factor analysis provided valuable insight into the multidimensional nature of the attitudes measured.

The results indicated in Component 1 reflected attitudes concerning the management of severe or chronic pain, especially regarding opioid dosing strategies. It captured beliefs about the necessity of higher opioid doses for chronic pain, the importance of monitoring sedation, and the use of placebos as a diagnostic tool to verify pain authenticity. It also touches on cautious opioid use when the pain source is unclear; Component 2 Items highlighted how addiction fears, spiritual perspectives, and patient population characteristics (children) influence attitudes toward pain management. Component 3 reflects skepticism about pain reports based on patient behavior and cautious opioid prescribing in ambiguous cases and Component 4 items suggested a belief that patients may be in pain even if they do not outwardly express it, emphasizing the need for careful interpretation beyond visible signs.

HCPs at MeTRH and STMHK exhibit knowledge about pain, skills in pain assessment and management and positive attitude score according to the reported responses, this translates to being competent in pain assessment and management. However, emphasis needs to be put on use of pain assessment scales with proper documentation of the findings and outcomes as

the absence of it negates all the reported responses raising a question on competency. Assessing the degree of pain control in future studies may help shed more light on the phenomenon. Internal continuous medical education on documentation, formation of quality improvement team to enforce the policy guidelines of pain management may improve pain management practice in Meru Teaching and Referral Hospital and in St Theresa Mission Hospital Kiirua.

6.2 Recommendations

The future researchers

Study the point and interval prevalence of different types of pain in Meru County. Use of observation method to study the real practice of healthcare professionals to identify the real picture of patient care. And identify factors contributing to improper documentation

Ministry of health department of medical services

To device and Standardize documentation policy and protocols with regard to pain management based on approved guidelines. This will help remove the theory practice gap.

To advice health institutions to form the pain management teams that will help plan, implement and monitor pain assessment and management for patients.

Ensure availability of pain assessment scales in health institutions

Meru County department of health research and quality offices

To form quality improvement teams as regard to pain management that will frequently audit the practice and documentation in the health institutions within the county.

The Meru Teaching and Referral hospital and St Theresa mission hospital Kiirua administrations.

To organize continuous medical education with regards to pain assessment and management with emphasis on documentation in the patient files.

To promote multidisciplinary collaboration by encouraging collaborative approaches in pain management involving all relevant professional, conduct regular audits and provide feedback to healthcare professionals to improve practice

The clinical department to ensure availability of different pain assessment tools in each unit in the respective hospital.

6.3 Publication

Wanzallah, P. T., Kailemia, N., & Kaimuri. (2025). Assessment of pain management skills among health care professionals at Meru Teaching and Referral Hospital and St Theresa Mission Hospital Kiirua in meru county, Kenya. *African Journal of science , Technology and Social Sciences*, 108-116.

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APPENDICES

Appendix A: Informed Consent Form (ICF)

Study Title: ASSESSMENT OF PAIN MANAGEMENT COMPETENCIES AMONG HEALTHCARE PROFESSIONALS IN SELECTED HOSPITALS IN MERU COUNTY
Version Date: Original version of 2024
Name of Principal Investigator(s): PAULYNE TRUPHENA WANZALLAH
Co-Investigators: 1. DR PETER N. KAILEMIA, PHD
2. DR MARYJOY KAIMURI, PHD
Name of Institution: MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY
Informed Consent Form for: DOCTORS, NURSES AND CLINICAL OFFICERS WORKING AT MERU TEACHING AND REFERAL HOSPITAL AND ST TERESA MISSION HOSPITAL KIIRUA
This Informed Consent Form has two parts:

- Information Sheet (to share information about the study with you)
- Certificate of Consent (for signatures if you choose to participate)
  You will be given a copy of the signed Informed Consent Form

Part I: Information Sheet for participant

INTRODUCTION

You are being asked to voluntarily take part in this research study.This information is provided to tell you about the study. Please read this form carefully and ask any questions if you have. If you decide to be in the study, kindly fill a copy of this consent form for your records.
Taking part in this research study is voluntary, you may choose not to take part in the study, you are free to withdraw from this study at any time. If you choose to quit after data collection, you can request that the information you provided be destroyed under supervision- and thus not used in the research study. You will also be notified if new information becomes available about the risks or benefits of this research, then you can decide if you want to stay in the study.
PURPOSE OF STUDY
The purpose of the study is to to assess pain management competencies among healthcare professionals in Meru teaching and referral hospital and St Teresa mission hospital Kiirua. We are interested in understanding the level of knowledge on pain and pain assessment, how healthcare professionals apply strategies of pain management at MeTRH and STMHK and the attitude of healthcare professionals towards pain assessment and management at MeTRH and STMHK. You have been chosen because you are among healthcare professionals managing patients with pain.
PROCEDURE
Data collection is at a certain point in time, once you have given your view, the rest is for the researchers for the next six months. We are asking you to help us learn more about pain

assessment and management competencies. If you accept, kindly sign this consent and fill the questionnaire attached.

BENEFITS

There are no material benefits to taking part in the study but feedback will be provided to the facility after analysis.

RISKS

There is no potential risk to the participants in the study, however if you perceive any risks, kindly contact the researcher for clarification.

CONFIDENTIALITY

All reasonable efforts will be made to keep your protected information (private and confidential. Protected Information is information that is, or has been, collected or maintained and can be linked back to you. By signing the consent document for this study, you are giving permission ("authorization") for the uses and disclosures of your personal information when applicable. A decision to take part in this research means that you agree to let the research team use Protected Information.

Contacts

In case you have a question about the study please contact the researcher. Paulyne .T. Wanzallah on 0705873135/0735265512.

Part II: Consent of participant

I have read or have had read to me the description of the research study. The investigator or his/her representative has explained the study to me and has answered all of the questions I have at this time. I have been told of the potential risks and discomforts as well. I freely volunteer to take part in this study.

___________________	______________________	______________
Name of Participant	Signature of participant	Date & Time
____________________________	________________	_______
Name of person Obtaining Consent	Signature of person Obtaining Consent	Date & Time
__________________________	__________________________	_________
Printed name of Investigator	Signature of Investigator	Date & Time

Appendix B: Questionnaire

S/NO.____________

Data collection questionnaire

This questionnaire intends to collect data to assess pain management competencies among healthcare professionals working in medical, surgical, outpatient, accident and emergency units. It comprises five sections; the socio- democratic data, knowledge on types of pain; knowledge in pain assessment; skills in pain management and attitudes towards pain management. Please read the instructions in each section and respond accordingly.

SECTION ONE: SOCIO-DEMOGRAPHIC DATA OF STUDY PARTICIPANTS

1. What is your age group in (years)?

1. 21–30 [ ] 2. 31–40 [ ] 3. 41–50 [ ]

2. What is your gender?

1. Male [ ] 2. Female [ ]

3. What is your present designation?

1. Doctor [ ] 2. Clinical officer [ ] 3. Nurse [ ]

4. How many years of working experience do you have?

1. Less than 1 year [ ] 2. 1–5 years [ ] 3. 6–10 years [ ] 4. More than 11 years [ ]

5. What is your education level?

1. Certificate [ ] 2. Diploma [ ] 3. HND [ ] 4. BSc [ ] 5. MSc [ ]

6. What is your area of work?

1. Surgical unit [ ] 2. Medical unit [ ] 3. Accident & Emergency [ ] 4. Outpatient [ ]

7. Have you attended any course on pain management?

1. Yes [ ] 2. No [ ]

SECTION TWO: KNOWLEDGE ON PAIN ASSESSMENT

1. The type of pain you have assessed and managed in your practice (Tick appropriate)

1. Neuropathic pain [ ]
2. Nociceptive pain [ ]
3. Inflammatory pain [ ]
4. Functional pain [ ]
5. Acute Pain [ ]
6. Chronic pain [ ]

For the following statements about knowledge on pain and assessment below, tick the appropriate response.

	Knowledge on multidimensional nature of pain	True(2)	False(0)	Not sure (1)
1	Pain is broadly categorized as acute or chronic. (T)			
2	Acute pain is of short duration (less than 3 months).(T)			
3	Acute pain is reversible with			

	appropriate treatment.(T)			
4	Poorly controlled acute pain induces physiological and psychological harmful effects on patients.(T)			
5	Chronic pain is complex and multidimensional.(T)			
6	Chronic has a negative impact on the person's function and quality of life.(T)			
7	Pain has many dimensions; physical, sensory, behavioral, sociocultural, cognitive, affective, and spiritual used for holistic assessment.(T)			

	Knowledge on assessing multidimensional nature of pain	True(2)	False(0)	Not sure(1)
8	Pain management guidelines should be used in assessment and management of pain.(T)			
9	Pain should be frequently assessed in patients before and after interventions.(T)			
10	Pain measurement ways include Patients' Self report, Behavioural and Physiological.(T)			
11	The gold standard in pain assessment is the patient's self-report. (T)			
12	Vital signs are always reliable indicators of the intensity of a patient's pain.(F)			
13	The sensory pain threshold is the same for all patients.(F)			
14	Estimation of pain by a healthcare professional is as valid a measure of pain as a patient's self-report. (F)			
15	The best approach for cultural considerations in caring for patients in pain Patients should be individually assessed to determine cultural influences.(T)			
16	Insomnia, anxiety and depression, reduce pain tolerance. (T)			
SECTION THREE: **ASSESSMENT TOOLS**				

17	**Available pain assessment tools** With regard to pain measurement scales, the following tools are available for guidance when dealing with patients in pain in my unit (Tick appropriately). (1). Numerical rating scale (NRS) [ ] (2). Visual analogue scale (VAS) [ ] (3). Face pain scale (FPS) [ ] (4). McGill Scale [ ] (5).Pain Assessment in Advanced Dementia (PAINAD) [ ] (6). Pain assessment checklist for seniors with limited ability to communicate (PACSLAC) [ ] b. I use pain assessment scale in my daily practice (Tick the favourable response) (1). Always [ ] (2). Once in a while [ ] (3). Rarely [ ] (4). Never [ ]			
	With regard to skills in pain assessment statements below please select the most favourable answer.	**True (2)**	**False (0)**	**Not sure (1)**
18	Unidimensional pain assessment tools evaluate only the sensory component of pain and are used for ongoing evaluation of pain intensity and response to treatment. (T)			
19	Pain assessment tools such as Visual Analog Scale (VAS), Numeric Rating Scale (NRS) Faces Pain Scale (FPS) should be used to rate pain intensity only. (T)			
20	Multidimensional tools for patients' self-report are used for an initial comprehensive pain assessment on sensory components of pain, emotional response to pain and quality of life. (T)			
21	The Hierarchy of Pain Measures is recommended as a framework for assessing pain in patients who are nonverbal. (T)			
	Collaborative decision making			
22	The nurses and the physicians in your unit have a mutual understanding of the reasons for the change of pain management. (T)			
23	The nurses and the physicians in your unit check with each other concerning whether a patient has any signs of side effects or complications on pain management. (T)			
24	The nurses and the physicians in your unit share information about a patient's reaction to explanations of his/her disease status and treatment methods. (T)			
25	The nurses, the physicians, and the patient in your unit have the same understanding of the			

	patient's wish for cure and care.			

SECTION 4: SKILLS IN PAIN MANAGEMENT

Below are responses about skills in pain Management. Kindly select the most appropriate response to reflect your actions.

	Item description	Yes(2)	No(0)	Sometimes(1)
1	You always consider treatment modalities for acute, chronic, centralized, or neuropathic pain to be often different.(Y)			
2	You often follow guidelines for prescription and administration to effectively manage pain in your unit (Y).			
3	You understand that, the term 'equianalgesia' means approximately equal analgesia and always use it when referring to the doses of various analgesics that provide approximately the same amount of pain relief.(Y)			
4	You frequently determine pain treatment methods specific according to the patient's pain intensity.(Y)			
5	You use Pain management index (PMI) as a tool that correlates an individual patient's pain intensity to the appropriateness of the prescribed analgesics according to the WHO pain management ladder.(Y)			
6	You always consider that opioids can be more or less addictive in a short time. (Y)			
7	You often consider that elderly patients cannot tolerate opioids for pain relief.(N)			
8	You understand that giving narcotics on a regular schedule is preferred over ''p.r.n.'' schedule for continuous pain. (Y)			
9	You often consider the time to peak effect for morphine given IV to be 15 min when prescribing and administering medication.(Y)			
10	You always consider combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) because they may result in better pain control with fewer side effects than using a single analgesic agent.(Y)			
11	You ensure that stable analgesics blood levels are maintained through around-the-clock dosing.(Y)			
12	In your practice, after an initial dose of opioid analgesic is given, you adjust subsequent doses			

	according to the individual patient's response.(Y)			
13	Anti-Convulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.(Y)			
14	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.(N)			
15	You use distraction, for example, use of music or relaxation, can decrease the perception of pain. (Y)			
	Sharing of patient information on pain management	Yes (1)	No (0)	Not Sure (1)
16	In your unit, Nurses, clinical officers and the doctors all know what has been explained to a patient about his/her condition or treatment of pain. (Y)			
17	In your unit, Nurses, clinical officers and the doctors share information to verify the effect of pain management. (Y)			
18	In your unit, Nurses, clinical officers and the doctors have the same understanding of the future direction of the patient's pain management. (Y)			
19	In your unit, Nurses, clinical officers and the doctors identify the patient as the key person in pain management. (Y)			

SECTION FIVE: ATTITUDES TOWARDS PAIN MANAGEMENT

Below are statements on the attitude towards pain management. Please tick the appropriate answer.

	Item: Attitude towards multidimensional nature of pain	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree(5)
1	Patients who can be distracted from pain usually do not have severe pain.(1)					
2	Lack of pain expression does not mean lack of pain.(5)					
3	Patients' spiritual beliefs may lead them to think pain and suffering are necessary.(4)					

	Attitude toward pain assessment and measurement					
4	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.(D)					
5	Giving patients sterile water for injection (placebo) is a useful test to determine if the pain is real.(A)					
6	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.(A)					
7	A patient should experience discomfort prior to giving the next dose of pain meds. (D)					
8	Patients having severe chronic pain often need higher dosages of pain meds than patients with acute pain.(D)					
9	25% of patients receiving narcotics around the clock become addicted.(D)					
10	Sedation assessment is recommended during opioid pain management because					

	excessive sedation precedes opioid-induced respiratory depression. (A)					

Appendix C: Observation Checklist

S/NO_______________

This checklist intends to examine pain management practice in the facility. It majors around documentation of pain assessment findings; type of pain, time and frequency of pain assessment; tools used for pain assessment and documentation of pain management strategy. This would help gather information on the ongoing adherence to best-practice standards.

Instructions: Place a checkmark in the "Yes" column for every statement where the item has been completed or Select "No" if there is no documented evidence of assessment.

Item no.	Item being checked	Yes (1)	No(0)
1	Patients' identification details are written.		
2	Patients' diagnosis is clearly documented.		
3	Patient prescription has pain medication.		
4	Available pain assessment scales in the unit		
5	Pain classification is well indicated.		
6	Time of pain assessment is written.		
7	Pain assessment tool used to assess pain is written.		
8	Pain assessment findings according to scale documented.		
9	Communication about patients' pain.		
10	Nursing care plan has a pain diagnosis.		

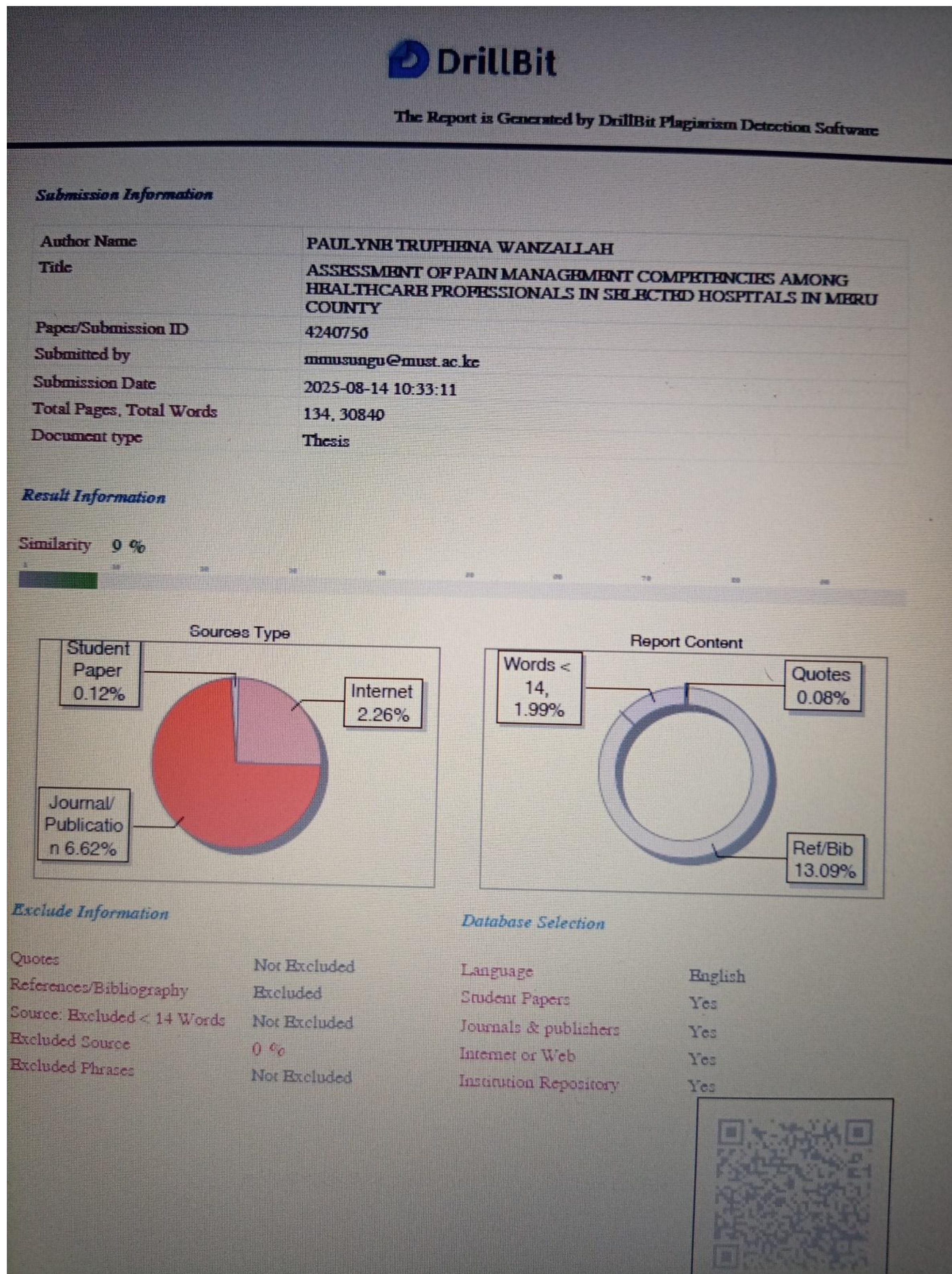
Appendix D: Attachment of Ethical Approval Documents

1. Mirerc approval
2. Nacosti permit
3. Meru county research office approval
4. MeTRH approval
5. STMHK approval
6. Conference Presentation

   Subtheme/Track: Innovations in Nursing Practice and Community Health for Empowered Populations

   TOPIC: Assessment of Healthcare professionals' skills in pain management in Meru teaching and referral hospital and St Teresa mission hospital Kiirua

Appendix E: Plagiarism report



Appendix F: Publication

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Assessment of Healthcare Professionals' Skills in pain management in Meru Teaching and Referral Hospital and St Theresa Mission Hospital Kiirua, Kenya

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ABSTRACT

Background: Pain is a public health problem and affects millions of people globally. According to Bisher et al (2023), analysed medical literature reveals a concerning gap of up to 30% of healthcare professionals lack training in pain assessment and management. Effective pain management is essential and possible through comprehensive pain management guidelines, trained healthcare professionals and adequate facilities. Studies suggest that health care professionals often demonstrate varying skills in pain assessment and management and consequently inadequately managed pain. Therefore, this study aimed to assess the healthcare professionals' Skill in pain management in Meru Teaching and Referral hospital and St Theresa Mission hospital Kiirua. Methods: Design was a Cross-sectional study carried out from 23rd March to 5th May, 2025). Participants included 154 Health care professionals (HCPs- 22 doctors, 33 clinical officers, 99 nurses). Tool Used was Adopted KASRP questionnaire and modified practice questions from literature review and a checklist to validate skill practice. Ethical approval from MIRERC, NACOSTI, Meru County Research office and a consent from participants were sought. Analysis was by descriptive, Chi-square, logistic regression, and multinomial logistic regression at a Significance set at $p < 0.05$. Results: N= 135. 17(89.5%) out of 19 questions assessing the HCPs skills in pain management were answered correctly. 129(95.6%) participants reported to often follow guidelines to effectively manage pain in their unit and 56 (41.5%) of healthcare professionals reported to use the pain assessment tool every time they meet the patients. Inferential statistics found lack of significant pairwise differences in practice by designation. Mean Differences = 0.15079, Sig. = 0.992 Mean Difference = -1.37143, Sig. = 0.444. There was a significant difference between the KASRP score, sample characteristics and the checklist results where ($p<0.001$). 48 (100%) of the sampled patient files had a prescription of pain medication, only 11(22.9%) of the files had pain classification and only 2 (4.2%) had finding according to assessment scale documented. Conclusion: All pairwise comparisons show significance levels greater than 0.05, this means that, there are no significant differences in the mean total pain management skill score based on professional designation. With these findings, HCP have good knowledge of what to practice in pain management but the evidence of their practice was lacking through documentation. The study recommends formation of quality improvement teams to train and audit practice.

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