FACTORS INFLUENCING EFFECTIVE CLINICAL HAND-OVER OF CRITICALLY ILL PATIENTS IN INTENSIVE CARE UNITS IN WESTERN REGION OF KENYA

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled "**Factors Influencing Effective Clinical Hand-Over of Critically ill Patients in Intensive Care Units in Western Region of Kenya".**

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DEDICATION

I dedicate this thesis to my family and colleagues whose sacrifice, love, encouragement and support have gotten me this far.

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ABSTRACT

Handover involves transfer of health care providers' responsibility and accountability for some or all aspects of care for a patient, or groups of patients, to another person, such as a clinician or nurse on a temporary or permanent basis. A health care provider can take over responsibility for a patient only if he or she receives all relevant information to facilitate continuation of effective and safe patient care. Handover is essential for safe health care and is used in all clinical situations. In Western Kenya there is little evidence of studies carried out on factors of critically ill patients. This study therefore sought to address the gap. The study was conducted in Moi Teaching and Referral Hospital, Jaramogi Oginga Odinga Teaching and Referral Hospital, Mediheal and Aga Khan Hospital in Kisumu. A cross sectional analytical research design was adopted in conducting the study. Purposive sampling method was used to select the institutions while convenient sampling was used to pick 80 study participants. Quantitative data was collected by use of questionnaires and observation check list and analyzed by descriptive techniques and inferential showing association between factors and handover. Qualitative data was collected through key informant interviews and was analyzed thematically. The study results showed that handover was done at the beginning, admission, discharge and end of shift using both oral and written. Majority (82.5%) of the participants had been trained on patient handover. Sixty (60%) thought that patient's bedside is the most appropriate place for handover as compared to 37.5% who preferred nursing station, while 2.5% indicated that the conference room was the most appropriate place for handover. All the interviewed staff took part in handover process. Majority (91.2%) agreed that alarms were a major distraction in their unit during handover. This was followed by emergency cases and noise. Majority (95%) agreed that unstable hemodynamics of patients and severity of illness (93.8%) greatly influenced handover. Further findings showed that staff who agreed that visitors and emergency cases affect handover, were up to 8 ($p = 0.1$) and 7 ($p = 0.3$) times more likely to have been more effective in their handover performance. On the contrary health care providers who mentioned that clinical handover is done at the beginning or the end of shift were 80% less likely to have been effective in their performance (OR: 0.2; 95% CI: 0.1 – 0.8; $p = 0.02$). health care providers who agreed that supplies which include consumables (OR:3.2,95% Cl:1.1-8.9,p=0.02) availability of clinical handover policy in the unit (OR:3.3;95%Cl:1.1-9.5;P=0.02) were three times more likely to perform effectively. The study concludes that health care provider should ensure proper handover is done on critically ill patients to ensure quality outcomes. Similarly, proper documentation should be enhanced because heath care provider needs to review handover from this documentation and confirm that the care was done. The study recommends formal teaching session in medical training colleges to enhance staff's competency in handing over among health care providers. There should be protocols and guidelines to assist during handover.

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LIST OF ABBREVIATIONS AND ACRONYMS

CME	-	Continuous Medical Education
ICU	-	Intensive Care Unit
IREC	-	Institution Review and Ethics Committee
IoM	-	Institute of Medicine
JCAHO	-	Joint Commission on Accreditation of Health Care Organization
KePSIE	-	Kenya Patient Safety Impact Evaluation
SBAR	-	Situation, Background, Assessment and Recommendation
MTRH	-	Moi Teaching and Referral Hospital
SPSS	-	Statistical Package for Social Sciences
UK	-	United Kingdom
USA	-	United States of America
WHO	-	World Health Organization

OPERATIONALIZATION OF TERMS

Accountability- The act of accepting, acknowledging and assuming the responsibility for action/decision, encompassing the obligation to report, explain and be answerable for resulting consequences.

Critically ill Patients -This is unstable patients following extensive injury, surgery or life-threatening disease.

Handover –The study adopted the definition by Clarke *et al.,* 2018 that state that it is the transfer of responsibility and accountability for some or all aspects of care of a patient or a group of patients to another professional group on temporary or permanent basis.

Health care providers-This is an individual who is accredited by a professional body upon completing a course of study and usually licensed by the government urgency to practice a health-related profession. They include ; Doctors. nurses, physiotherapy officers, laboratory officers and nutritionists.

Intensive Care Unit – This is a specialized hospital ward that provide treatment and

Continuous monitoring for patients who are critically ill.

Policy – A set of principles that reflect the organization's mission and direction. All procedure and protocols are linked to a policy statement.

Protocol – A set of rules used for the completion of tasks or set of task

Standard- is a repeatable, harmonized, agreed and documented way of doing something.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter introduces the background to the study, statement of the problem, justification, study objectives and the conceptual framework.

1.2 Background of the Study

Patient safety is an essential component of the health systems, and it is of a global concern .Maintaining patient safety increases, the chances of success in gaining optimal results in treatments (Hemmati, *et al.*, 2018)This is one of the biggest challenges of providers of healthcare services, Failure of effective handover is a major preventable cause of patient harm. Patient handover is a valuable affair and an essential part of processes and workflows in hospitals (Mohseni, *et al.*, 2017).The goal is to ensure continuity of care by provision of accurate and up to date information about a patient and their needs (Mardis *et al.*, 2016). In practice, the complexity of patients' conditions, lack of standardization of prolong the reporting process (Spanke & Thomas, 2010).

Intensive Care unit is considered the highest level of patient care. Intensive Care Clinical Advisory Group in conjunction with the Joint Faculty of Intensive Care Medicine (JFICM) defines intensive care unit as a specialty staffed and equipped, separate and self-contained section of a hospital for the management of patients with life threatening or potentially life-threatening conditions. Such conditions should be compatible with recovery and have the potential for an acceptable future quality of life. An intensive care unit provides special expertise and facilities for the support of vital functions and utilizes the skills of medical, Health care providers and other staff

experienced in the management of these problems (JFICM, 1997 as cited in Intensive Care Clinical Advisory Group).

Clinical handover is critical to clinical decision making and a provision of high-quality continuing care. The primary goal of clinical handover is to ensure the continuity of care by imparting accurate, up-to-date, relevant, and necessary information about patient care to enable health care providers to meet patient needs (Mardis, *et al.*, 2016).

A study stated that clinical handover provide an opportunity for error and that "in a safe system, information is not lost, inaccessible, or forgotten in transitions" (Spurgeon, Sujan, Cross, & Flanagan, 2019). Clinical handover at change of shift between health care providers about patient care, records and information tools to assist in communication between health care providers about patient care, therefore staff should understand clinical handover not only as an explicit transfer of information, but of clinical accountability and responsibility.

The duration of each clinical handover varies, depending on the type of clinical handover, the number of patients in the unit, their level of acuity, and the rate of patient turnover (Goff, Knee, Morello, Grow, & Bsat, 2014). Patient safety includes the variables that limit or affect preventable adverse patient outcomes and errors. Clarke, Clark-Burg, & Pavlos, (2018) describes clinical handover as the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis.

Clinical handover at shift change seem routine but during this transfer, vital information passes through multiple health care providers in a short time. The potential for an information gap causing an error is very real (Handel & Schwartzstein,

2018). In clinical and communication handover the standard requires the clinical leaders and senior managers of a health service organization to implement documented systems for effective and structured clinical handover (Rickard, *et al.,* 2021).

The intention of standard is to ensure there is timely, relevant and structured clinical handover that supports safe patient care (Samantha, Clark-Burg, & Pavlos, 2018). The Joint Commission on Accreditation of Health Care Organizations (JCAHO) has established a standardized clinical handover tool to be used as a priority for improving patient safety since 2006 (Patel & Landrigan, 2019). It has been suggested that quality and safety of health care providers' clinical handover depends on both technical and non-technical aspects of their performance. Technical skills refer to procedure-specific skills, whilst 'non-technical skills', as core part of human factors, refer to the cognitive, social and personal resource skills that complement technical skills and therefore contribute to safe and effective task performance. Generic human factors relevant to patient safety include elements of teamwork, situation awareness, decision-making, leadership, task management.

However, in health care studies on clinical handover have focused almost exclusively on technical performance and in particular on the development of protocols and checklists that define specific information content for particular clinical settings and tools in support to communication standardization (Thompson, Chambers, & Wilson, 2012). During the typical patient stay in an intensive care unit, there are many clinical handovers that occur. These clinical handovers are a primary source for adverse events due to incomplete or inaccurate information being shared (Clarke, *et al.*,2012).

The transfer of information can be written or verbal among staff across shifts or across hospital departments and is critically important as it creates a shared understanding of the patient's condition, thus impacting on decisions and care planning for the patient.

At each handover point there is a potential for important or critical information to be lost, misinterpreted or not communicated effectively. This can result in unintended consequences, patient harm or sub-optimal care (Milesky, Baptiste, & Shelton, 2018). Clinical handover in Intensive Care Units (ICUs), where clinical handover during shift changes is often delivered at the bedside, is more complex than clinical handover on general wards due to complexity of patient health conditions and work pressure in more critical care contexts (D'Empaire & Amaral, 2017).

Consequence of error in health care tragic and may include inconveniences, disability, complications, delay in treatment, prolonged hospital admission, cost and both detrimental effects to the involved health care personnel the family institution and the trust relationship between the public and the health care sector. In the UK the medical director for the national patient safety agency said clinical handover of care is one of the most perilous procedures in medicine and when carried improperly can be a major contributor factor to subsequent error and home to patients (Spranzi & Norton, 2020).

The handover process is referred to as variable, unstructured and error prone (Slade, Murray, Pun, & Eggins, 2019) it can be both risk creating and minimizing (Bukoh & Siah, 2020). Although there are controversies about the efficacy of handover practices, some articles highlight the importance of oral shift report that could not be substituted by any other method because handover is the only place where different aspects of professional care are identified (Gordon & Findley, 2011)otherwise, other studies question its efficacy and report that there is no need to have an oral shift report because most of the discussed information could be located within Health care providers documentation and therefore, such a practice is time consuming. In practice, the complexity of patients' conditions, lack of organization, and different interruptions during handover prolong the reporting process (Kim, Kim, Kim, & Cho , 2022).

Handover process can take 30 to 45 minutes to complete, but the time involved depends on the patient's condition and other factors that may note during a handover. Handovers can occur at the bedside, in a handover room, or at Health care providers‟ stations (Ilan, et al., 2012). However, bedside handover is an older method that takes place around the patient's bed. It characterized by involving the patient as a participant, which may help to improve care. It gives a patient access to the medical condition and Health care providers care information. Bedside handover is manifested on the patient and Health care providers' satisfaction as well as the patients' family that by feeling more informed about their care and knowledge increased about their illness (Mardis *et al.,* 2016).

Handover planning is a part of ICU transitional care and provide continuity of care for the patients. The effects of a poorly coordinated handover can lead to prolonged stay in the ICU and also avoidable deaths. If the handover for the individual patient is accompanied by scarce, inadequate or untimely knowledge or preparation, it may be perceived as a threat to patient security (Gysin, Sottas, Odermatt, & Essig, 2019). Generally, handover process relates to the inter-shift communication of Health care providers relating to the patients within their care. Often, within general and long-term care settings, many of the health care providers will be familiar with the patient whose information is handed over. Health care providers receiving patient handover in these long-term settings often have existing knowledge and insight into the patients' needs (Mardis *et al.,* 2016).

1.3 Statement of the Problem

Handover of critically ill patients is crucial to clinical decision-making and provision of safe, high quality care. Up to two-thirds of sentinel adverse events in American hospitals are related to clinical handover problems (Handel & Schwartzstein,

2018).Clinical handover information transfer passes through multiple Health Care Providers in a short time thus potential for loss or omission of information is real (Peterson *et al.,* 2011).This problem is exacerbated by the high frequency of handovers in health care, especially in intensive care unit. The number of admissions in ICUs is on the rise, with hospitals in western region of Kenya recording up to 18,000 admissions annually to ICU (Lalani, *et al.,* 2018). Hospital reports of 2019 indicated that 2 out 5 patients in ICU missed out on planned procedures due to lack of proper handover (MTRH Reports, 2019). Studies on patient handover have focused on technical performance / development of protocols / checklists that define specific information content for particular clinical settings and tools in support to communication standardization (Thompson *et al.*,2014; Langbart *et al.,* 2013). Limited studies have documented factors influencing handover in Africa, Kenya included. This study therefore sought to address this gap

1.4 Objectives

1.4.1 Broad Objective

To investigate factors influencing effective clinical handover of critically ill patients among health care providers in intensive care units in Western region of Kenya.

1.4.2 Specific Objectives

1. To assess patient factors influencing effective clinical handover of critically ill patients in intensive care in Western region of Kenya.
2. To examine health care provider factors influencing effective handover of the critically ill patients in intensive care unit in Western region of Kenya.
3. To analyze health facility factors influencing effective clinical handover of critically ill patients in intensive care units in Western region of Kenya.

1.5 Research Question

1. What patient factors influencing effective clinical handover of critically ill patients in intensive care in Western region of Kenya?
2. What health care provider factors influencing effective handover process of critically ill patients in intensive care units in Western region of Kenya?
3. What are health facility factors that influencing effective clinical handover of critically ill patient's intensive care in Western region of Kenya?

1.6 Scope of the Study

The study was conducted in intensive care unit (ICU) among health care providers working in the intensive care unit who are eligible and willing to participate in the study. The study participants were from selected hospitals in Uasin Gishu and Kisumu counties in western Kenya.

1.7 Limitations of the Study

The research design used was cross-sectional design whereby data was collected at one point in time. The investigator was interested in health care providers because they had the characteristic of interest. The sample size was small.

1.8 Justification

Continuity of information is vital for the safety of critically ill patients. Ineffective handover leads to poor patient outcomes. Effectiveness in patient handover in ICU has a particular importance where accuracy and attention to detail can literally breach the gap between life and death (Wunsch *et al.*, 2013). Many studies on patient handover have focused on the process and tools (Thompson *et al.*,2014; Langbart *et al.*, 2013). This study, therefore investigated factors that influence handover of patients in the

critical care units thus the results from this will help improve patient care and outcomes.

1.9 Conceptual Framework of the Study

The conceptual frame work was developed according to the specific objectives of the study, patients factors which included diagnosis, plan of care ,general condition of the patient, unstable hemodynamics and deranged lab works, when handing over in noisy environment with a lot of interruptions, this will hinder the handover process, leading to incomplete or inaccurate information transfer leading to ineffective handover.

On health care provider factors, we had age, gender, cadre, training, level of education and experience when the respondents have the knowledge and expertise and competence the above influence the ability to effectively transfer the patient information in a suitable environment leading to effective handover.

Health facility factors influencing handover we had continuous medical education, bed capacity, nurse / patient ratio, updated guide lines and protocols and supplies and equipment's. Implementation of standardized handover tools and procedures can ensure consistence and structured communication during handover leading to effective handover. Resource allocation which is sufficient with the right technology can also support effective patient handover.

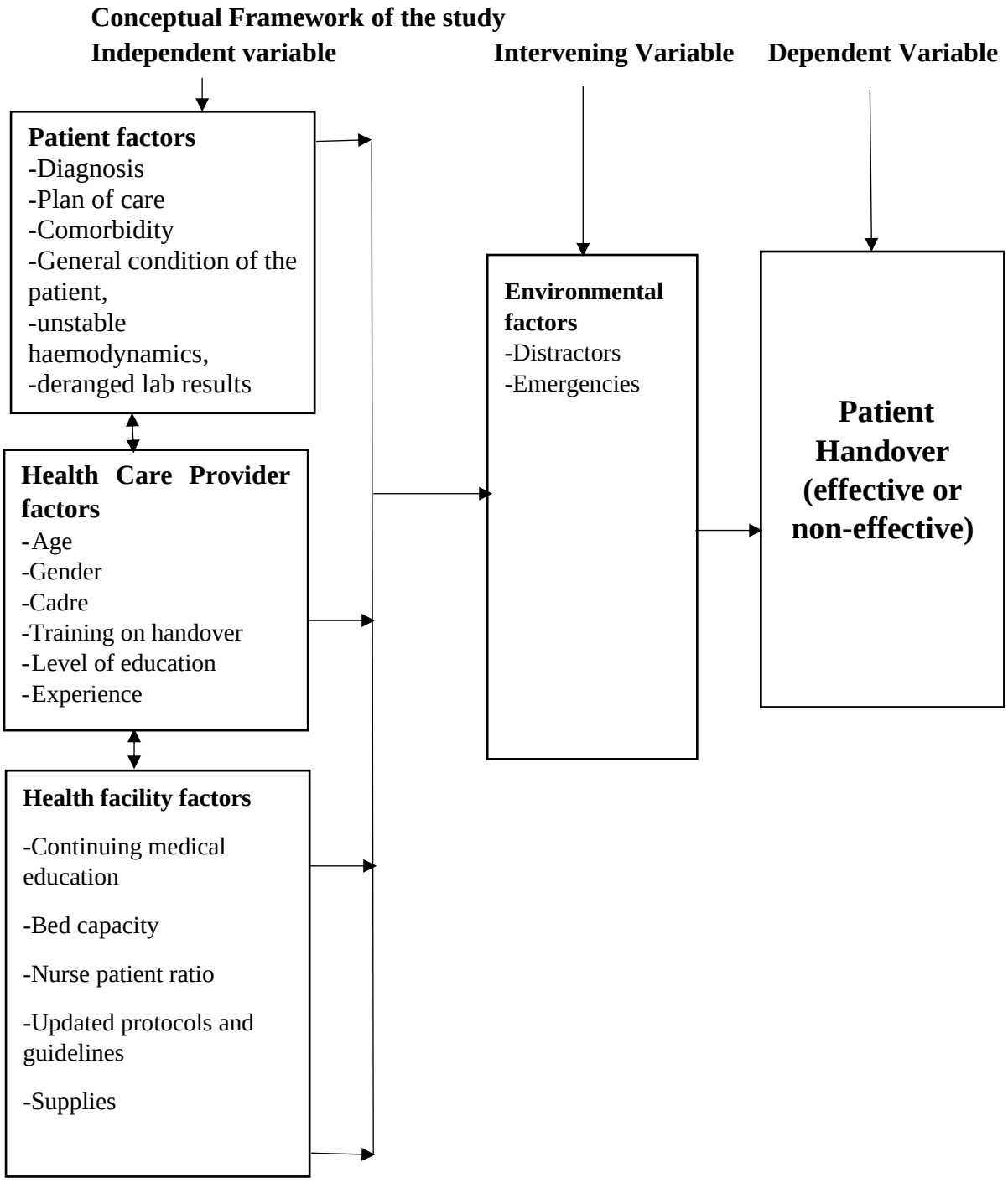

Figure 1.1: Conceptual Framework of the Study

Source: Researcher, 2020

CHAPTER TWO

LITARETURE REVIEW

2.1 Overview

This chapter reviews the hand over process, patient factors, healthcare provider factors and health facility factors influencing handover.

2.2 Introduction

In medical practice, which is based on upon teamwork where no single professional is able to care for a patient for twenty-four hours, 365 days a year, handover is frequent and unavoidable process (Mortensen, 2020). It is estimated that there are 421 million patients hospitalized in the world annually and approximately 42.7% adverse events occur in patients during this hospitalization. Latest data shows that patients harm is the 14th leading cause of morbidity and mortality. Hand over is historic and is viewed as significant that has maintained a place in modern times hand over has several functions. Apart from communication it serves as debriefing and refection and it allows time for psychosocial aspect, educational forum for new staff. Patient safety is a serious global health concern in comparison 1:300 chance of a patient being harmed in health care (WHO, 10 facts on patient safety, 2014).

In UK, a survey of junior doctors discovered that 83% of them believe that handover processes were poor; written handover was rarely conducted, accounting for only 6% of all handovers (Mikky, Salmi, & Busafi, 2019). In UK, an improvement initiative called ‘The Productive Ward ‘was launched in 2007; with health care providers’ handovers as the Key module, which was recognized. To be able to diminish communication breakdowns protect patient safety (Mikky, Salmi, & Busafi, 2019).

It is now widely recognized that patients across all health-care systems may suffer preventable harm resulting from inadequate patient handover. In SYREC study contributing factors related to handover were found present in 5.76%of the incidences and more than a half of the sentinel events (Merino, et al., 2013). Since the publication of the landmark Institute of Medicine (IoM) report by Mikky, Salmi, & Busafi, (2019) the USA and the UK Department of Health report *an Organization with a Memory*, there has been a significant increase in research about patient safety and the factors that contribute to or adversely affect the delivery of safe care to patients (Brennan *et al.*, 2017*)*.

In Kenya which is one of a few low-income countries with a national survey on patient safety, two percent of health facilities in 2012 were compliant with minimum protocols and systems to assure patient safety. Further, there are few trials that can guide policymakers to improve patient safety in such settings: frequent calls for more inspections and greater regulation, for instance, are not backed by evidence of the impact of such policies (WHO, 2014). Kenya has standardized national figures on health outcomes, high levels of medical knowledge among providers, and importantly, stakeholders who are committed to this effort. The Kenya Patient Safety Impact Evaluation (KePSIE) is a unique partnership between the Kenyan Government and the World Bank Group, building on long-term support for regulatory reform in the health sector through IFC's Health in Africa program. The Kenya Patient Safety Impact (KePSIE) is the largest trial aimed at improving patient safety in low and middle-income countries (WHO, 2014).

2.2.1 Non-verbal behavior during handover

Although the content of clinical handover has been studied frequently, less is known about how non-verbal behavior influences the quality of clinical handover. A recent

study in a number of US Department of Veterans Affairs medical centers investigated types of non-verbal behavior in health care providers in clinical handover. The authors concluded that participants frequently adopted forms of non-verbal behavior that may result in sub optional transfer of information (Frankel, 2012). Such forms of non-verbal behavior included holding patient lists or other artefacts in such a way that they could not be seen by the other participant not having a joint visual focus and situations where the person giving the handover was standing while the other party was sitting, which resulted in hurried handovers with fewer questions The most productive form of nonverbal behavior was reported to be the joint focus of attention, where both parties coordinate their verbal and visual attention jointly on an object.

Participant's variation i.e. expertise (specialization in the field) during handover, years of experience, cadres and attitude or perception of health care providers. Patient care hand-overs occur in many settings across the continuum of care, including admission from primary care, physician sign-out to a covering physician, Health care providers change-of-shift reporting, Health care providers report on patient transfer between units or facilities, anesthesiology reports to post-anesthesia recovery room staff, emergency department communication with staff at a receiving facility during a patient's transfer, and discharge of the patient back home or to another facility. Common language for communicating critical information.

Incorporating situational briefing techniques such as the SBAR (Situation, Background, Assessment and Recommendation) process can provide a standard communication framework for patient care hand-overs. (Abraham *et al.*, 2016).

Simply providing opportunities for providers of care to ask and resolve questions can improve the effectiveness of hand-over communications (Wong, Kwang , & Turner, 2017). Streamlining and standardizing change-of-shift reporting can enhance critical thinking, as well as minimize time spent away from the patient (Alforque, 2020).

Read-back is another effective technique used in hand-overs, where the receiver of information writes down the information and then "reads it back" to the provider of the information to obtain confirmation that it was understood correctly. Technologies such as electronic patient sign-outs have been shown to reduce preventable adverse event rates (Anupam , Caputo, Gohal, & Dascenzo, 2020). Collaborative (multidisciplinary) rounds are being used effectively to improve communication and hand-over of important information relating to the patient's care (Alforque, 2020).

Involving patients and families in the process of care is increasingly being recognized as an important aspect of care delivery. The patient and family are the only constant and are thus in a position to play a critical role in ensuring continuity of care (Anupam , Caputo, Gohal, & Dascenzo, 2020). Hospital discharge is a critical stage where communicating information to families becomes vital (Abraham *et al.*, 2016). Engaging relatives is sometimes made more difficult due to low health literacy. The term health literacy has been defined as the capacity of individuals to obtain, process and understand the basic health information and services needed to make appropriate health decisions (Bergs, et al., 2018). In the United States, it is estimated that at least 50% of adults have low health literacy (Fisher, et al., 2017). Teach-back is a technique used by caregivers to ensure that the patient has understood the information provided (Wong, Kwang , & Turner, 2017). Teach-back involves asking the patient to describe what he or she has just heard to assess their comprehension.

2.3 Clinical Handover process

A clinical handover occurs when one health care provider hands over the responsibility of care for a patient to another, for example, at the end of a shift. On average, clinical handover occurs two to three times a day for each patient. The intensive care unit handover is thought by many to be a core skill, but there is no formal training, guidelines or assessment in its delivery (Hanneke, Van Galen, & Wagner, 2017). There are relatively few medical studies describing transitions or promoting safe transition methods for many clinicians it is the most stressful time of the shift. In daily practice handovers are done in various ways, some handovers are done through health care providers talking to each other (verbal handovers). Others are done through health care provider reading the patient's medical notes or through a combination of reading and talking to each other. In some cases they are done at the patient's bedside, so that the patient can contribute, if desired.

The incoming health care provider puts a lot of faith in the quality of information handed over, as it is on the basis of this information that guides in the plan of care of patient's intensive care unit (Hanneke, Van Galen, & Wagner, 2017). The morning handover starts at 8am where the health care provider hands over to the 'day' health care provider. During handover, all notes and radiological imaging reports are available. The night shift begins at 6 pm so handover take place again similarly between the clinicians and consultants. With this set up there is no gap in the handover of care and it is a thorough process with teaching and feedback. There will always be work which is ongoing during the handover time, especially in the evening. Virtually all aspects of care can wait for 30 minutes to ensure continued safety during handover (Suyogi & Sultan, 2019).

Handover is highly dynamic, relying heavily on interpersonal communication as an essential component of the process. (Kerr, McKay, Klim, Kelly, & McCann, 2014) Both identified handover in their studies as partitioned into three phases: pre-handover, an inter-shift meeting, and post-handover. Typically, handover occurs across varying levels of experience, knowledge and roles. The WHO, JCIA, and the National Institute for Health and Care Excellence (NICE) recommend using a standardized approach in handover communication between health care providers and different patient care units, such as the Situation, Background, Assessment, and Recommendation (SBAR). In situation handover is based on patients symptoms or problem, level of stability and any other concern, In background it includes history of the presenting illness, date of admission, diagnosis and any relevant past medical history. In assessment the patient's diagnosis is made as per the assessment, impression of the situation and what has been done so far. Recommendations include what you want done, treatment and investigation underway that need monitoring and plan of care depending on the results.

Individuals need to be allowed to attend, subject to emergency cover being defined. The handover leader should ensure the team is aware of any new team and that adequate arrangements are in place to familiarize them with local systems and hospital geography. Handover should be supervised by the most senior nurse present and must have clear leadership. Information presented should be succinct and relevant (Suyogi & Sultan, 2019). All clinical handover processes need to be structured and documented. This ensures that all participants know the purpose of the handover, the required information and documentation they need to share. Handover requires the transfer of standard information between clinicians within a discipline from one discipline to another wards or departments within a health service and health services.

The recommendations include that clinical handover should occur within protected time clinical handover mainly occurs during shift changes morning, afternoon and evening (National hospital of medicine, 2016). It takes place either at bedside or Health care provider's desks where various health care providers are involved each contributing to ensure there is patient continuity of care. Clinical handover should comprise a written document alongside face to face (Spranzi & Norton, 2020).

Handover should occur at change of shift, from one ward to another ward or department at patient transfer to another facility, on patient discharge, when a patient's condition warrants it.

2.3.1 Good practices in handover

Individuals and organizations have a shared responsibility to ensure that safe continuity of information and responsibility between shift changes takes place. Every hospital will need to develop its own handover policy. This will require a coordinated approach from managers, all grades of doctors, nurses and clinical officers. Significant organizational change will probably be needed to enable effective handover to occur (Till, Sall, & Wilkinson, Safe handover: safe patients-the electronic handover system, 2014).

The information provided during handovers influences the delivery of care for the whole shift, it should include patients concerns and all the new admissions. Suggestions for improvement of handover include the adoption of structured communication protocols (Bost, Crilly, Patterson, & Chaboyer, 2012) the creation of opportunities for interdisciplinary, interdepartmental and inter organizational collaboration. The introduction of information technology across departmental and organizational boundaries and the teaching of appropriate communication skills including shared training programme across organizations.

Information transferred should be relevant, accurate, and unambiguous and occur in a timely manner and transferred in a standardized format situation, background, assessment and recommendation (SBAR) and adapted to reflect local need.

2.3.2 Benefits of clinical handover

Safety is protected by any lapses in information handover can and do, lead to mistakes being made which can increase morbidity and mortality. Poor clinical handover leads to fragmentation, discontinuity and inconsistency of care. There is decrease in repetition – patients dislike having to answer the same questions over and over again (Suyogi & Sultan, 2019). Different individuals providing care will be accepted as long as existing team knowledge is retained. There is increased service satisfaction – every health care provider attending a patient can begin where the last left off. Patient perception of professionalism is reaffirmed and improved (National patient's safety agency, 2010).

2.3.3. Benefits to health care providers

Educational–better clinical handover improves the practice and helps in the development and broadening of communication skills. A well-led handover session provides a useful setting for clinical education. Professional protection, accountability has become more prominent with the move towards a more litigious culture within health care. Clear and accountable communication can protect a health care provider against blame from errors which occur. There is stress reductions having the information and feeling informed allows health care providers to feel less unsupported and more in control of a patient's care. There is job satisfaction providing the best possible quality of care is highly rewarding and is fundamental to a health care provider which gives a sense of job satisfaction (Suyogi & Sultan, 2019)

2.3.4 Who should be involved in Handover of patients?

The key clinical handover to or from the health care provider team should be multidisciplinary. Each team needs to identify the key people who need to attend. The ideal model includes all grades of staff from each included specialty, subspecialty. Daily involvement of senior health care providers is essential. This ensures that appropriate level management decisions are made and that handover forms a constructive part of medical care which conveys the seriousness with which the organization takes in this process (Ofosu, Ofori, Ntumy, Kwaku , & Boafor, 2021).

2.3.5 When and where should handover take place?

Handover should be at a fixed time and of sufficient length. This period should be known to all staff and should be coordinated by a senior health care provider to allow them to attend in 'working time'. Clinical handovers should be in the morning and at the change of other shifts. Clinical handover should be at a fixed time and of sufficient length, ideally this should be close to the most used areas of work, the health care provider's station. It should be large enough to comfortably allow everyone to attend.

This should be free from distraction and not used by others at this time. It should have access to lab results, X-rays, clinical information, the internet/intranet and telephones. Distractions that can disturb the handover process include bleeps, telephones, relatives, Health care providers and other doctors (Ofosu, Ofori, Ntumy, Kwaku , & Boafor, 2021). The WHO recommends the use of the (SBAR) situation background assessment and recommendation technique. The SBAR tool should be used in a manner that suits the clinical context for all clinical handovers to guide the content and the structure. Clinical handover content should be clear, concise, and use easily understood words with minimal accepted abbreviations.

2.3.6 Clinical Handover of patients

Handover is the transfer of professional responsibility and accountability of some or all aspect or care of a patients or a group of patients to health care providers on temporary or permanent basis (Rickard, *et al.,* 2021). Types of clinical handover are as follows: Intra-disciplinary handover which occurs between health care providers that have the same academic training e.g. nurse to nurse or physician to physician. Inter- disciplinary handover occurs between health care providers that have different academic training e.g. nurse to doctor. Inter-departmental handover which occurs from one department to another. Inter-hospital handover which occurs from one hospital to another and shift to shift handover.

Bedside it is located at the patient's bedside, which promotes patient and nurse face-to-face interaction (Dorvil, 2018). Verbal handover is done in an office setting, the health care provider is responsible for a group of patient's exchanges relevant documented information (Nadine , Waele, Urben, Turini, & Verloo, 2020). , Health care provider inform themselves by reading the patient health records, involving progress notes, medication charts, observation charts .and Health care providers care plans. Taped is located in an office setting, the health care provider in charge collects the relevant information and records this onto an audiotape so that the oncoming shift can listen at a convenient time (Brodie, 2022).

For safety of our patients, continuity of information is vital. Comprehensive handover of clinical information is more important than ever with the move to shift patterns, which increase the number of individuals caring for patient. Good handover does not happen by chance (Burgess, Diggele, Roberts, & Mellis, 2020). It requires extra effort by all those involved, from organizations and the individuals. Shifts must be coordinated and adequate time allocated (Sherman, Kari , & Jennifer , 2013). Verbal

handovers are often and reasonably lengthy include non-essential and irrelevant information with no reference to patient's documentation instead focusing on subjective speculative sometimes vague information (Makkink, 2021).

This process provides health professional with the vital patient's information to facilitate planning and clinical decision making for patient care. The team leader meets with the incoming staff and reviews the patients' notes treatment charts and all other information about the patient (Nagaraj, *et al.*, 2021).

Handover between shifts is a high-risk activity for patients' safety because critical information should be transferred effectively and correctly to maintain continuity of care between the shifts (Pilcher, Kurian, MacArthur, Singh, & Manaseki-Holland , 2022).

To ensure patient safety, Sufficient and relevant information should be exchanged: the clinically unstable patients are made known to the senior consultants and covering clinicians, junior members of the team are adequately briefed on concerns from previous shifts, tasks not yet completed are clearly understood by the incoming team (Till, Hanish , & Wilkinson, 2014). To protect the safety of patients during shifts handover, good communication is essential between Health care providers. In a study by (Suyogi & Sultan, 2019) junior Health care providers felt that existing handover arrangements were frequently not as good as they would have liked them to be. Changing patterns of work in the hospital setting have created a need for improved handover of clinical responsibility and information.

2.4 Patient factors influencing Handover of patients

Patients' clinical handover by health care providers in ICU may be a vulnerable activity due to poor handovers. This may be due to the complex physiology of their

health condition and the significant decrease in monitoring which occurs upon the transfer of these patients to a general ward (Stelfox, *et al.*, 2013). Poor handover increases the risk of suboptimal ICU discharge and may result in severe adverse events, ICU readmissions, and increased mortality (Vollam, *et al.*, 2021).

There has been much debate pertaining to the transfer of critically ill patients from one hospital to another because of the unavailability of appropriate critical care services. However, a large number of patient handover occur within the hospital, often between the critical care units such as intensive care unit (ICU) when the condition of the critically ill patient is acute and unstable. The exchange of information between health care providers in critical care units plays a crucial role in the continuity of effective, individualized and safe patient care (Dittman & Hughes, 2018).

To ensure continuity of patient care, there is a need for the effective handover of patient information regarding the patient's condition and management in ICU among health care providers. The absence of a structured and logical handover can also lead to fragmentation in patient care and could potentially result in critical incidents or in omissions in the care being delivered (Pun, 2021). The critically ill patient being handed over in ICU will not be well catered by the ICU staff and therefore the need for clear and accurate sharing of information amongst themselves.

2.5 Health care provider factors influencing clinical handover of patients

Critical information of each patient should be handed over effectively and correctly in order to maintain continuity of care despite change in shifts among medical and other health care providers. Therefore, health care providers have the responsibility of proper handover of their patients (Heather, Gill, Hughes, & McCall-White, 2014).

Documentation is basic during handover, because heath care provider needs to review bedside handover from this documentation and confirm that the Health care providers care was done. It also helps to assure safety by describing the sheet during bedside handover. The strength factors regarding documentation are clearly describing each event that occurs in a shift based on evidence. It needs to be understandable and clear handwriting, and to follow proper procedures. In addition, awareness with terminology and abbreviations helps to improve documentation, writing each intervention after it is finished, when the nurse is close to the patient's bedside. When health care provider participates in a bedside handover to the next shift, he or she may use a small piece of paper to write important notes about the care done. When documenting patient information, it can be helpful for a health care provider to record the important data by using different colors, such as blood pressure in red (Johnson & Cowin, 2013).

Health care provider should document using a process similar to the present case that focused on the content of information. The content of the patient information needs to begin with patient details such as name, age, and gender and end with thorough documentation containing a patient's current condition, medical issues, the care plan (treatment), and medication as well (Warth, et al., 2022). The weakness factors of documentation can include difficulties in understanding the handwriting if a nurse does not write clearly. In addition, incomplete patient data can occur. Because it differs from heath care provider to on other, the description of a patient's condition or care

given can be vague. Because of that, the description needs to explain the care given beside evidence-based practice to minimize errors. In some cases, a health care provider who receives the handover did not read back a patient file such as a handover sheet or patient investigations, which can affect Health care providers care. A lack of Health care provider' knowledge regarding scientific terminology and abbreviations can affect understanding of the handwriting. Moreover, the Health care provider' documentation may not make too much sense of the shift. If a health care provider does not write what happened during a shift that may lead to reduced patient safety, because it will be difficult to follow care for the next shift (Warth, *et al.,* 2022).

Some lack of information in documentation during bedside handover can occur when it summarized too much or not structured well. On the other hand, centralized papers on unit board, which describe the patient's condition, can help Health care providers in urgent situations, especially with critical cases or sudden emergency cases. Handovers are also helpful in clarifying patient questions regarding treatment, and in more accurately determining the patient's needs. Handover can be helpful in allowing the health care provider to explain medical terminology and other unfamiliar words that the patient might not understand. In addition, the patient will feel free to inform the Health care provider of any new developments that may happen. Moreover, handover gives patients a chance to correct any inaccurate information regarding their medical history and to remind Health care provider may they forget something. For these reasons, both patients and Health care provider perceive that bedside handovers which help to improve patient safety (Patel & Landrigan, 2019).

The weaknesses factor that can affect the bedside handover on the patient side are Health care provider poor grasp of the language spoken by the patient, or a simple misunderstanding can lead to unknown issues. Some Health care providers' feel better

with completing handover at the door in order to avoid any matter discussed being overheard by other Health care providers or patients. It should note that is in some cases handover needs to complete in a more private way, especially when the patient requests that privacy. If a patient has pointed out a sensitive topic, which they prefer not to be discussed, such as patient psychological issues, an ethical dilemma occurs, as confidentiality issues tend to arise. The confidentiality issues mostly occur with the time for handover overlaps with visiting hours when family or others are present. If the patient doesn't want anyone to know about his or her condition, the health care provider must respect that and find another way to handover the patient information to the next health care provider, possibly by asking the visitor(s) to "please step out of the room." Finally, language issues are also important to consider. Not all patients speak English well, so the health care provider needs to resolve language and understanding issues with patients (Kerr, McKay, Klim, Kelly, & McCann, 2014). In a study by Gehan Hefnawy, (2020) the mean age of the studied sample was 34 years. Ninety-five percent of the studied sample were female Health care providers represents 95% and 70% of them had a diploma of Health professional degree.

The lack of an integrated handover protocol in our country in addition to the inappropriateness of the international shift handover formats for our health care settings have made the standardization of the shift handover difficult. Currently, there are two types of accreditation standards for hospitals worldwide including the JCAHO (Joint Commission Accreditation of Health Organization) and JCI (Joint Commission International). The JACHO and JCI standards have been developed for the accreditation of health care settings in the developed and developing countries, respectively. On the other hand, available handover formats such as SBAR have been designed based on the specifications of the developed country and therefore are not

applicable to the Iranian health care settings (Etemadifar, Sedighi, Sedehi, & Masoudi, 2021).

2.6 Health facility factors influencing clinical handover of patients

The handover should occur in a designated area and at a designated time without avoidable interruption (Patel & Landrigan, 2019). McMurray indicated that was important to educate ICU staff with regard to hand over practices for better patient care and outcome. In addition, Health care providers' staff and medical staff had attended training programs on handover. The Health care providers had learnt about ICU handover by experience and senior advice respectively. In addition, there should be an effective structure for communication at handover and information should be exchanged to pass on tasks. Medical officers and Health care providers' had protocols on handover in their ICUs.

This review also confirms that good handovers do not happen by chance and that they require the support of significant structural and organizational efforts. The literature also highlights the importance of leadership, time commitment, human resource commitment and appropriate structures and processes being in place for effective clinical handover to occur (Wong, Turner, & Yee, 2017). Above all this literature review highlights that clinical handovers involve a complex set of dynamic processes that need to be taken into account in any interventions aimed at improving clinical handover (Wong, Kwang, & Turner, 2017).

Hospital standards can have either a strength and weakness effect on critical care Health care providers during a bedside handover. Hospital standards require a health care provider to know about patients during bedside handover. It is better for all Health care provider to have an idea about all patients in the critical care area, so they can

cover the needs of other Health care providers (who may be on break time or in an emergency situation for Health care provider or patients). Some hospitals apply standards requiring one health care provider to every one or two patients. Some Health care provider do not have enough information regarding other patients, which can enhance or decrease patient safety depending on the condition. Hospital standards also utilize systems and policies to improve verbal and written communication, which makes the bedside handover information easier to read and more understandable (Warth, *et al.*, 2022).

The standards can be helpful if document the description of each Health care providers documentations, which, associated with verbal communication during bedside handover. The bedside handover includes three sources of patient information: verbal, Health care provider notes, and written as highlighted important information. In addition, the standards can improve bedside handover between critical care Health care providers because of clear plans followed by Health care providers, who are sufficiently aware of them. Regarding Health care providers, documentation, and the standards can be effective by applying understandable forms to help the critical care nurse to fill over the content of bedside handover more easily (Johnson & Cowin, 2013).

The difficulties during a bedside handover as a new hospital standard can be many, such as variation of Health care providers, understanding, experience, coping, and motivation to apply it. These issues can play important factors affecting bedside handover, especially with first-time application. Finally, the quality of applying standards of bedside handover can lead to successful outcomes regarding increased patient safety (Johnson & Cowin, 2013). In the majority of these incident reports, they give incomplete or poor bedside handovers, which have a negative effect on patient

care. There are specific incident reports in which incorrect information regarding a bedside handover was recorded or an entirely wrong action taken. These incidents are important, as patients can be harmed because of miscommunication between Health care providers, teams, especially when they do not have a proper process for bedside handover and do not have clear standards. There are also occasions where standards may exist, but a nurse fails to apply those standards (Warth, *et al.,* 2022).

2.6.1 Standardization of patient handover

Interviews conducted in an Australian hospital found that 95% of participants did not identify a formal procedure for clinical handover (Rickard, *et al.,* 2021). A qualitative study comparing clinical handover practices to pit stop practices in motor car racing concluded that clinical handover had no clear procedures and was not supported by formal checklists. A focus group-based study involving junior doctors found that shift clinical handover was perceived as frequently being conducted in an ad hoc or chaotic fashion, and without obvious leadership (Catchpole, Sellers, Goldman, McCulloch, & Hignett, 2019).

2.6.2 Organizational priority and training

The literature suggests that a lack of organizational priority given to clinical handover and the absence of formal training in communication and clinical handover both at universities as well as within health-care organizations are further barriers to the implementation of effective clinical handover (Johnson & Cowin, 2013). A recent interview study investigating transitions from primary care into hospital suggested that participants perceived clinical handover as an administrative burden that took away time for their patient care duties. The study also found that clinical handover and communication competencies were rarely taught and that health care providers learned these skills ‘by being around and immersed in the clinical effort. A national

survey of internal medicine training programmers in the USA found that 60% of these did not provide training in clinical handover (Ibraheim, Gupta, Dao, Patel, & Koshelev , 2022).

One study report that junior doctors had not received any training in clinical handover, and that, as a result, they had a narrow view of clinical handover concerning only completion of outstanding tasks (Fealy, et al., 2019). Present a competency-based approach to improving handover that entails the development of a standardized instructional approach to teach communication skills and the establishment of corresponding robust assessment systems.

2.6.3 Clinical Handover protocols

Many institutions have focused on developing structured clinical handover protocols to minimize errors, borrowing strategies from the automotive industry, such as Six Sigma, or from Formula-One to improve handovers to the ICU; (Catchpole, Sellers, Goldman, McCulloch, & Hignett, 2019). Patient handover from surgery to intensive care: using Formula 1 pit-stop and aviation models to improve safety and quality. Both strategies have the standardization of the processes in common, including clear roles for participants, task sequences, anticipation of events, checklists and clinical handover specific forms. These structured moments of clinical handover are different from standardization as they focus not only on which elements need to be discussed but also on when and where handovers occur, who should be present, and what is the sequence of presentation, and they frequently incorporate elements that enable two-way communication in their format.

2.7 Summary of Literature Review

Handovers are an important moment in patient safety with potential to improve quality and efficiency of care. Understanding that handovers should not be a one-way communication is crucial when caring for complex patients, such as critically ill patients. Clinicians and intensive care unit directors should consider many simple strategies that can improve communication and are unlikely to cause harm, despite limited evidence.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter includes the research methodology and outlines the research methods, the data collection procedures, data analysis and ethical considerations. The inclusion and exclusion criteria were also outlined in this chapter.

3.2 Research Design

A cross-sectional analytical research design was adopted which is a type of observational study that analyses data collected from a population or a representative subject at a specific point in time (Wang & Cheng, 2020).The research design enabled the researcher to examine the process of handing over of critically ill patients among health care providers. This design was ideal because it allowed for a single time snapshot data collection.

3.3 Study Area

The study was conducted at Moi Teaching and Referral Hospital (M.T.R.H), Mediheal, JOOTRH and Aga Khan Hospital. These four health care facilities receive critically ill patients and have intensive care units. Moi teaching and Referral hospital is in Uasin Gishu County. It is located in Eldoret East about 350 km North West of Nairobi along Nandi Road. Uasin Gishu is a cosmopolitan county, covering an area of 3345.2 square kilometers'. It borders Kericho County to the south, Nandi to the south west, Bungoma to the west and Trans Nzoia to the north is the second largest referral hospital in the country with 40 health care providers working in the unit. It has a bed capacity of 17 beds, it offers services to patients of all ages and manages all conditions like medical, surgical and neuro cases.

Mediheal fertility Hospital Eldoret located along Nandi road neighboring MTRH to the east. The hospital has an ICU bed capacity of 5 and 10 health care providers.

The JOOTRH is a major teaching and referral hospital in Nyanza region Western and North Rift Kenya. It serves a population of about 2 million people; it is located about 3.5 miles from Kisumu city between Kondele and Kibuye along Kisumu- Kakamega high way. The hospital has an ICU capacity of 5 beds and 15 health care providers.

The Aga khan Hospital Kisumu is a private hospital located along the Nyerere road, about 160 meters left of Ondiek highway, township location, Kisumu East constituency, Kisumu County in Nyanza region of western Kenya. The ICU has a bed capacity of 5 with 15 health care providers.

3.4 Target Population

The study targeted all health care providers working in four hospitals ((MTRH, Mediheal, JOOTRH and Aga Khan Hospital).

3.5 Sampling Procedure

A multi stage sampling approach was used (it was done in two stages) whereby purposive sampling was used to select the health care facilities and convenience sampling technique was used to select the study participants due to the few numbers of health care providers working in the intensive care units in the study area thus all health clinicians who provide direct care to the critically ill patients were selected to participate in the study.

3.6 Sample Size Determination

The sample size was small therefore a census approach was adopted where all the health care providers in intensive care unit (doctors, Health care providers and clinical officers) were interviewed MTRH had 47 participants, JOOTRH had 20 participants,

Mediheal had 15 participants and Aga khan too had 15 participants giving a total of 97 participants.The distribution was done using the duty rota. Out of the 97 questionnaires sent out,80 were returned and completely filled.

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusion Criteria

- All qualified clinicians, (nurses, doctors and clinical officers) working in the critical care unit for at least three months.
- Clinicians who gave consent to participate in the study.

3.6.2 Exclusion Criteria

- Those who did not consent.
- Those who qualified but were not available on duty.

3.7 Data Collection Tools

Data collection tools included structured questionnaires for health care providers checklists were used by research assistants to counter check if all the information on the checklist were mentioned during clinical handover and key informant schedules were done by the researcher on heads of department. The data collection tools were adopted from a study by Australian commission on safety and quality in health care and was tailored to fit the study.

3.7.1 Structured Questionnaire

Structured questionnaire was used to collect information from health care providers. The questionnaire was divided into three parts. The first part was on social demographic where the researcher looked at the gender, age, cadre, level of education years of experience and specialization. Part B was on handover process where the researcher looked at the participants were trained on handover and if they had any

continuous medical education (CMEs) part C was on health provider and health facility factors where the researcher looked at nurse patient ratios, the equipment, supplies and consumables and environment.

3.7.2 Key Informant Interview Schedule

An interview schedule guide was also designed by the researcher to gather information about policies on handover in Intensive Care Unit (ICU). This tool contained 4 open ended questions that examined the factors during handover. The key informants respondents were clinical officers and deputy CEO in charge of clinical services .

3.7.3 Observation Checklist

A structured checklist was used to assess the handover of critically ill patients among health care providers. The check list was divided into parts, first part was to confirm if the health care providers mentioned the patient's bio-data, day in the unit, diagnosis, vital signs and any pain management. Another part was to look at the systems central nervous systems, level of consciousness of the patient. Cardiovascular system that is blood pressure, heart rate, and respiratory system that is equal expansion of the chest, air entry and saturation. Procedures that were done during the shift, then any investigations for example lab works and radiological. Any intravenous and invasive lines like foleys catheter that is date of insertion and removal. Under Safety checks the following was checked wall oxygen supply, suction unit for functionality, side rails, ambu bag and mask in case of emergency, monitor alarms if they are on. Overall mean was 27.8 with a median of 30.0 and range of 10 to Score of $\geq$ 30 (median score) used as a measure of effective handover while a score of < 30 indicated ineffective handover

3.8 Data Collection Procedures

Data was collected for a period of four months from February 2020-May 2020. The questionnaires were administered by the research assistants while the researcher

completed the checklist to ensure accuracy and eliminate bias. Two research assistants with qualifications of Bachelor's degree in nursing were trained for one week on study objectives, data collection tools and needs of consistency. During the study to further minimize hawthorn effect. The researcher did the key informant interview on the heads of departments (doctors, Health care providers and clinical officers) to find out if the hospitals had any policy's and protocols on clinical handover.

3.8.1 Data management

Questionnaires were checked for completeness and were found to be complete the observation checklist were also complete. Both the completed questionnaires and observation checklists were filed and kept under lock and key. They are were only accessible by the researcher and the research assistants.

3.9 Validity of Study Tool

Validity is the extent to which an instrument measures what it is supposed to (Carminati, 2018). Content validity was done by incorporating key questions and processes used in the handover of the critically ill patients. The questionnaire used in this study were given to the supervisors and independent experts who evaluated it for content validity and consistency as well as conceptual clarity and investigative bias and necessary adjustments were made.

3.10 Reliability of the Study Tool

Reliability is the accuracy and consistency of the information obtained in the study (Carminati, 2018). Reliability of research instruments entails the degree to which a particular measuring procedure give similar results of a number of repeated trials. This is done to check the content and structure of the tool for its relevance. Pre-testing of the data collection tool was done in St. Luke's ICU unit on health care providers (Ten Health care providers, eight nurses, one clinical officer and one doctor) Split half

reliability approach was used where the participants were given numbers and where odd and even numbers were used to split the participants into two. The questionnaire was administered and the responses of the two groups were compared. Cronbach's α score was +.80.

3.10.1 Data analysis

The raw data was cleaned, coded and entered in the spreadsheet as soon as the data was generated. Data analysis was done using the SPSS version 28. Quantitative data was analyzed and presented using descriptive and inferential statistics Inferential statistics showed the association between factors and handover. Qualitative data a thematic analysis approach was used to organize and analyses the data into themes guided by key variables in the specific objectives,..

3.11 Ethical Considerations

According to the Helsinki declaration any research conducted should ensure that the human rights of the participants are protected. This includes the privacy of the participants being upheld, their dignity considered to the highest level and the data should remain anonymous of the participants (Arifin, 2018). It is on the basis of these that the ethical principle shall be adhered to. The researcher sought approval to carry out the study from Masinde Muliro university director of post studies as guided by the institutional policies on research .This was to ensure that all the protocols in regards to conduct of research were conformed to ethical issues of the research focused on ensuring excellent research practices in accordance to the global research standards. It was for this purpose that ethical clearance from the research ethics committee was sought to ensure conformity with the ethical principles. This paved way to obtaining a permit from National Commission of Science and Technology innovation (NACOSTI).

3. 11.1 Autonomy

Autonomy as a principle puts demand on the researcher to ensure that subjects are free to make their own decisions without being coerced in any manner while the study is ongoing .whichever decisions made by the subjects, the researcher acknowledged and respected.it was in this process where the researcher provided adequate information to subjects prior to them giving what we call informed consent. For these purposes the subjects had to fall in a category that was legally authorized to make such consent and for those with reduced autonomy, the researcher endeavored to protect their right. In these study, informed consent was sought from the participants after diligently taking them through the consent form. A written consent was provided for the participants and key informants who were required to tick on the consent form without writing their name or appending a signature on it after being informed of the purpose of the study and other essentials. The participants were informed that there were no incentives or favours that the study was pure voluntary and they were allowed to withdraw from the study at any point without suffering any consequences (Miller, 2018). It was imperative that the confidentiality of the information shared was adhered to because it was on the basis of trust in the process of conducting research the participants were protected from discomfort and disadvantaged as a result of being included in the study and willingly giving information.

3.11.2 Non-maleficence

Participants were informed that the study would not pose any physical or mental harm while answering the questions.

3.11.3 Confidentiality

Anonymity was maintained by the participants by not writing their names on the questionnaires instead serial numbers were used in order to maintain privacy.

Respondents were assured that the information given was only for research purposes and wouldn't be assured by any unauthorized persons.

3.11.4 Justice

There was no discrimination among the respondents and everybody eligible was given equal choice to participate in the study.

CHAPTER FOUR

RESULTS

4.1 Overview

This chapter presents the results of this study. Results have been organized in line with the objectives of the study. The following were the study objectives to assess patient factors influencing clinical handover of critically ill patients in intensive care, to examine health care provider factors influencing handover of the critically ill patients in intensive care unit and to analyze health facility factors influencing clinical handover of critically ill patients in intensive care units in Western region of Kenya.

A total of 80 clinicians (doctors, nurses and clinical officers) assigned in ICUs in the target hospitals were interviewed. All responded with resultant response rate of 100%. Out of the 97 self-administered questionnaires sent out 80 were returned as well as the observational checklist.

4.2 Socio-demographic characteristics of respondents

Table 4.1 presents socio-demographic characteristics of the 80 health workers who were interviewed. Nearly two-thirds (66.2%) were females compared to 33.8% males. Over one-half (56.2%) were in the age group of 30 – 39 years with average age of 35.4 (±8.3 SD) and ranged from 23 to 55 years. Nine out of ten (90%) were Health care providers. Slightly more than half (51.2%) had attained higher diploma while one-quarter (26.2%) had bachelor's degree. Sixty-two percent had work experience of between 0 – 9 years with a mean of 9.5 and SD of ± 7.9. The minimum number of years worked was one and a maximum of 30.

Table 4.1: Socio-demographic characteristics

Variable	Response	N	%
Gender	Male	27	33.8
	Female	53	66.2
Age groups in years	20 – 29	15	18.8
	30 – 39	45	56.2
	40 – 49	10	12.5
	≥ 55	10	12.5
Mean age ± SD (Range)		35.4 ± 8.3 (23.0 – 55.0)	
Cadre	Doctors	6	7.5
	Nurses	72	90.0
	Clinical Officers	2	2.5
Level of education	Certificate	1	1.3
	Diploma	13	16.3
	Higher diploma	41	51.2
	Bachelor's degree	21	26.2
	Masters	4	5.0
Years of experience	0 – 9	50	62.5
	10 – 19	20	25.0
	20 – 29	8	10.0
	≥ 30	2	2.5
Mean years of experience ± SD (Range)		9.5 ± 7.9 (1.0 – 30.0)	

4.2.1 Patient factors influencing clinical handover of critically ill patients in intensive care

Table 4.2 shows results of bivariate logistic regression on patient factors influencing handover of critically ill in ICU. Effective clinical handover has been operationalized by summing up all the 37 observed activities that were scored as 1 if the respondents performed the task. Overall mean was 27.8 with a median of 30.0 and ranged from 10 to 37. A score of at least 30 and above was considered as effective performance with respect to respondent's handover performance. All the five independent variables that were tested yielded non-statistically significant association between patient factors and handover. In spite of non-significant results, respondents who agreed that patients with underlying illness ($p = 0.7$) or comorbidities ($p = 0.7$) influenced handover process were up to 5.3 times more likely to have been more effective during the handover process.

Table 4.2 Patient factors influencing clinical handover of critically ill patients in intensive care

Independent variable	Categories	Total	Evaluation of handover process		OR	95% CI	p value
			Effective	Non-effective			
		(n)	(%)	(%)			
Severity of illness	Agreed	75	58.7	41.3	-	-	-
	Disagreed	5	100.0	0.0			
Comorbidities	Agreed	71	62.0	38.0	1.3	0.3 – 5.3	0.7
	Disagreed	9	55.6	44.4			
Unstable hemodynamics	Agreed	76	60.5	39.5	0.5	0.1 – 5.1	0.99
	Disagreed	4	75.0	25.0			
Deranged lab works	Agreed	70	61.4	38.6	0.9	0.2 – 3.6	0.99
	Disagreed	10	60.0	40.0			

4.3 Health Care Provider factors influencing clinical Handover of critically ill patients

Table 4.3 shows health care provider factors that are associated with clinical handover. Staff independent variables that were considered included gender, age group, cadre, level of education and years of experience in working in ICU. None of these variables were statistically significantly associated with handover. However, the handover performance of nurses (p = 0.3) and staff with higher diploma (p = 0.2) was up to 11.8 and 18 times more likely to have been effective. Which could mean this group are keener during handover. The clinical handover was mainly face to face and written. The clinical handover process was open in that it wasn't guided by any tool apart from Aga khan hospital which used situation background assessment and recommendation (SBAR). Majority (82.5%) had been trained on patient handover. Most of the respondents (46.3%) concurred that their institution had not had CMEs on the same. Sixty percent thought that patient's bedside is the most appropriate place for clinical handover as compared to 37.5% who were of contrary view preferring the process to be held at the nurse's station. All the interviewed staff took part in clinical handover

process. Most of the respondents (65%) confirmed that clinical handover is done at the beginning and end of shift and during admission. A smaller proportion (28.8%) stated that clinical handover is at the end of shift. Three-quarters stated that handover is done in their units through written and verbal method. A smaller proportion (17.5%) rely on verbal report.

Table 4.3 Health care provider factors influencing clinical handover

Independent variable	Categories	Total	Evaluation of handover process		OR	95% CI	p value
		(n)	Effective (%)	Non-effective (%)			
Gender	Male	27	55.6	44.4	0.8	0.3 – 2.1	0.7
	Female	53	60.4	39.6			
Age group (years)	≤ 33	43	55.8	44.2	0.8	0.3 – 1.9	0.6
	> 33	37	62.2	37.8			
Cadre of staff	Nurse	72	**61.1**	38.9	2.6	0.6 – 11.8	0.3
	Doctor/CO	8	**37.5**	62.5			
Level of education	Higher Diploma	74	60.8	39.2	3.1	0.5 – 18.0	0.2
	Others	6	33.3	66.7			
Works experience in year	≤ 7	41	65.9	34.1	1.8	0.7 – 4.5	0.2
	> 7	39	51.3	48.7			
Trained on handover	Yes	66	59.1	40.9	1.1	0.3 – 3.5	0.9
	No	14	57.1	42.9			

According to key informant interview results, it was noted that the ICU clinical handover process is done differently according to various cadres in the different health institutions. Nurses, doctors and clinicians have their unique ways of handing over their patients to corresponding staff.

> *"ok...the policies in clinical handover entails that you first of all...Aaah you need to be conversant with what to receive and how to receive especially things affecting safety checks of the client, that is the patient and then the cadre of a person you are handing over and it must be between activities. Nursing, a nurse should hand over to another nurse. A nurse cannot hand over to the*

support staff....But also handing over happens at the level of the doctors, that is medicine now. And even at the level of the support staff there is also hand over. So this is just to ensure effective communication and actually it is one way of ensuring that there is safety, because if you don't hand over properly information is likely to miss so you have missed out what we call continuum"....Respondent; KII 05

"Unless there is something, it is for the nurses or the physiotherapists but not the doctors. The doctors are...There are those junior doctors work flow....Now their practice is different from the consultants. The consultants when they are on call, the juniors will brief them about the patients. Part of it is on the plan for future management"...Respondent; KII 03

It also came out that physicians and doctors provide patient summaries alongside briefings in the clinical handover process.

"Those are mainly nurses but for us as physicians I think we give a summary of the patients. I will talk about their state of illness, management and way forward. That is in the teachings, medicine it is not really a policy but it a culture that is developed amongst the practitioners...unless there is something, it is for the nurses or the physiotherapists but not the doctors. The doctors are...There are those junior doctors work flow....Now their practice is different from the consultants. The consultants when they are on call, the juniors will brief them about the patients. Part of it is on the plan for future management"…Respondent; KII 03

Key Informant Interviews showed that handover of critically ill patients is done at the bedside to enable the incoming nurse see the patient being handed over. This also enhances continuum of care.

"Handover next to the patient, unless the patient is conscious to understand maybe some sensitive information, then probably you may need to step aside. But largely we do handover at bedside so that you are able to appreciate everything around the patient in relation to the report.... So it starts by introducing yourselves, and then to your patients, and then your surrounding...."Respondent, KII02

Further results from key informant interviews showed that nurses have standard guidelines on the parameters to be keen on with ICU patients during handover, hence the need to do a clinical handover whether there are existing policies in an institution or not.

"Yeah. So, we are using the standards which was developed long time ago on protocols actually of handing over which I think started all the way from the curriculum in school. Yeah, so it has not been reviewed as such but it is what is in practice……. Yes. So once they have developed understanding of whom you are handing over to then now you are going to the nitty gritty of the report which involves, one; patient's particulars. So we do now patient particulars of

course understanding the patient, the name, the age, patient demographics generally. And then the diagnosis, how many days has been in the unit, and then what is... what the issues… is currently and then what is has been in the last say during the handing over period, if for example it is a night shift we must summarize. So what happened, actually what transpired during that period of time in short, that is in summary. Then now, we are lucky we have a patient monitor, they are items that have some information that you can see on display... So cardiovascular monitor will give you the patient's status in terms of hemodynamics, then you will be able to see the trend. So you will hand over the trends for heart rate, blood pressure, temperature, respiratory rate, saturations levels, respiratory rate…" Respondent; KII02

4.3.1 Distractors to Patient handover

Table 4.4 presents distractors-related factors associated with effective handover. Variables examined included noise, alarms, cell phones, visitors and emergency cases. None of these independent variables were associated with effective handover, the results being non-significant. This notwithstanding, staff who agreed that visitors and emergency cases affect handover, were up to 8 ($p = 0.1$) and 7 ($p = 0.3$) times more likely to have been more in their handover performance.

Table 4.4 Distractor related factors influencing Patient handover

Independent variable	Categories	Total (n)	Evaluation of handover process		OR	95% CI	p value
			Effective (%)	Non-effective (%)			
Noise	Agreed	69	59.4	40.6	1.2	0.3 – 4.4	0.8
	Disagreed	11	54.6	45.4			
Alarms	Agreed	73	57.5	42.5	0.5	0.1 – 3.0	0.7
	Disagreed	7	71.4	28.6			
Cell phones	Agreed	63	60.3	39.7	1.3	0.5 – 4.0	0.6
	Disagreed	17	52.9	47.1			
Visitors	Agreed	65	63.1	36.9	2.6	0.8 – 8.1	0.1
	Disagreed	15	40.0	60.0			
Emergency cases	Agreed	69	60.9	39.1	1.9	0.5 – 6.7	0.3
	Disagreed	11	45.4	54.6			

4.4 Health Facility Factors Influencing Handover of critically ill patients

In addition, Table 4.5 shows health facility factors influencing handover. Two independent variables with significant association with handover were supplies and availability of clinical handover policy in the unit. Staff who agreed that supplies which includes consumables/non-consumables (OR: 3.2; 95% CI: 1.1 – 8.9; p = 0.02) and those who confirmed the availability of clinical handing-over policy in the unit (OR: 3.3; 95% CI: 1.1 – 9.5; p = 0.02) were three times more likely to have performed effectively than those who disagreed. The rest of the variables that were examined were not statistically significantly associated with handover. Staff who mentioned that handover is done at the beginning, end, at admission and during discharge were 80% less likely to have displayed effective handover (OR: 0.2; 95% CI: 0.1 – 0.6; p = 0.002). Equally, respondents who stated that patient's bedside is the appropriate place for handover were 60% less likely to have been effective (OR: 0.3; 95% CI: 0.1 – 0.8; p = 0.01). Thus, knowledge on when handover is done and the appropriate place for conducting the activity significantly influence effective handover. Those who

mentioned that their institution conducts seminars/CME on handover on quarterly or yearly basis had higher odds of being more effective although the results were not statistically significant (OR: 2.1; 95% CI: 0.9 – 5.4; p = 0.09). Neither having been trained on handover nor knowledge on how handover is done were not significantly associated with effective handover.

Table 4.5 Health facility factors influencing handover of critically ill patients

Independent variable	Categories	Total (n)	Evaluation of handover process		OR	95% CI	p value
			Effective (%)	Non-effective (%)			
Bed capacity	Agreed	69	59.4	40.6	1.2	0.3 – 4.4	0.7
	Disagreed	11	54.6	45.4			
Nurse-patient ratio	Agreed	77	58.4	41.6	07	0.1 – 8.1	0.99
	Disagreed	3	66.7	33.3			
Equipment	Agreed	65	58.5	41.5	0.9	0.3 – 2.9	0.9
	Disagreed	15	60.0	40.0			
Supplies: consumables & non-consumables	Agreed	59	66.1	33.9	3.2	1.1 – 8.9	**0.02**
	Disagreed	21	38.1	61.9			
Staffing	Agreed	70	57.1	42.9	0.6	0.1 – 2.4	0.5
	Disagreed	10	70.0	30.0			
Environment	Agreed	62	61.3	38.7	1.6	0.6 – 4.6	0.4
	Disagreed	18	50.0	50.0			
Availability of clinical handing-over policy in the hospital	Yes	52	65.4	34.6	2.1	0.9 – 5.5	0.1
	No	28	46.4	53.6			
Availability of clinical handover policy in the Unit	Yes	61	65.6	34.4	3.3	1.1 – 9.5	**0.02**
	No	19	36.8	63.2			
Unit requires new policies in order to improve handing over standards	Yes	61	59.0	41.0	1.0	0.4 – 3.0	0.9
	No	19	57.9	42.1			
When handover is done	Beginning, end, at admission, at discharge	52	46.2	53.8	0.2	0.1 – 0.6	**0.002**
	Beginning or end of shift	28	82.1	17.9			
Frequency of CME on handover	Quarterly or one years	43	67.4	32.6	2.1	0.9 – 5.4	0.09
	Never conducted	37	48.6	51.4			
Appropriate place for handover	Patient's bedside	48	47.9	52.1	0.3	0.1- 0.8	0.01
	Nurse's station or Conference room	32	75.0	25.0			
How handover is done	Written and verbal	60	60.0	40.0	1.2	0.4 – 3.4	0.7
	Written or verbal	20	55.0	45.0			

Further, availability of policies on handover were confirmed during the Key Informant Interviews by almost all the participants who stated clearly that there were policies on clinical handover process with a few saying they weren't aware if there were such policies in their respective hospitals as shown in the extract below:

> *"Yes we have a clinical handover policy...A whole policy that we use as an organization"...Respondent; KII 04*

> *"Okay, policies are there, for example there's a policy for admission in ICU…There are those that were made... Some of these guidelines exist but not on clinical handing over…. Yes"….Respondent; KII 01*

> *As per the key informant interview results, Most respondents acknowledged the fact that continuing Medical education sessions were being conducted in the ICU unit to equip the staff with more knowledge, attitude and skills to handle the critically ill patients. It was however not very clear whether the CMEs were on clinical handover process as per the following responses:*

Frequency of the CMES

According to key informant results on frequency of the CMEs, several answers came up with a majority mentioning weekly. Others stated that they carried out the CMEs thrice a month while some mentioned that they had them monthly. Finally, a respondent highlighted that they had a CME on clinical handover once a year because there were many other topics to be covered during the sessions.

> *"So, usually the hospital, of course, has CPD, Continuous Provisional Development. It is done every Tuesday, virtually. Now we are doing virtually. So we usually put a notice every week before the D-day for staffs to log in. So this CPD is a cut across"...Respondent; KII 02*

> *"Yes, they are there. Before COVID they used to do them monthly and of course we do clinical audit"…Respondent; KII 03*

> *"It is usually 3 in a month but lately not yet"…Respondent; KII07*

> *"You know in our facility by the time we are starting a year, there is usually a whole plan of the year in terms of education. So every year we must have at least one session on clinical handover and many others because per year there are many topics to be covered...So a minimum of 1"...Respondent; KII04*

4.5 Multivariate logistic regression analysis on Health Facility Factors associated with effective handover

Table 4.6 presents multivariate logistic regression analysis results on factors associated with effective handover. To fit the model, all the independent variables with p values less than 0.2 from the bivariate logistic regression were included in the model controlling for confounders. Only two variables independently predict effective handover performance by staff in ICU. Staff who agreed that visitors influence handover process were 5 times more likely to have performed well as during the handover sessions than those who agreed (OR: 5.1; 95% CI: 1.1 – 24.7; p = 0.04). On the contrary staff who mentioned that handover is done at the beginning, end, admission and discharge were 80% less likely to have been effective in their performance (OR: 0.2; 95% CI: 0.1 – 0.8; p = 0.02).

Table 4.6 Multivariate logistic regression analysis on factors associated with effective handover

Independent variables	Categories	AOR	95% CI		P value
			Minimum	Maximum	
Visitors	Agree vs Disagree	5.1	1.1	24.7	**0.04**
Supplies	Agree vs Disagree	2.2	0.6	7.7	0.23
When handover is done	Beginning, end, admission and discharge vs Beginning or End of shift	0.2	0.1	0.8	**0.02**
Frequency of conducting CME	Quarterly or yearly vs Never conducted	1.8	0.6	5.6	0.28
Appropriate place for handover	Patient's bedside vs Nurses' station/Conference room	0.3	0.1	1.2	0.09
Availability of policy in hospital	Yes vs No	0.7	0.1	4.6	0.73
Availability of policy in Unit	Yes vs No	4.3	0.6	31.3	0.15

CHAPTER FIVE

DISCUSSION

5.1 Overview

This chapter deals with the discussion of the study findings and they are guided by the study objectives.

5.2 Clinical Handover process of the critically ill patients in intensive care unit

The study sought to investigate clinical handover of critically ill patients among health care providers in intensive care unit. According to the study majority of the respondents (82.5%) had had on job training on clinical handover which disagreed with a study done by national survey of internal medicine which found out that 60% of health care providers had not had any training on clinical handover in their training period they only learned about it by experience. Another explanation that supported this study concluded that hospital regulations, clinical handover, and information communication skills are not taught formally during education and health care providers acquire such skills during their clinical experience in daily practice which is not a reliable method to improve their abstract clinical knowledge and skills (Uhm, Eun , & Hyeong, 2018).

46.3% of respondents concurred that their institution had not had any Continuous medical education (CMEs,) seminar on clinical handover agrees that the intensive care unit handover, most stressful part of the shift' health care providers stated that they had not had any formal training on clinical handover despite being of great importance. A study showed that the training program was successful in improving clinical handover among health care providers and implementation of the training program significantly improved the clinical handover among health care workers in terms of

maintaining the continuity of care and improving the quality of inter-departmental information (Malfait, *et al.*, 2018).

60% of the respondents thought that bedside clinical handover was the most appropriate place for handover as it allowed the incoming health care providers to see observe and monitor at the same time of clinical handover. Most studies seemed to agree with this as bedside handover are seen to provide individualized care and help to ensure patient safety. According to (Dorvil, 2018). Bedside handover has its advantages which manifested in improved efficiency, accountability and accuracy. Most of the respondents 65% confirmed that clinical handover is done at the beginning and end of shift. Three quarters stated that clinical handover is done in the units through written and verbal methods but Gordon & Findley, (2011) question the efficacy of oral handover and recommend written reports on the other hand as oral handover need communication and careful listening. However (Rushton, 2010) cautions that written cases of clinical handover are inaccurate, biased and incomplete which may lead to many errors, mislead health care providers and increase patient complications. Only a small proportion 17.5% rely on verbal report which is lengthy and time consuming. Moreover, clinical handover is an opportunity for health care providers for group cohesion, professional education, socialization interaction and emotional support.

All the interviewed staff took part in the clinical handover process, meaning clinical handover is very important for continuity of cares. According to the findings, 91.2% of respondents agreed alarms were a major distraction followed by emergency cases and noise at 86.2%, visitors at 81.2% and cell phones at 78.8% Interruption during clinical handover (13%), this was confirmed by a study which stated alarms, environmental noise, phone calls, and visitors as the most frequent barriers to effective

clinical handover in no particular order. There was a significant relationship between interruption and time spent in clinical handover in the number of distractions increased. Roslan and Lim (2017) frequent interruption of clinical handovers increased the time taken for the process with a loss of critical information resulting in adverse patient events. Respondents from this study also demonstrated that clinical handover became time consuming with constant interruptions and distractions, causing delays in the delivery of care which is consistent with the findings of (Kowitlawakul *et al.,* 2015) who showed that distraction is a particularly common problem during handover in ICUs, and the human factor was the most common distracting factor. Another previous observational study about clinical handover showed that visitors and alarms were the most frequent interruptions during handover. Interruptions and distractions that occurred during the clinical handover were also perceived to cause the loss of important and relevant information and could lead to increased adverse events (Suyogi & Sultan, 2019).

5.3 Patient factors influencing clinical handover of critically ill patients in intensive care

The study sought to assess how patient factors influenced clinical handover of critically ill patients in intensive care. According to the findings (95%) of the respondents agreed that unstable hemodynamics of patients and severity of illness (93.8%) greatly influenced clinical handover. This was backed by Spanke & Thomas, (2010) who reported that in practice the complexity of patients' conditions, severity of their illness and different interruptions like unstable hemodynamics of patient's clinical handover contributed to prolonging the process of reporting. Additionally, another study agrees with this finding which states that clinical handover is more complex depending with the complexity of patient health conditions which increases

work pressure as more critically ill patient's handover require effective communication of the patients' clinical information for delivery of a safe clinical handover (D'Empaire & Amaral, 2017). But the age of the patient is also known to be a factor in the clinical handover process. Patients who are older are likely to experience severe illness and multiple chronic conditions. The prevalence of unstable hemodynamics and comorbidities increases in patients aged more than 80 which is associated with a higher mortality. Age plays a major role in the clinical handover as the oldest patients are frailer and dependent than younger patients. These characteristics influence strongly the decision for the clinical handover process and care in the intensive care unit (ICU). Any information loss or misunderstanding or irrelevant or improper handling may cause ineffective clinical handover).

Similarly, underlying illness and comorbidities each reported by 88.8% of the respondents were important factors that were considered as having an influence during clinical handover process. The mean clinical handover duration per patient increased depending with the underlying illness of the unstable patients who needed urgent attention greatly increased task uncertainty and they recommended that redesigning of clinical handover procedure.

5.4 Health care provider factors influencing clinical handover

The study sought to determine how health care provider factors influenced clinical handover of critically ill patients in intensive care. During the study, staff gender, age group, cadre, level of education and years of experience in working in ICU were not statistically significantly associated with handover. According to the study, handover performance of Health care providers (P = 0.3) and those with higher diploma (P = 0.2) was up to 11.8 and 18 times more likely to have been effective, meaning this group are more keen during handover. However, while clinical handover had been identified as being very important in the continuity of patient care, there was no formal teaching in place both at the university level and at the hospital level on how to handover properly. An example of this is illustrated by INT C who indicated that participants received minimal formal teaching in handover and they learnt through observing how other senior clinicians handover patients, According to (Croos, 2014,handover is not taught formally in many nursing and medical schools, which raises the question of the ability for inexperienced health care providers to communicate effectively during their working life. Lack of adequate communication skills during handover can lead to misunderstandings and cause vital information to be omitted (Ferrara, et al. 2017,). Inexperience and lack of confidence can lead to health care providers feeling intimidated to carry out handovers; some may fail to engage patients in the discussion altogether. In addition, it can lead to patients feeling insecure about their care. Providing relevant training to health care providers can help them to gain confidence and improve their competency in carrying out bedside handovers. (Bruton, *et al.*, 2016) According to (Hefnawy, 2020) learning does not need to be formal or entail organized training events, but it must be guided by learning goals to be achieved and that can be measured, it needs to be integrated in professional practice .In my years of practice I

have realized that most health care providers become more effective in handover if they go back for higher learning especially after a few years of practice. Others due to years of experience they master the best way to carry out handover and teach the juniors on what to do and what not to do.

According to this study, years of experience (P=0.2) was seen to play a major role in the handover process this disagreed with a study that says more experienced health care workers were reported to be more likely to double-check received information and generally relatively health care providers with less experience are unlikely to double-check that the receiver interprets the information correctly (Rayo *et al.*,2014).Another study disagrees with this and states that junior health care workers are likely to feel fear from lack of knowledge about a new situation that may lead them to miss important information which can lead to overwork or affect patient condition (Mcmurray,*et al.*, 2010). The more experience a health care provider has, the more likely they are to be accurate and responsible. Variation in experience levels between health care providers might lead to weakness consequences as well, such as not understanding, or difficulty in delivering patient information. A lack of experience can also occur if a health care provider excludes information not thought to be important at the moment; this information can be forgotten with time and only to be focused on patients (Hains, *et al.*, 2012)

Currently, many hospitals and healthcare facilities across the world recommend the use of ISBAR during handovers. ISBAR is a communication tool that was developed to provide a guideline for healthcare professionals to communicate with each other during consultations and transfer of care for patients (Munro, 2016).

5.5 Health facility factors influencing clinical handover

The study sought to determine health facility factors that influenced clinical handover of critically ill patients in intensive care. According to the findings the health facility-related factors affecting clinical handover process cited by respondents were nurse-patient ratio which ranked the highest at (P=0.99) but was not statistically significant. Staffing was ((P=0.5) this agreed with a study that found inadequate staffing was the second most frequent contributing factor affecting clinical handover. Health care providers indicated that one of the obstacles to the clinical handover process is the nurse-to-patient ratio. Shortage of staff increase workload and negatively affect the quality of the clinical handover process. Another study showed that improvements in clinical handover process requires the organizations priority to reduction in workload and staff training for the clinical handover process. Patient clinical handover entails an intensive workload and should be included in workload measurement systems, with appropriate human resource management to support patient and staff needs (Blay *et al.,* 2017). The study found out that equipment affected the clinical handover process with (P=0.9) of the participants describing it as a factor. There is a deep collaboration between clinical handover process and equipment. The right equipment has been shown to facilitate communication and information flow among health care workers and patients. Clinical Handover policies in most health care systems were not implemented according to the findings which found that (65%) of respondents confirmed that their hospital did not have clinical handing over policy (76.2%) said they needed new policies in order to improve handing over standards and another (76.2%) of the respondents had the document in their unit though the same proportion.

A previous study carried out in Saudi Arabia found that the overlapping main causes of events reported from 2012 to 2015 were related to unavailable policy and procedures or failure to implement them. Therefore, there is a need to improve clinical handover protocol to increase patient safety and prevent the occurrence of preventable errors in hospitals. Lack of proper clinical handover policies in place "inhibits communication, stifles full participation and undermines teamwork" according to (Ofosu, Ofori, Ntumy, Kwaku , & Boafor, 2021). Failure of hospitals to adopt and enforce clinical handover policies are known to impact quality that is disrespectful, non-collaborative care among team members which impedes safety to ask questions and express ideas. Therefore, paying more attention on training programs for health care providers, policy development and designing standards to improve clinical handover are strongly needed (Uhm, Eun , & Hyeong, 2018). 77.5% of the respondents agreed that environment played a major role in the clinical handover process. This is supported by a study that concludes a stressful environment decreases cooperation and interaction between health care workers. When interaction between health care providers is reduced, the work overload will be increased due to critical situations. Because of that, environmental factors can lead to errors, which affect patient safety as well as bedside clinical handover (Mardis *et al.,* 2016). Previous studies have found widespread unstandardized processes of clinical handover in ICUs, leading to poor information communication, which may be attributed to many factors including health care providers, patient environments, hospital standards, policy's, protocols, and documentation during clinical handover in critical care (Mardis, *et al.*, 2016).

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Overview

This chapter presents the conclusions and recommendations of the study as per the specific objectives.

6.2 Conclusion

6.2.1 Patient factors influencing clinical handover of critically ill patients in intensive care unit

Although not statistically significant underlying illnesses was an important factor that influenced handover. 62% of the respondents agreed that unstable hemodynamics of patients and severity of illness 58.7 % greatly influenced clinical handover. Similarly, underlying illnesses and comorbidities each were mentioned by respondents as factors that influenced clinical handover. Deranged lab works 61.4% was also mentioned as a factor that influenced clinical handover.

6.2.2 Health care providers

Although not statistically significant cadre of staff 61.1%, level of education 60.8%,work experience below seven years 65.9% were important health care providers that influenced handover.

6.2.3 Health facility factors influencing clinical handover of critically ill patients in intensive care unit

Three factors were statistically significant, The healthcare providers who agreed supplies (consumables and non-consumables) at 66.1%,they were upto 3.2 times more effective in handover. Availability of clinical handover policy in the unit were at 65.6% and upto 3.3 times more effective in handover. Knowledge on when handover

is done and appropriate place for handover also significantly influenced handover of critically ill patients.

6.3 Recommendations

- Adopt technology to facilitate and improve handover process by eliminating errors and providing easy access to information particularly on patients with complex conditions.
- Conduct training programs to help ICU staff to gain knowledge, develop competencies, and apply tools to manage the intricate nature of handover process. Teach how to handover patients in formal didactic session in School of Medicine and medical training colleges to enhance staff's competency in handing over process.
- Provide enough supplies to facilitate smooth handing over process. Health facilities with critically ill patients should develop standard guidelines and protocols for patient handover.
- Strategies for reducing distractions such as noise and visitors in the ICU should be explored particularly during handover.
- Further studies should be done on patient factors/healthcare providers factors influencing handover process with a larger sample size.

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APPENDIX I: CONSENT FORM

I JUDITH ODHIAMBO, a student at Masinde Muliro University of science and technology. I am doing a study on **CLINICAL HAND-OVER OF CRITICALLY ILL PATIENTS AMONG HEALTH CARE PROVIDERS IN INTENSIVE CARE UNITS IN WESTERN REGION OF KENYA** whose aim is to determine the level of process, factors and strategies used during handover. This is a letter to invite you to participate in this study. It involves filling a questionnaire which is attached and will only take ten minutes of your time. I kindly ask you to answer questions truthfully and independently. Confidentiality is assured. Do not write your name on the questionnaire. It is anticipated that the result of this study will generate information that will be useful to the hospital at large. There is no payment for having participated. There are no potential risks; all the information in the questionnaire will be safely stored. Results will be disseminated after the study.

Thank you for taking your time to read this letter. If you have any questions, do not hesitate to contact me on the above address and telephone number.

Your participation will be greatly appreciated.

Yours sincerely,

Judith Odhiambo

I have read the information; my questions have been answered and I give consent to participate in the study.

Participant's signature---------- Date----------

Interviewer's signature----------Date…….

APPENDIX II: QUESTIONNAIRE

SECTION A

SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Gender

    a) Male [ ]

    b) Female [ ]

2. Age _____

3. Cadre

    a) Doctors [ ]

    b) Health care providers [ ]

    c) Clinical officers [ ]

4. Level of Education

    a) Certificate [ ]

    b) Diploma [ ]

    c) Higher diploma [ ]

    d) Bachelor's degree [ ]

    e) Masters [ ]

5. Years of experience_____

SECTION B

6. Do you take part in patient handover?

   a) Yes [ ] b) No [ ]

7. When is hand over done? HOW TO MEASURE EFFECTIVE HANDOVER WHICH IS OUTCOME VARIABLE

   a) End of shift [ ]

   b) Beginning of shift [ ]

   c) During discharge [ ]

   d) At admission [ ]

   e) All the above [ ]

8. The following are some of the distractors during patient handover?

		Strongly agree	Agree	Disagree	Strongly disagree
1.	Noise				
2.	Alarms				
3.	Cell phones				
4.	Visitors				
5.	Emergency cases				

SECTION C

9. During your training were you ever trained on patient handover?

a) Yes [ ] b) No [ ]

9b) .How often do you conduct continuing Education seminars on patient handover?

a) Quarterly [ ]

b) Yearly [ ]

c) Never conducted [ ]

10. What do you think is the appropriate place for handover?

a) Conference room [ ]

b) Patient's bedside [ ]

c) Health care providers station [ ]

11. How is patient handover done in your unit?

a) Written [ ]

b) Verbal [ ]

c) E-mail [ ]

d) Telephone [ ]

e) Written and verbal [ ]

12 Where do you think is the appropriate place for handover?

a. Conference room

b. Patients bedside

c. Health care providers station

13.How is patient handover done in your unit?

a) Written

b) Verbal

c) Email

d) Telephone

e) Written and verbal

14. The following tables describe some of the factors influencing patient handover Please tick as appropriate.

I. Patient Related Factors

		Strongly agree	Agree	Disagree	Strongly disagree
1.	Underlying illnesses				
2.	Severity of illness				
3.	Comorbidities				
4.	Unstable hemodynamics				
5.	Deranged lab works				

I. Health facility related factors

		Strongly agree	Agree	Disagree	Strongly disagree
1.	Bed capacity				
2.	Nurse patient ratio				
3.	equipment				
4.	Supplies – consumables / non-consumables				
5	Staffing				
6	Environment				

15. Are there any clinical handover policy in your?

a) Hospital a) Yes [ ] b) No [

a) Unit a) Yes [ ] b) No [ ]

16. Does your unit require new policies in order to improve handing over standards?

a. Yes [ ] b) No [ ]

17. Is handover in ICU different from other units in the hospital?

a. Yes [ ] b) No [ ]

APPENDIX III: KEY INFORMANT INTERVIEW SCHEDULE

This key informant interview schedule is designed to examine the interventions used by Health care providers working in the intensive care units that promote clinical hand over of critically ill patients among health care providers in intensive care unit.

Information given will help to improve the hand over process in intensive care unit. The interview schedule is designed to collect data from health care providers working the unit during the data collection period. Informants (participants) are not required to give their names.

K.I.I Schedule

1. What are the policies in place on clinical handover?

2. How often do you conduct continuous medical education?

APPENDIX IV: CHECKLIST

PATIENTS HANDING OVER CHECKLIST

	Done	**Not done**
Name		
Age		
Gender		
IP NO.		
Date of Admission		
Day in the unit		
Diagnosis		
Vital signs		
Pain management		
CNS level of consciousness (GCS)		
Cardiovascular		
Respiratory		
Genitourinary		
Integumentary		
Reproductive		
Musculoskeletal system		
Patient reviews		
Input and out put		
Allergies		
Pending procedures		
Lab works and diagnostic tasks		
Intravenous and invasive lines/drains. -Type of invasive - Cvc… Peripheral line- Foleys catheter NGTUBE… -Date of insertion -Date of change/removal		
Armband /patient identity-		
Safety checks		
Wall oxygen supply		
Suction system works		
Oxygen cylinder		
Bed wheel locks		
Side rails		
Ambu bag and mask		
E T T cuff and pressure		
Monitor alarms ON/OFF		

APPENDIX V: APPROVAL LETTER FROM IERC

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke
P. O. Box 190-50100
Kakamega, Kenya
Institutional Ethics Review Committee (IERC)

Ref: MMU/COR: 403012 vol2 (65) **Date:** 29th October, 2019

Judith Seka Odhiambo
Masinde Muliro University of Science and Technology
P.O. Box 190-50100
KAKAMEGA

Dear Ms Odhiambo

RE: Clinical Hand Over of Critically ill Patients among Health Care Providers in Intensive Care Units in Selected Hospitals in Uasin Gishu and Kisumu County -MMUST/IERC/093 /19

Thank you for submitting your proposal entitled as above for initial review. This is to inform you that the committee conducted the initial review and approved (with minor revisions) the above Referenced application for one year.

This approval is valid from **29th October, 2019 through to 29th October, 2020.** Please note that authorization to conduct this study will automatically expire on **29th October, 2020**. If you plan to continue with data collection or analysis beyond this date please submit an application for continuing approval to the MMUST IERC by **29th September, 2020.**

Approval for continuation of the study will be subject to submission and review of an annual report that must reach the MMUST IERC secretariat by **29th September, 2020**. You are required to submit any amendments to this protocol and any other information pertinent to human participation in this study to MMUST IERC prior to implementation.

Please note that any unanticipated problems or adverse effects/events resulting from the conduct of this study must be reported to **MMUST IERC**. Also note that you are required to seek for research permit from **NACOSTI** prior to the initiation of the study.

Yours faithfully,

Dr. Gordon Nguka (PhD)
Chairman, Institutional Ethics Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)
- DVC (A & F)

APPENDIX VI: APPROVAL LETTER MTRH

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
COLLEGE OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET
Tel: 33471/2/3

Reference: IREC/2019/310
25th March, 2021

Approval Number: 0003829

Judith S. Odhiambo,
Masinde Muliro University of Science and Technology,
School of Nursing,
P.O. Box 190-50100,
KAKAMEGA-KENYA

Dear Ms. Odhiambo,

CLINICAL HAND-OVER OF CRITICALLY ILL PATIENTS AMONG HEALTH CARE PROVIDERS IN INTENSIVE CARE UNITS IN SELECTED HOSPITALS IN UASIN GISHU AND KISUMU COUNTY

This is to inform you that ***MTRH/MU-IREC*** has reviewed and approved your above research proposal. Your application approval number is ***FAN: 0003829.*** The approval period is **25th March, *2021 – 24th March, 2022.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MTRH/MU-IREC***.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MTRH/MU-IREC*** within 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MTRH/MU-IREC*** within 72 hours.
v. Clearance for export of biological specimens must be obtained from ***MTRH/MU-IREC*** for each batch of shipment.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MTRH/MU-IREC.***

Prior to commencing your study; you will be required to obtain a research license from the National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and other relevant clearances. Further, a written approval from the CEO-MTRH is mandatory for studies to be undertaken within the jurisdiction of Moi Teaching & Referral Hospital (MTRH), which includes 22 Counties in the Western half of Kenya.

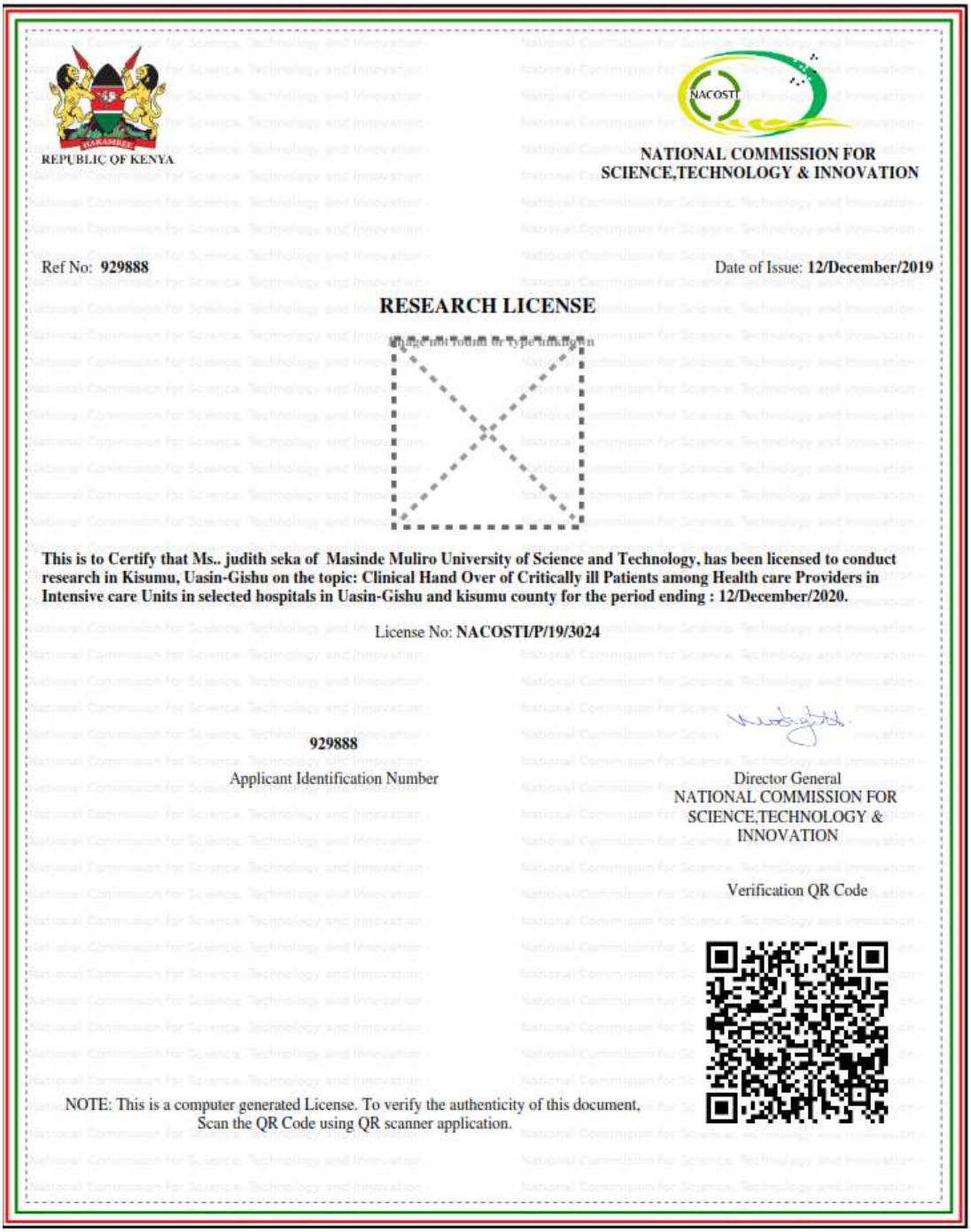
Sincerely,

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
25 MAR 2021
APPROVED
P.O. Box 4606 - 30100 ELDORET

PROF.E.O.WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc CEO - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

APPENDIX VII: APPROVAL LETTER FROM NACOSTI



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **929888**

Date of Issue: **12/December/2019**

RESEARCH LICENSE

This is to Certify that Ms.. judith seka of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Kisumu, Uasin-Gishu on the topic: Clinical Hand Over of Critically ill Patients among Health care Providers in Intensive care Units in selected hospitals in Uasin-Gishu and kisumu county for the period ending : 12/December/2020.

License No: **NACOSTI/P/19/3024**

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NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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