TRAINING NEEDS ASSESSMENT SURVEY PROPOSAL FOR QUALITY AND SAFETY CURRICULUM DEVELOPMENT FOR HEALTHCARE WORKERS

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Declaration

We declare that the ideas in this proposal are original and has not been published or presented elsewhere. Any external sources used for reference or citation have been properly acknowledged, and all direct or indirect quotations are duly credited. No part of this proposal has been copied or plagiarized from any other source, and it does not infringe upon the intellectual property rights of any third party.

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Definition of operational terms

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Quality: The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge

Patient Safety: Patient safety is a discipline that emphasizes safety in health care through the prevention, reduction, reporting and analysis of error and other types of unnecessary harm that often lead to adverse patient events

Quality improvement: is a systematic, formal approach to the analysis of practice performance and efforts to improve performance

Training needs assessment: The purpose of a training needs assessment is to identify performance requirements and the gaps in knowledge, skills, and abilities needed by an agency's workforce to achieve the training requirements

Competencies for quality and safety: Competence can be described as the combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform a task safely. Other factors, such as attitude and physical ability, can also affect someone's competence

Curriculum for quality and safety in health care workforce: This type of curriculum is tailored to help clinicians and clinical administrators improve patient safety and health care quality in an increasingly complex and evolving health care environment.

High-risk organization: refers to an entity or institution that operates in an environment where there is a higher likelihood of encountering and facing significant risks, challenges, or potential harm. The nature of the organization's activities, the complexity of its operations, the external environment, and the potential impact of failures or mistakes.

In-service training: Training that is done after the basic qualification, commonly to hospital staff
Pre-service training: Training that happens during the basic training before being licensed as a healthcare workers.

Abbreviations

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AKUH; Aga Khan University Hospital

ICU; Intensive Care Unit

ISO; International Standards Organization

JCI; Joint Commission International

KII; Key Informants Interviews

KMTC; Kenya Medical Training College

KNH: Kenyatta National Hospital

LMIC: Low- and Middle-Income Country

PS; Patient Safety

PDSA: Plan Do Study and Act

QI: Quality Improvement

RCA; Root Cause Analysis

SSA; Sun Saharan Africa

UON: University of Nairobi

WHO: World Health Organization

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Abstract

Background

Patient safety is increasingly becoming a concern worldwide. However, there has been little attempt in teaching and assessing patient safety at diploma, undergraduate and even at residency levels in medical education. Curriculum that mimics how high-risk and complex domains organizations teach safety to prevent adverse events are not yet developed for medical education. Developing this type of curriculum will require that we take the context into consideration for it to be relevant.

Objective

This proposal seeks to assess the training needs for patient safety curriculum for our context to the preservice, in-service and residency.

Methods

This will be a mixed method of explanatory strategy - a quantitative survey will be performed first to find out the needs and the best ways to undertake the training and a qualitative phase will be undertaken to understand better the ideas being raised in the survey. The study will be performed in three facilities in Kenya: a public referral hospital (Kenyatta National Hospital), a private teaching hospital (Aga Khan University Hospital), and a mission hospital (Kijabe Mission Hospital). The study will include participants from medical, nursing, pharmacy, laboratory and other relevant health care fields. Purposive sampling shall be utilized for a sample size of 388. A link for an online survey will be distributed to people from the stated locations and areas of work or study. The survey will include demographics, area of work or study (or both) and will address awareness of what safety and quality of care is, what is and should be taught, how it should be assessed and how to measure the impact. The survey will be analysed using IBM SPSS version 26 for mean, proportion. The association will be performed using chi-square and statistical significance will be taken at p-value <0.05. A subsequent qualitative survey will be performed among the same population for an in-depth exploration some of the issues that have been raised and will take the form of key informant interviews from the faculty and hospital leadership, at least 2-4 participants per institution. The individual in-depth interviews with an expected duration of 30-45 minutes will be

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taped and transcribed. NVivo software will be used for analysis of themes until saturation is reached. Validation of the results shall be done at a stakeholders workshop inviting the ministry of health, the medical schools and health institution.

Utility

This study will help understand the stakeholders perceived content, methods and challenging in developing a contextual and relevant curriculum for patient safety teaching.

CHAPTER 1 INTRODUCTION

1.1 Background

Patient safety is a discipline in health sector that applies safety science methods toward the goal of achieving a trustworthy system of health care delivery(1). Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes(1). The training aims to impart necessary knowledge, skills and competence to healthcare workers(2). Studies indicate a 20 times higher risk of healthcare-associated infections in Africa and a 60% risk of mortality in low and middle-income countries due to poor quality of care. In the African region, existing and published training programs in quality and safety for healthcare workers are still in the nascent stages and not published(3,4) in accessible literature.

A relevant system-based curriculum should offer demand-based training that must be informed by systematically identified training needs showing current existing gaps. Key stakeholders must include healthcare workers as the learners as well as patients and communities (5).

1.2 Problem statement.

Healthcare is provided in a complex environment with multi-disciplinary teams. Whereas Healthcare Quality and Safety have been important aspects of training and how care is provided, there is a lag in this discipline getting dedicated attention in the form of content that traverses all the key aspects of learning as per the bloom's taxonomy, Incorporating the knowledge of how to do this into the medical student curriculum is an urgent necessity. A dedicated curriculum that includes principles of safety, skills acquisition and transfer has not been used in any of the medical schools in a consistent manner.

This study seeks to explore the needs of the training institutions and the health service provision institution to use a quality and safety curriculum for training the pre-service and the in-service healthcare workers.

1.3 Study Questions

1. What content is desirable for training quality and safety among the healthcare professionals and the pre-service healthcare professionals?
2. What teaching methods are acceptable and feasible for teaching healthcare quality and safety among preservice and in-service healthcare workers ?
3. What are the barriers to implementing the Healthcare Quality and Patient safety curriculum (Faculty and organizational factors that could influence this training)?

1.4 Objective

This study aims at exploring training needs for Healthcare workers in Health quality and patient safety in Kenya.

Specific Objective

1. To determine perception of the In-service and Pre-service healthcare professionals on the educational content for training Healthcare Quality and Patient safety.
2. To determine perception of the Faculty in medical training institutions on teaching methods acceptability and feasibility.
3. To assess the barriers to implementing the curriculum on Healthcare Quality and Patient Safety at organizational and individual level among the faculty in medical training institution and leaders in healthcare institution.

1.5 Study Significance

By understanding and implementing curriculum, healthcare providers can minimize errors, prevent harm, and create a trustworthy system for patients. When healthcare services are of high quality, they increase the likelihood of desired health outcomes, such as improved health, reduced complications, and better patient satisfaction(3). The higher risk of healthcare-associated infections and increased mortality rates in low and middle-income countries underscore the impact of poor quality of care on patient outcomes(6). In the African region, the lack of published training in quality and safety for healthcare workers indicates an opportunity for improvement. Conducting a needs assessment from stakeholders is a crucial initial step to identify the specific areas that require attention and develop an effective curriculum. By enhancing training in quality and safety practices, healthcare workers can be better equipped to provide safe and high-quality care to patients, ultimately improving health outcomes and reducing the risk of harm(2). Curriculum on patient safety and quality of care in healthcare is essential to foster a culture of safety, improve health outcomes, and address the challenges specific

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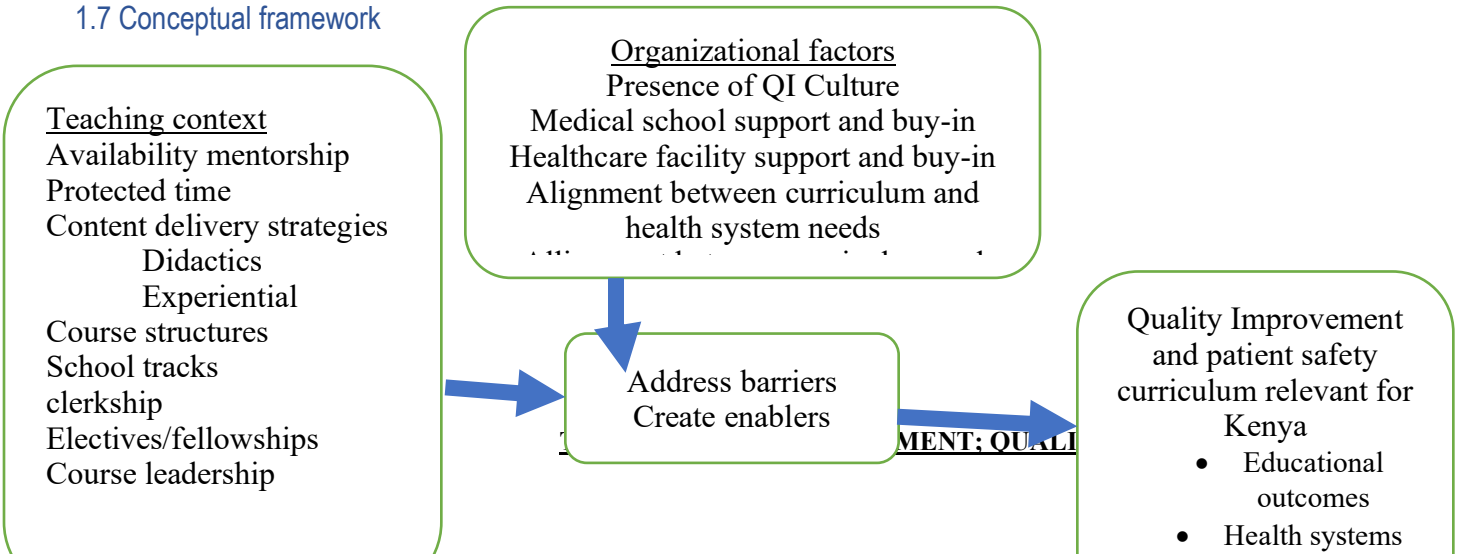
to each region's healthcare system.

1.6 Study justification

The studies indicating a significantly higher risk of healthcare-associated infections in Africa, along with the alarming 60% risk of mortality in low and middle-income countries due to poor quality of care, emphasize the urgent need for action. In the African region, the lack of published training in quality and safety for healthcare workers further emphasizes the gaps that need to be addressed. Without proper training and knowledge, healthcare workers may struggle to provide safe and high-quality care to their patients, leading to preventable harm and negative health outcomes.

Conducting a needs assessment before curriculum development is crucial for several reasons. Firstly, it allows for a comprehensive understanding of the specific challenges and requirements of the stakeholders involved. By involving key stakeholders such as healthcare professionals, administrators, patients, and policymakers, their valuable insights and perspectives can be incorporated, ensuring that the curriculum will address their needs effectively. Secondly, the needs assessment will help identify the specific areas where training is lacking or needs improvement. It may uncover gaps related to patient safety protocols, infection control practices, communication skills, or other essential areas that contribute to quality of care. Moreover, involving stakeholders in the needs assessment process will help generate buy-in and foster a sense of ownership among them. This collaborative approach will increase the likelihood of successful implementation and adoption of the training program. Training needs assessment allows for a tailored curriculum to be developed, specific to the needs of the healthcare workers, and aims to address the gaps in quality and safety training. By integrating the insights and perspectives of stakeholders, the resulting training program will be more effective in improving patient safety, reducing healthcare-associated infections, and ultimately saving lives

1.7 Conceptual framework



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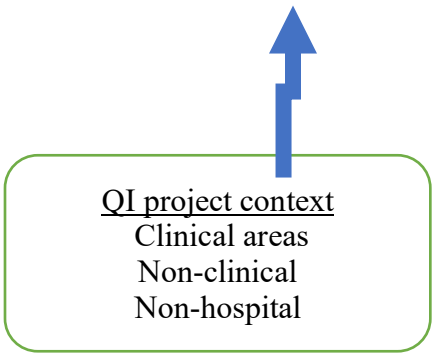

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Quality definition

The concept of Quality of healthcare is very subjective depending on who is asked, patient, healthcare provider or even leadership, hence existence of different definitions (7). The United States Institute of Medicine (IoM) defines it as the extent to which healthcare services for individuals and populations improve the chances of achieving desired health results and align with the latest professional knowledge. (8). As such, it is important to define quality by the development of expectations and standards. This means ascribing to the multidimensional nature of quality, known as domains. The Institute of Medicine (IoM) explains that there are six domains of quality in healthcare. These include the requirements that healthcare services must be safe, effective, patient-centered, timely, efficient, and equitable. (1,9).

Patient Safety

The World Health Organization (WHO) defines patient safety as a system of structured activities that establish cultures, procedures, behaviors, technologies, and environments within healthcare. The goal of these activities is to consistently and reliably reduce risks, minimize preventable harm, decrease the likelihood of errors, and mitigate the impact of harm if it does occur.(10). IoM considers patient Safety not different from the delivery of quality care(11).

Poor Quality of care and the sequelae of medical errors have resulted in unnecessary loss of life, poor prognosis and treatment outcomes and huge losses to both patients and the healthcare system (6). Health care of low quality is a major cause of preventable deaths, especially in LMICs. Kruk et al estimate that in 137 LMIC the relative contribution of poor-quality care to excess mortality is greater than the role of non-utilization of health care

services(3). Out of the 8.6 million deaths that could have been prevented through health care, 3.6 million preventable deaths were due to non-utilization of health care and another 5 million deaths were due to very low quality of care(6). Low quality of care is the cause for up to 15% of overall deaths in LMIC (3). This evidence suggests that expanding healthcare access through universal coverage does not necessarily result in improved health outcomes (6) unless the services are of sufficient quality.

The disparity in the quality of healthcare services is a worldwide concern of great significance, so much so that it has been referred to as a chasm. Improving the quality of health care services is a global priority for making progress on the Sustainable Development Goals. This is especially true in Africa. Africa has some of the weakest health systems in the world. These health systems experience numerous constraints hindering the delivery of quality health care including weakly integrated health systems, under-investment in health, insufficient human resource management, poor governance systems, and corruption(12,13). Patients in Africa have the highest levels of dissatisfaction with their healthcare system and their systems demonstrate substantial gaps in quality. While gaps in quality health care in Africa are undeniable, understanding what quality is and measuring it is a challenge(3).

Quality Improvement

Quality care is not static. Developing clarity on what measures and processes drive quality in health care is important to evaluate what types of actions are going to bring quality care to the patient. The Royal College of Physicians defines quality improvement (QI) as a process that resembles a spiral. At its foundation, it involves establishing standards for quality and then necessitates measuring the level of quality prior to any evidence of improvement.(7). QI can be characterized as an enhanced patient experience and improved outcomes achieved through altering provider behavior and organizational practices by implementing systematic change methods and strategies. (7). This definition encompasses the fundamental elements of Quality Improvement (QI) which include a 'change' (improvement), a 'method' (a systematic approach assisted by suitable tools), and a 'context' (the environment in which the improvement is implemented) in order to attain enhanced 'outcomes'. (14). It is crucial to acknowledge that better results encompass not just patient outcomes but also other elements linked to excellent care, like system performance and professional development (learning)(15).

HCW should actively participate in establishing quality standards for patient care. Acquiring the abilities to strategize, execute, and evaluate enhancements in intricate systems is an essential skill that will have a positive impact on patient outcomes and the overall performance of health systems. (7).

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Training on QI and Patient Safety

The key principles of QI include: an iterative approach, an emphasis on reliability, scaling up with adaptation to context, a deep understanding of systems and processes and empowerment of service users, management and frontline healthcare workers (14).

While the resources for QI are available, they are scarce and can be difficult to find unless you know where to look. Quality improvement (QI) training for health professionals is essential to address the challenges of implementing the best evidence in real-life practice and to drive tangible and evidence-based improvements in patient care. Many trainees would say that they acquire most of their quality improvement (QI) education informally, relying on guidance from their more experienced colleagues. While there is value in practical education for a field that involves the hands-on implementation of research, there are significant advantages in equipping future QI practitioners with a solid understanding of the underlying theory (5).

. This is especially true at the undergraduate level, where formal QI teaching is currently rare. However, when undertaken, these teachings tend to enhance participants' knowledge and often lead to changes in clinical processes.(15) (16)

Studies show improvement in clinical processes and patient outcomes after QI training (16)

2.2 History

The initial indications of a significant increase in quality in the healthcare industry became visible at the beginning of the new millennium when the Institute of Medicine's progressive methods of innovation and enhancement were widely publicized in the book "Crossing the Quality Chasm." (1). Healthcare professionals have been increasingly interested in utilizing a wider range of knowledge and techniques, beyond the field of medicine, to continuously enhance the standards of safe and effective patient care (14).

In fact, over the past two decades, QI has become integrated into many competency frameworks for physician training. (5). The incorporation of QI as a fundamental skill highlights the significance of frontline healthcare workers actively participating in system-wide endeavors to enhance the quality and safety of care. (17). Consequently, numerous advancements have been made in integrating QI training into the fundamental medical syllabus.

2.3 Content

Several content areas on QI and PS curricula have been covered during training. These content areas provide a comprehensive foundation for effective teaching methods. (5), identified three primary content areas that could

form the core of QI and PS curricula. These include enhancing the patient experience of care, improving overall population health, and mitigating healthcare costs(18).

Similarly, (19)emphasized key content areas in Patient Safety efforts that encompass communication, multidisciplinary care, the integration of simulation techniques, and the development and implementation of evidence-based guidelines and quality improvement initiatives.

A comprehensive review of 41 quality improvement and patient safety training curricula revealed that Continuous Quality Improvement (CQI), Root Cause Analysis (RCA), and Systems Thinking were commonly incorporated into these educational programs.(16).

Furthermore, (20)identified essential content areas that had been added to their Residency Patient Safety Curricula, which included root cause analysis, medical error identification, fostering a culture of patient safety, and addressing system-based errors in patient care. The Model for Improvement, as highlighted by Brown et al, stood out as the most commonly taught QI approach from 218 studies, underlining its significance in QI curricula(5).

In addition to these content areas and teaching methods, it is crucial to consider the holistic approach to training healthcare professionals in QI, as outlined (2). This approach includes teaching principles and methodologies of QI, emphasizing the use of real-time data for improvement, fostering an understanding of human factors in system design, developing skills to manage complexity and lead change effectively, and involving patients throughout the QI process to tap into valuable feedback and co-design opportunities.

Additionally, Brown et al.s research emphasized key success factors for medical student involvement in QI projects (5). Success was often associated with working on projects aligned with healthcare system priorities, receiving substantial mentoring, clear expectations, and protected time. Furthermore, highly structured curricula, mentorship, and innovative content delivery strategies were identified as facilitators for successful QI curricula(5)

2.4 Methods

In previous studies, the methods employed in the curricula for teaching Quality Improvement (QI) and Patient Safety (PS) have been varied and innovative, with an emphasis on combining didactic and experiential learning. Wong et al. (2010) observed that most curricula incorporated a blend of teaching approaches, while web-based learning and detailed case discussions were utilized less frequently.

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For medical students, the curricula were often targeted at both preclinical and clinical stages, either integrated into existing courses or delivered as standalone sessions. These programs typically comprised less than 10 hours of contact time were allocated for these programs, usually in a single session. It is important to note that five of these programs actively involved medical students in QI or PS projects.

Similarly, the QI and PS curricula created for residents were relatively short, with around 10 hours of contact time. However, they often consisted of multiple meetings, typically ranging from 2 to 5 sessions. These curricula were usually integrated into core rotations, although some were stand-alone sessions or elective rotations, all taking place in clinical settings. It is worth mentioning that the majority (58%) of these curricula had residents participating in QI or PS projects.(20).

Remarkably, Batalden et al's findings (2007) indicated that improvement would be likely when teaching methods emphasized practical learning(15). These methods involved giving learners complete set of quality improvement (QI) tools and personalized coaching in QI methods. Furthermore, exposure to specialized QI experiential learning cycles, involving multiple small cycles of change, was more effective in achieving improved results compared to single comprehensive interventions.

(21)highlighted the significant role junior doctors play in QI and the building their competencies(22) . They stressed the real-time and dynamic nature of QI, which, when approached through a structured framework, led to visible and effective changes in patient care. This underscored the importance of involving frontline trainees in making a tangible difference in patient care(17).

Additionally, Brown et al.'s research emphasized key success factors for medical student involvement in QI projects. Success was often associated with working on projects aligned with healthcare system priorities, receiving substantial mentoring, clear expectations, and protected time. Furthermore, highly structured curricula, mentorship, and innovative content delivery strategies were identified as facilitators for successful QI curricula(5). These findings collectively underscore the importance of a multifaceted approach in teaching QI and PS, combining didactic and experiential learning, mentorship, and tailored content delivery to achieve positive educational and clinical outcomes.

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2.6 Medical Training in Kenya and its Relation to Quality and Safety

Efforts have been made to enhance healthcare quality in Kenya, specifically in the handling of sick newborns and children at the initial referral or district hospital level, as demonstrated by Irimu et al in their study. The study reveals advancements in the development and implementation of evidence-based clinical practice guidelines, the utilization of standardized medical record forms, and the training of healthcare providers. These actions have resulted in improvements in the quality of care provided at district hospitals, measured by adherence to guidelines. (23). In another work by Amref, some factors such as management shortcomings, limitations in personnel and finances, failure to comply with hygiene standards, and inadequate availability of medical equipment all contributed to the substandard quality of care. These challenges result in low utilization of health services, particularly by those without health insurance. The document also mentions a new quality improvement initiative implemented by Amref Health Africa and GIZ, which aims to institutionalize the Kenya Quality Model for Health (KQMH) in health facilities to address these issue (24).Okeyo et al 2017 did assessment on readiness for quality care curriculum in Kenya and found that a well-defined plan should be created alongside the curriculum to address the improvement needs of the faculty's professional development. Additionally, the institutional structures for QI, including measurement systems, should be reinforced to ensure that the practicum experience with QI is productive and beneficial. They suggest conducting a readiness assessment, reviewing the curriculum, assessing the training needs of the staff, developing specific modules, and offering coaching and follow-up support to both faculty and students to practice QI effectively(25).

2.7 Gap

Much of what health care workers understand about quality comes from a quality assurance perspective while most QI approaches were developed in industry, not health care domains. In considering what actions are important for improving quality in health services it is worthwhile to examine established approaches. Research, standard setting, compliance and quality assurance, clinical audits, supportive supervision, service training and evaluation, are different domains and each brings a different perspective to the quality in health care discussion.

Much of what is needed in the day-to-day quality domain is not a need for new knowledge but rather a need for putting into practice the evidence-based practices that already exist. Implementation of evidence into practice is often weak(4,16). The emphasis on integrating existing knowledge into everyday practice sets QI research apart. To properly improve the quality, it is necessary to have an analytical perspective rather than an enumerative one, along with suitable methods for the field of quality improvement (2). The scientific methods of inquiry in quality improvement research are distinct from those utilized in much of clinical research. While clinical research remains

essential it is frequently done in a research silo, often separated from the routine provision of care, rendering it less representative and possibly less effective in real world application.

Regulatory approach of setting standards and accrediting institutions work from a compliance perspective(Smits et al., 2014). Accreditation agencies sets standards and are represented by certifying bodies like Safe Care, the International Organization for Standardization (ISO) or the Joint Commission on Accreditation. Standard setting or accreditation processes are driven by leaders. . This implies a top-down perspective where leadership often has more invested in the outcome. Hierarchical processes, as such, may have limited potential to empower frontline staff. These processes have recently been examined in randomized controlled trials with the findings that showed no impact on process quality (27).

Clinical audits are frequently used as a quality assurance function. Clinical audit with feedback is often utilized as a training tool, as are supportive supervision(28), While each approach may be a valuable starting place for improving health care quality, these approaches do not necessarily lend themselves to a rapid cycle iterative testing approach. Nor do they result in directly applying patient care data to decision-making by frontline providers. While each may have value, all show substantial variation in their impact (29). In moving toward a learning health system, one that is focused on quality care, individual and small-scale efforts must lead to the spread of improvement, in how things are done every day (30).

To facilitate the integration of quality health care into everyday practice, it is crucial to comprehend what the training needs are across multiple levels of the health system, at the pre-service level and the practitioner level addressing the real workforce needs for licensed health care professionals (21). The current state of patient safety and quality training available in SSA is very limited. There are a few short courses and webinars provided but to our knowledge there is no post-graduate degree training in available anywhere in SSA.

While organizations like the Institute for Healthcare Improvement in the USA have been addressing the quality gap since the 1990s with a focus on applied training through short courses, training in Quality and Patient Safety is at the master's degree level is a much more recent phenomenon. That said, the need for both pre-service and post graduate training in quality and patient safety is substantial.

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CHAPTER 3; METHODOLOGY

3.1 Study designs

This will be a sequential mixed methods study design of explanatory model where structured quantitative survey will be conducted. This will be followed by qualitative interviews using key informant interviews to contextualize the quantitative data from the survey. .

This will be followed by a validation workshop among key stakeholders (healthcare providers, regulators, academicians

3.2 Study site

The study will be conducted among the following group of individuals:

a) Pre-service trainees at the University of Nairobi and the Kenya Medical Training College in Nairobi, as well as the postgraduate residents at the University of Nairobi, Kijabe Mission Hospital, and the Aga Khan University Hospital.

b) Healthcare workers in Kenyatta National Hospital, Aga Khan University Hospital, and Kijabe Mission Hospital.

Additionally, key informant interviews will be conducted among faculty and clinical leaders at the academic institutions mentioned above (AKUH, UON, KMTC, and Kijabe Mission Hospital), as well as the hospitals (KNH, Kijabe Mission Hospital, and AKUH).Kenyatta National Hospital is a multi-specialty national teaching and referral hospital. Its mandate is to provide specialist care to patients referred from other facilities, support training of health professionals, participate in research and national health policy formulation. The hospital offers training facilities and resources for graduate and postgraduate students from the University of Nairobi Medical School and the Kenya Medical training collage. KNH has a bed capacity of 2000 and a staff establishment of 5,500. The bed occupancy has been an average of 110% during the year 2019/2020. The hospital runs over 30 specialist outpatient clinics; an average of 2,500 seek care every week in the outpatient clinic, while 1200 are seen for emergency care.

The University of Nairobi's Faculty of Health Sciences is located in the Kenyatta National Hospital complex. It includes departments for medicine, surgery, nursing, pharmacy, global health, microbiology, human pathology, and various basic sciences. The university offers training programs in various fields, such as Bachelor of Medicine, Bachelor of Surgery, Bachelor of Dental Surgery, Bachelor of Science in Nursing, Bachelor of Pharmacy, and Bachelor of Science in Laboratory Science. Additionally, it provides several postgraduate degrees in medical, surgical, dental, pharmacy, and nursing specialties. The institution has been in existence for the past 50 years and has played a significant role in training the majority of healthcare providers in Kenya and the region.

The Kenya Medical Training College (KMTC) is a State Corporation that falls under the Ministry of Health. It was established by an Act of Parliament in 1927 and is responsible for training individuals in various sectors of the health field, aiming to benefit Kenya as well as East Africa and even reaching beyond. The College is comprised of 74 Campuses, which have been strategically placed in different areas of the country. With a core mandate of Training, Research, and Consultancy, the College offers 95 medical courses across the healthcare spectrum ranging from preventive through to curative at certificate, diploma, and higher diploma levels. KMTC programs are approved and accredited by the relevant regulatory and accreditation bodies. To address emerging and emerging diseases, the College offers short courses to enable practitioners to meet continual professional development and remain relevant in the health profession. With a student population of about 63,000, KMTC produces about 12,000 graduates each year, accounting for 85 percent of middle-level healthcare professionals in the country.

The Aga Khan University Hospital, Nairobi aims to become the leading healthcare facility in sub-Saharan Africa, offering specialized medical care, education, and referral services. Having served the community for over fifty years, Aga Khan University Hospital, Nairobi (AKUH) holds an international accreditation from the Joint Commission International (JCI) since 2013. The hospital adheres to various standards, including the SANAs for its laboratory operations. With a total of 254 beds, the hospital employs a dedicated team of nurses. Referrals for specialized medical care and diagnostic services are received by the hospital from various hospitals and clinics in the region. The hospital, founded by the Aga Khan, offers a wide range of secondary and tertiary care, including disease diagnosis and team-based patient care management.

AIC Kijabe Hospital has been providing medical services to the less fortunate and vulnerable individuals in the Rift Valley of Kenya for over 100 years. It is a hospital with 350 beds and conducts more than 9,500 surgical procedures annually. The hospital is equipped with 15 operating theaters and accommodates over 180,000 outpatients. The majority of the patient population consists of women and children. Over the years, the institution has transformed from a small missionary station into a significant tertiary care hospital and training center. Additionally, Kijabe Hospital has established three branch clinics in Nairobi, Naivasha, and Marira, while the Bethany Kijabe Children's Center specializes in providing exceptional care and treatment for children with various disabilities, notably in the fields of pediatric neurosurgery and ENT (ear, nose, and throat). Moreover, it is worth noting that this center is the only one in East Africa offering a Pediatric Surgery fellowship training program, is a training site for East Africa's first Fellowship in Pediatric Emergency and Critical Care Medicine. In addition, the institution has residency training programs for Family Medicine, General Surgery, Anesthesia, and Orthopedic Surgery. Kijabe Hospital is also a recognized and certified training site for Kenya Medical and Clinical Officer internship program. We will be starting a Plastic Surgery Training Program in 2023.

Kijabe College of Health Sciences (KCHS) has been graduating nurses for 40 years and currently trains health care professionals across multiple levels, including post basic nursing training in: Kenya Registered Nurse

Anesthesia, Emergency Critical Care Clinical Officers, Pediatric Emergency Critical Care Clinical Officers, Palliative Care Nursing, Peri-Operative Nursing, ICU Nursing. Each of these programs addresses critical shortages and high demand skills.

Current academic partners include Vanderbilt University, University of California Davis, University of Alabama, Harvard University, University of Virginia, Kabarak University, Strathmore University, University of Washington, University of Nairobi. As part of the research and training agenda Kijabe has a fully equipped state-of-the-art Simulation Laboratory developed in partnership with General Electric.

3.3 Study populations

a. Medical students from the University of Nairobi from year 5-6
b. Students from Kenya Medical Training colleges, Kijabe College of Health Sciences
c. Healthcare workers from Kenyatta National Hospital clinical and diagnostic disciplines
d. Health care workers from Kijabe Hospital
e. Health care workers from Aga Khan University Hospital
f. Leadership for healthcare facilities and Faculty in medical training institutions.

3.3.1 Inclusion criteria

a. Medical MBCHB students from the University of Nairobi from year 5-6,
b. nursing students in year 3-4,
c. dental students in 4-5.
d. Final year students from Kenya Medical Training colleges or
e. Kijabe College of Health Sciences doing clinical medicine, nursing, laboratory medicine, radiology and orthopedic technology courses.
f. Healthcare workers from Kenyatta National Hospital clinical and diagnostic disciplines
g. Health care workers from Kijabe Hospital
h. Health care workers from Aga Khan University Hospital
i. Leadership for healthcare facilities and Faculty in medical training institutions
j.

3.3.2 Exclusion criteria

1. Medical students from the University of Nairobi from year 1-4, nursing students in year 1-2, dental students in 1-3, and students who decline to give consent or are absent from school during the study period.
2. Final year students from Kenya Medical Training colleges and Kijabe College of Health Sciences in clinical medicine, nursing, laboratory medicine, radiology and orthopedic technology who decline to give consent or are absent from school during the study period.
3. Healthcare workers from Kenyatta National Hospital, Aga Khan University Hospital, Kijabe Hospital clinical and diagnostic disciplines who decline to give consent or are on leave during the study period.
4. Leadership for healthcare facilities and Faculty in medical training institutions who decline to consent or are on leave during the study period.

3.4 Sampling procedure

The sampling for the survey among the pre-service and in-service will be a purposive sample of those who voluntarily accept to respond to the questionnaire. The sample reflect the range and scope of HCWs and students within the institution but will not attempt to have equal representation by gender.

The stratification will be on the basis that university of Nairobi and Kenyatta National Hospital has over 1000 undergraduate students, 700 postgraduate and in-service, KMTC has about 500 students and 100 workers, Kijabe has 700 workers and AKUHN has 700 workers including postgraduate students.

3.5.1 Survey Sample size calculation for cross-sectional survey

During the pre-intervention phase 388 questionnaires shall be administered to consenting pre-service participants (medical students) at UON, AKUH. The sample size will be determined using the Cochran's formula for prevalence studies. The Cochran formula will be used for this survey, given the population is infinite.

$N=[z^2p(1-p)]/e^2$

Where.

n = desired sample size

Z = the standard normal deviates at 95% confidence interval (= 1.96).

p = the proportion of healthcare workers with no exposure to training on Quality of care estimated at 50%

e = Desired level of precision, estimated at 5%

$n = ((1.96)^2 *0.50*(0.50))/ (0.05)^2$

n = **386**

	Institution	Course/department	Number	Proportion	No for survey	Adjusted
UON	Preservice	BDS	200	0.03	11.4	12
		B.Sc. Nursing	400	0.06	22.8	24
		Pharm	250	0.04	14.3	15
		MBChB	2400	0.36	137.0	137
	Postgraduate	Surgery	360	0.10	34.3	35
		Medicine	100	0.01	5.7	6
		Obsgyn	150	0.02	8.6	9
		Peds	100	0.01	5.7	6
		Pathology	90	0.01	5.1	6
		Radiology	90	0.01	5.1	6
		Nursing	40	0.01	2.3	3
		Pharmacy	40	0.01	2.3	3
		Dental	40	0.01	2.3	3
Kenyatta National Hospital		Surgery	100	0.01	5.7	6
		Medicine	100	0.01	5.7	6
		Obsgyn	100	0.01	5.7	6
		Peds	100	0.01	5.7	6
		Pathology	100	0.01	5.7	6
		Radiology	100	0.01	5.7	6
f		Nursing	100	0.01	5.7	6
		Dental	100	0.01	5.7	6
AKUHN		Surgery	50	0.01	2.9	3
		Medicine	50	0.01	2.9	3
		Obsgyn	50	0.01	2.9	3
		Peds	50	0.01	2.9	3
		Pathology	50	0.01	2.9	3
		Radiology	50	0.01	2.9	3
		Nursing	50	0.01	2.9	3
		Dental	50	0.01	2.9	3
KMTC		Nursing	100	0.01	5.7	6

	Clinical medicine	100	0.01	5.7	6
	Technology	100	0.01	5.7	6
	Surgery	100	0.01	5.7	6
Kijabe	Post graduate students	40	0.01	5.7	6
	Consultants	40	0.01	5.7	6
	Pre-service Students	250	0.01	5.7	7
	Nurses	300	0.01	5.7	7
	Allied Health Staff	80	0.01	5.7	6
Total		**6760**		**388.0**	**403**

Study procedures

Data collection tools

For the survey, data will be collected through a questionnaire which will be in 5 sections . Section A demographic characteristics of participants, station of work, whether student/postgraduate or staff and I cadre, Section B: knowledge and apllications on quality is, how it is practices and skills required. Section C will deal with what they would think should be the content. Section D will deal with what would the methods of delivery and section E will deal with what they perceive to be challenges.

Qualitative approach

Recruitment and selection of study participants

Conducting qualitative research, particularly Key Informant Interviews (KIIs), is a systematic process. Below is a step-by-step guide on how you can conduct qualitative interviews to assess the preparedness of healthcare institutions and faculty to integrate patient safety and quality improvement into their curriculum:

The study has clear Research Objectives that are related to the guiding questions .

Identify Key Informants (KI)

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Diverse Representation:

- Include faculty members from different healthcare disciplines (e.g., medicine, nursing, allied health professions).
- Ensure representation from various health institutions to capture different perspectives (teaching hospitals, faculty, health facility leadership students and healthcare workers, etc.).
- gender diversity of your informants shall be considered.

Selecting Participants:

- Aim for a sample size that ensures saturation (the point at which new information ceases to emerge).
- Consider interviewing at least 2-3 faculty members from each represented institution and having representation of the disciplines.

The KII shall follow Steps that are systematic and comprehensive qualitative process to assess the preparedness of healthcare institutions and faculty in integrating patient safety and quality improvement into the curriculum.

For qualitative data from interviews, there will be 4 guiding questions as indicated in the appendix. In addition, Key stakeholders will participate in review and validation of the data.

Both the KIIs and data validation sessions will be recorded. The content will be captured through recording using Sony recorder after receiving consent from participants.

Recording and Transcribing the Sessions

The KIIs, stakeholder meetings and the resultant audio recordings will be the main method of data collection. Audio recordings from these sessions will be raw data and will be used for analysis; The written notes done during the interviews will also provide a useful source of reference and verification of the data

Audio recordings will be transcribed by the research team or done using an automated computer transcription service like Otter.ai (https://otter.ai) or Sonix (https://sonix.ai). This AI technology is completely automated so no humans have access to your content. Due to AI challenges with accents, there may be a need to do hand transcription. If there is need to gain help from contracted transcribers, they will be required to sign a confidentiality agreement to ensure participant safety, integrity and privacy are maintained. Further processes for protecting participant privacy during the research project are explained below.

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This recorder will be listened to and transcribed by an expert transcriber but for quality purposes this will be confirmed by one other investigators. The transcribed data will be taken through NVivo for analysis of codes to themes.

Research assistance

Data analysis plan

The data from the survey will be in 5 sections. Section A would be demographic, station of work, whether student/postgraduate or staff and l cadre, Section B will be on knowledge of what quality is, how it is practices and skills required. Section C will be on the expected curriculum content. Section D will expected methods of delivery of the curriculum content and section E will be on perceived challenges. Measures of outcomes will be summarized into means and proportions. Measures of association will be through Chi square and student t as appropriate. Qualitative data from KIIswill be recorded, transcribed and coded and organized into thematic areas using NVivo version 12.

Data quality control measures

The data will be kept under lock and key with the principal investigator and will only be accessed by her for 5 years after the analysis and dissemination. The data for analysis will undergo de-identification to maintain confidentiality. The principal investigator will:

- Ensure that through the process of data collection that there is clear communication of the purpose of the assessment to participants.
- Ensure that the data collection process adheres to ethical standards.
- Address data privacy concerns and assure participants that their responses will be kept confidential.
- Share the findings with stakeholders for validation.
- Based on the identified training needs, develop a comprehensive training plan that includes learning objectives, content, delivery methods, and evaluation strategies
- Establish a plan for monitoring and evaluating the effectiveness of the training programs implemented.
- Develop a communication plan to inform all stakeholders about the assessment results, the proposed training plan, and the next steps.
- Keep detailed documentation of the entire process, including data collection instruments, analysis methods, and final reports.

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Ethical consideration

Data collection will start after the permission granted by KNH /UON ERC, Kijabe ERC, AKUH ERC as well as NACOSTI permit. Each participating institution has been requested for a letter of support before submission to ERC and further to this we shall submit the process to institution specific research mechanism. This shall include registering the study with institution specific research department where applicable and notifying the department that may be involved.

The individual participant will sign a written informed consent form before filling in the survey and this will be after explanation by the research assistant.
The research assistant will

- Clearly explain the purpose, procedures, potential risks, and benefits of the assessment.
- Ensure that participants understand their right to withdraw from the assessment at any time without facing negative consequences.
- Assure participants that their responses and personal information will be kept confidential.
- Remove any identifiers when reporting findings to maintain anonymity.
- Clearly outline who will have access to the data and how it will be stored securely.
- Emphasize the voluntary nature of participation and make it clear that individuals can choose not to participate without facing any repercussions.
- Avoid any form of coercion or pressure to participate.

This study aligns with the institutional needs and the information found shall be used to improve the quality of care and the training of the healthcare workers in the respective departments . Ensure that the needs assessment will ultimately contribute to the improvement of healthcare training and services, benefiting both individual participants and the broader community.

We shall implement robust data security measures to protect the confidentiality and integrity of the collected data. There shall be a Clearly outline the data storage and disposal processes, complying with relevant data protection regulations.
The PI and CO-PI shall Establish mechanisms for ongoing monitoring and evaluation of the ethical aspects of the needs assessment.
This study shall be responsive to any ethical concerns that may arise during the assessment.

Results dissemination plan

The results of the study will be disseminated through stakeholder meeting, conference, publications, seminars and workshops within the institutions and in the country as well as Ministry of health.

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Timelines

29TIMELINES TRAINING NEEDS ASSESEMENT						
	2023		2024			
	Q3	Q4	Q1	Q2	Q3	Q4
Activity						
Development of proposal Draft Zero						
Review of proposal by Co-PI						
Presentation of Proposal to ethical review committee						
Addressing any revisions from ERC						
Survey						
Recruitment and training of Research assistants						
Preservice Under-graduate medical students (UON) KMTC students (Nairobi) Postgraduate clinical students (UON,AKUH, KIJABE) Healthcare workers (KNH,UON,KIJABE, AKUH)						
Analysis of Survey results						
Key Informant Interviews						
Faculty (KMTC, UON,KIJABE, AKUH) Leadership in facilities (AKUH,KNH, KIJABE) Patient representative advocacy groups						
Data analysis and report Writing						
Stakeholders workshop						
1st Stakeholder workshop (Share results and share draft Zero Curriculum) Pre-service HRH institutions MOH , MOE, Regulators, WHO, Health institutions						
2nd Stakeholder workshop (Validate curriculum) Pre-service HRH institutions						

MOH , MOE, Regulators, WHO, Health institutions						
Submission of draft copies to the institutions						
Final report writing						

BUDGET

BUDGET	
Activity	**Estimated cost in Ksh**
Development of proposal	0
Printing cost for Ethics submission	5,000
Submission to Ethics	5,000
Survey ; Loading data collection tool to redcap Training research assistants (3) Payment for RA 30 days by 3 Statistician-data cleaning and analysis	10,000 15,000 90,000 50,000
Key Informant Interviews; UON KMTC AKUH KIJABE Total Data analysis	 400,000 50,000
Report writing	60,000
1st Stakeholder workshop 1 day	200,000
2nd Stakeholder workshop 1 day	200,000
GRAND TOTAL	1,285,000

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APPENDIX I: QUESTIONNAIRE Survey

Situation analysis of variables relevant to Patient Safety and Quality improvement interventions in health professional training and healthcare worker (HCW) in-service Capacity building (Respondents: Medical school leadership, Hospital leadership, faculty, Healthcare workers and students)

A. General Information

1. Gender of respondent: 1=Female 2=Male
2. Age in years:
   1=>65, ☐
   2=55-64, ☐
   3=45-54, ☐
   4=35-44, ☐
   5=25-34, ☐
   6=20-24 ☐
   7=15-19 ☐
3. What is/are your role(s)/Responsibility (ies) in the institution? 1=Institutional head/Principal 2=Unit head/Dean 3=Program head/HOD 4=Faculty member 5=Student 6=Administration Staff 7= Frontline Healthcare-worker
4. What is the total number of years served in your position in this institution (Student Respondents: Write year of study) ……

A. Readiness Domains

1. Transformation in health training and care, calls for integration of Patient safety and Quality Improvement (QI) into Pre- service Training 1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree 6=Don't know
2. Are you aware of Continuous QI Initiatives within the institution? 1=Yes 2=No 3=Not sure
   If yes, specify……
3. Are you aware of Patient Safety Initiatives within the institution? 1=Yes 2=No 3=Not sure

If yes, specify……

4. Does your curriculum include a QI topics 1=Yes 2=No 3=Not sure

5. Does your curriculum include a Patient safety topics 1=Yes 2=No 3=Not sure

6. Given the prevailing state of health professional training there is need to include more about quality improvement and Patient safety in training of health professionals? 1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree 6=Don't know

7. Which of the following QI indicators are tracked by your institution? (Tick/mark X on **all** that apply)
   a. Timeliness of Care
   b. Patient Satisfaction
   c. Equal quality of Care to all patients
   d. Efficient use of resources
   e. Educational programs
   f. Clinical care protocols
   g. Facility Mortality audit
   h. Any other (Specify) ……..

Regarding the following QI elements, Tick/mark X on only one of the responses which is closest to the graded levels of agreement: 1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree, 6=Don't know	1	2	3	4	5	6
6. There is an information system which tracks QI indicators.						
7. Motivation for Change: There is pressure from key stakeholders calling for integrating QI into Pre Service Training (PST).						
8. Our institution/Unit has the right structures to implement the revised curriculum integrating QI into PST						

9. (a)Our institution/Unit has the right; systems to implement the revised curriculum integrating QI into PST						
9 (b)Our institution/Unit has the right; Competencies to implement the revised curriculum integrating QI into PST						
10 The Leadership of the institution has manifested commitment to integrating QI into Pre-service curriculum						
11 The curriculum committee is fully functional to support the curriculum review process integrating QI into PST						
12 All Faculty and staffs of affiliate institutions have personal responsibility for successful implementation of QI in PST						
13 The institution has adequate resources (Funding, Staff Development) to effect the change						
14 The institution has mechanisms for motivating/incentivizing performance improvement						
15 The institution has a culture and history of effective consultation and communication on important changes such QI integration into the curriculum						

16 Motivation for Change: Where is the greatest pressure for integrating QI into PST coming from:
1=Student, 2=Faculty, 3=Academic Program Leadership, 4=Government, 5= Regulatory bodies, 6=Employers, 7=Public

17 List at most three challenges that you foresee as barriers to effective Patient Safety and QI integration into PST

a. ……..
b. ……
c. ……

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Assessable Variables relevant to Quality Improvement interventions in Health Professional training settings

Please mark the option which is closest to your response to the written statements

B. General Knowledge and Understanding of Quality Improvement

1. The six Dimensions of QI (Effectiveness, Efficiency, Safety, Equitable, Timeliness, Patient Centered) are well known and understood 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. The key principles (Total Quality Management, Evidence Based Decision making), approaches (Plan Do Study Act, Lean, Sigma six), techniques (Collaborative) and tools (Assessment tools, capacity tools) are well known and understood 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
3. Key stakeholders and their roles are well known and appreciated 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
4. Faculty, residents/registrars and clinical rotation students have skills to analyze and prioritize QI areas and design appropriate intervention 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
5. Faculty, residents/registrars, clinical rotation students have knowledge to identify performance indicators and develop relevant assessment, monitoring and evaluation tools 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
6. Faculty's' competency development need for QI integration has been assessed and identified 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

7. There is a strategy for Capacity building of the requisite faculty competency 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
8. There is adequate ongoing coaching and mentoring on QI 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
9. Leadership and management provides conducive environment and support for QI 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
10. There is adequate Understanding of the complexities of health systems 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
11. There is adequate provision of Continuity of care 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

C. *Effective Communication*

1. Patients and carers are involved fully as partners in health care 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. Health Care Risks are adequately Communicated to patients by health workers 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
3. There is adequate and honest Communication with patients after an adverse event (open disclosure): 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
4. Informed consent of patient/client is always obtained when necessary 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
5. Students are taught and guided to be culturally respectful and knowledgeable (Cultural Competence). 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

D. *Identifying, Preventing, and Managing Adverse Events and Near Misses*

1. Students / HCW are taught how to recognize, report and manage adverse events and near misses. 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. Students are taught principles and practical applications in Managing Clinical Care Risks

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1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

3. Students/ HCW have adequate Understanding of health-care errors 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
4. Students/ HCW know how to Manage complaints in health care settings 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
5. There is an anonymous/confidential system of reporting medical errors 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

E. Using Evidence and Information

1. Quality improvement teaching, training, mentorship in your institution and affiliated practicum facilities are documented in scientific publication, and well disseminated 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. Clinical care in the practicum facilities is effective because it is always based on scientific evidence. 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

3. The institution/practicum facilities have all the required clinical care protocols 1=Strongly Agree 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
4. The Standard Operating Procedures for ten most important clinical conditions Incl. HCT, ART, PMTCT, EMOC, MNCH, FP, TB, are readily accessible 1=Strongly Agree 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
5. There is optimum use of ICT to enhance learning and practice of QI and patient safety 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
6. There is regular (at least annual) patient/client satisfaction survey 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

F. Working Safely

1. The clinical placement facilities have a culture of quality improvement and patient safety 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. The training institution has a culture of quality improvement 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
3. Teamwork and leadership for safety is taught, encouraged and supported 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
4. There is adequate Understanding of human factors in quality and safety 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
5. All Clinical instructors and supervisors always ensure that all students on clinical practicum only make decisions and undertake actions that are appropriate at their levels, and receive appropriate supervision 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
6. Students and faculty are taught and supported to Manage Fatigue and Stress 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
7. Patients in practicum facilities have none or very low level of unintended injuries or adverse effects of treatment and care: 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

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G. *Professionalism*

1. Students and faculty are taught, encouraged and supported to Maintain good health and physical fitness to work or practice 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. Students and faculty are taught, encouraged and supported to establish and maintain Ethical behaviour and practice 1=Strongly Agree 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

I. *Continuing Learning*

1. Students/Faculty HCW/Facility leadership are encouraged and supported to develop a culture of Lifelong Learning 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. Faculty/ Facility leadership have a regularized Continuous Professional Development (CPD) program, and regularly engage in it at least three occasions annually 1=Strongly Agree 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

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J. Specific Issues

1. Students/HCW know and understand how to Prevent or avoid wrong site, wrong procedure and wrong patient treatment 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
2. Students/HCW have adequate understanding of Medication safety 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
3. Students/HCW have adequate understanding and practice of Infection prevention and control 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
4. Clinical treatment and care in practicum facilities is Patient-centered: providing care that is respectful and responsive to individual patient preferences, needs and values 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
5. Patients in practicum facilities always receive treatment and care without potentially harmful delays (Timely) 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
6. The treatment and care in practicum facilities is Efficient, and avoids waste of resources (Human, supplies/medical products, equipment, infrastructure) 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
7. The treatment and care in practicum facilities is Equitable, with every patient receiving appropriate care irrespective of person characteristics such as age, gender, ethnicity, geographic location and socioeconomic status. 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
8. The institution has a committee or unit in charge of quality standards of curriculum: If in agreement, name the committee or unit 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
9. The vision and mission of the institution include statement about quality of curriculum and or delivery of teaching and training? 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
10. The current strategic plan include specific objective and or target of quality improvement of curriculum and education/training 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
11. The clinical placements facilities and resources are appropriate and adequate for delivering quality

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improvement training: 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

12. The organizational vision, mission, values, strategic plan make specific statements on quality improvement and patient safety 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know
13. Faculty/Facility leadership are well-oriented and trained on quality improvement concepts and applications in improving student training 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

K. Miscellaneous

1. What is the average number of total hours that Clinical instructors work during an average week period? …… 1= 20 Hrs or less 2= 21-40 Hrs 3= 41-60 Hrs 4=61-80 Hrs 5=>80 Hrs 99=No information
2. The institution recognizes and rewards Quality improvement efforts 1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't know

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APPENDIX II Qualitative guiding questions

The guiding questions for the qualitative interviews (KII) shall be

1. What is the priority content for Quality and Patient Safety?
2. Where can this training be placed? Which Year?
3. What approaches do they think can work to implement patient safety and quality curriculum?
4. What are the barriers you identify to implementing content for quality and patient safety and what can be done to mitigate these barriers

APPENDIX III ; CONSENT INFORMATION DOCUMENT

Title: Training needs assessment survey proposal for quality and safety curriculum development for healthcare workers

Introduction

Quality of care and patient safety is increasingly becoming an area of concern worldwide; addressing this aspect of healthcare increases the success of Universal health coverage (UHC) initiatives. There is little attempt to teach and assess the quality of care and patient safety during the pre-service period for health worker training. Moreso, in low and middle-income countries.

This proposal seeks to assess the training needs for patient safety curricula for our context to preservice, in-service, and residency. In the African region, existing and published training programs in quality and safety for healthcare workers are still in the nascent stages. A relevant system-based curriculum should offer demand-based training that must be informed systematically and identify training needs showing current existing gaps. The key participants shall include Pre-service and In-service healthcare workers and the leadership and faculty of healthcare and teaching institutions in Kenya. Those included here are the University of Nairobi medical school, Kenyatta National Hospital, Aga Khan University hospital, and Kijabe Mission Hospital.

Study procedure

You shall be requested to participate by any of the two approaches at different occasions

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1. Self-administered questionnaire
2. Key informant interviews

General Study Objective

This study aims at exploring training needs for healthcare workers in Health quality and patient safety in Kenya.

Specific Objective

1. To determine perception of the In-service and Pre-service healthcare professionals on the educational content for training Healthcare Quality and Patient safety.
2. To determine perception of the Faculty in medical training institutions on teaching methods acceptablty and feasibility.
3. To assess the barriers to implementing the curriculum on Healthcare Quality and Patient Safety at organizational and individual level among the faculty in medical training institution and leaders in healthcare institution.

Risks

The information you will provide during the study will be kept in confidence and there will be anticipated risks however**.**

Benefits

By participating in this study and answering the questions you will help in providing information that will improve the quality of care and the training of healthcare workers in the respective departments. This will also ultimately contribute to the improvement of healthcare training and services, benefiting both the individual participants and the broader community.

If you have any concerns about how this study is being conducted, you can get in touch with the secretary of Kenyatta National Hospital- University of Nairobi Research and ethics Committee through the following contacts: KNH/UoN – ERC P.O. Box 20723-00203 or

Email: uonknh erc@uonbi.ac.ke or Tel.726300-9 Monday to Friday 9.00am to 5.00pm

46Click here to enter text.

The Principal investigator is

Dr Lydia Okutoyi works at the Healthcare Quality Division KNH.

She can be reached on email lydiaoctoy@gmail.com 0721814381

CONSENT FORM

Voluntarism

Your participation in this study is voluntary and you have the right to refuse to participate or answer any questions that you feel uncomfortable with. If you change your mind about participating during the course of this study, you have the right to withdraw at any time.

Declaration of the respondent

I have understood the purpose of this study and therefore consent voluntarily to participate as a respondent.

Name: _____

Signature: _____

Date: _____

Witness:

Name: _____

Signature: _____

Date: _____

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Researcher:

Signature: _____

Date: _____

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APPENDIX IV; Investigators CV

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APPENDIX IV; Support letters from institutions

UON

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AKUH

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