DETERMINANTS OF ADHERENCE TO THE AMERICAN HEART ASSOCIATION GUIDELINES FOR ACUTE CORONARY SYNDROME AMONG CLINICIANS AT KENYA PORTS AUTHORITY CLINICS IN MOMBASA, KENYA

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DECLARATION AND APPROVAL

Declaration by the Student

I hereby declare that this thesis is my original work and has not been submitted anywhere else for research purposes or award of any degree or otherwise.

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DEDICATION

I wish to dedicate this thesis to my husband Robert Mailu and my children Ivy, Ian, Ida and Ike for the understanding and immense support accorded during the time of study.

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ABSTRACT

Acute Coronary Syndrome encompasses a spectrum of coronary artery diseases, including Unstable Angina, ST-segment-Elevation Myocardial infarction, and Non-ST Elevation Myocardial Infarction. Standard clinical guidelines like Advanced Cardiac Life Support by American Heart Association are put in place to guide the clinicians in the management of the Acute Coronary Syndrome to improve the outcomes among the patients. The main purpose of the study was to assess the determinants of adherence to the American Heart Association Guidelines for Acute Coronary Syndrome among Clinicians at Kenya Ports Authority Clinics in Mombasa, Kenya. A descriptive cross-sectional study involving quantitative methods of data collection was adopted. An interviewer administered questionnaire was used for data collection. The study was carried out in Kenya Ports Authority clinics in Mombasa, Kenya. The target population was 106 clinicians attending to patients who present with Acute Coronary Syndrome at the KPA clinics in Mombasa. A Census method was used to determine the study participants. The sample size was made up of a hundred and six participants. The clinicians who consented to participate in the study were included while those who were on sick off, leave or who recently joined the clinic were excluded. Pretesting of the study tool was done at the Kenya Pipeline Clinic Mombasa. Data analysis was done using Statistical Package for Social Sciences version 25 and presented via graphs, charts, and tables. Ethical approval was sought from Mount Kenya University Ethics and Research Committee (MKU-ERC) and permission granted from the National Commission for Science Technology and Innovation while authorization to conduct the study from the institution was from the Manager Medical Services of Kenya Ports Authority. The study results showed that at 95% level of confidence (ρ-value = 0.05%), there was a significant association between gender (ɑ=0.025), work experience (ɑ=0.016), job cadre (ɑ=0.014) and training received (ɑ=0.022) on adherence to the American Heart Association Guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The association was insignificant between age (ɑ=0.178), education level (ɑ=0.439) and specialization (ɑ=0.489) on adherence to the AHA guidelines. The study concludes that the associations between availability (ɑ=0.000), accessibility of the AHA guideline (ɑ=0.002), training on ACS management (ɑ=0.022) and provision of the resources (ɑ=0.004) on adherence to AHA Guidelines among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya was significant. The study recommends that the KPA management should increase the medical budget to ensure availability of adequate resources for ACS patient management. These resources include adequate staffing, medication, equipment, and staff training costs. The Clinic management should ensure that medications such as aspirin, morphine and nitroglycerine are readily available and accessible at patients care points. The KPA Clinic management to formulate a simple algorithm that outlines the steps to be taken when managing ACS patients. The study recommends that the clinics should assess their equipment requlary for maintenance controls to ensure efficiency. The study further recommends random assessments and post care audits to assess the adherence to ACS guidelines among clinicians.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACLS	Advanced Cardiac Life Support
ACS	Acute Coronary Syndrome
AHA	American Heart Association
CAD	Coronary Artery Disease
CPR	Cardiopulmonary Resuscitation
CVD	Cardiovascular Disease
ERC	Ethics and Review Committee
IHD	Ischemic Heart Disease
MI	Myocardial Infarction
MKU	Mount Kenya University
NCD	Non-communicable Disease
NSTEMI	Non-ST Elevation Myocardial Infraction
SSA	Sub-Saharan Africa
STEMI	ST Elevation Myocardial Infraction
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Acute Coronary Syndrome (ACS) encompasses a spectrum of coronary artery diseases, including unstable angina, ST-segment-elevation myocardial infarction (STEMI), and non-ST elevation myocardial infarction (NSTEMI) (WHO, 2020). Cardiac arrest occurs in case of cessation of effective heartbeat and blood circulation and it is one of the causes of sudden or unexpected death. In case of a cardiac arrest, Cardiopulmonary resuscitation (CPR) which is a well-recognized critical procedure in which chest compressions and artificial ventilation are provided to maintain adequate blood flow to the brain and other vital organs is instituted to save the victim (WHO, 2018). Acute Coronary Syndrome is commonly caused by coronary atherosclerotic plaque and subsequent intracoronary thrombus formation, which leads to myocardial ischemia. If coronary blood flow is interrupted long enough, myocyte necrosis which is lethal occurs (WHO, 2016).

In 2020 WHO reported that cardiovascular diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Out of the 17 million premature deaths (under the age of 70) due to non-communicable diseases in 2019, 38% were caused by CVDs. Over three-quarters of CVD deaths take place in low- and middle-income countries (WHO, 2020). According to World Health Organization (WHO) prediction (2004-2030), cardiovascular disease (CVD) will continue to be the leading cause of mortality globally up to 2030(WHO, 2020). Based on the report of heart disease and Stroke Statistics 2018; the global prevalence of ischemic heart disease (IHD) was estimated about 110.6 million, where males were more commonly affected than females and with case fatality rate of 8.9 million (Benjamin et

al., 2018). ACS is a leading cause of mortality and morbidity, accounting for 50% of all CVD deaths and more than 2.5 million hospitalizations worldwide each year (Guo et al., 2016). Given these figures, the clinicians need to be well versed with the standard guidelines for the management of acute coronary syndrome to improve the outcomes.

Coronary artery disease is the second leading cause of death in both men and women in Europe, accounting for 21% and 22% of all deaths, respectively (Ralapanawa & Sivakanesan, 2021). Every sixth man and every seventh woman in Europe will die from myocardial infarction (MI) (Kakou-Guikahue et al., 2016). Adherence to prescribed guidelines in the management of these coronary artery diseases and myocardial infarction helps reduce the complications associated and improve the outcomes. About 15.5 million Americans have coronary heart disease with over 900,000 coronary events each year, which accrue over $200 billion in direct and indirect costs (Mozaffarian 2016). In the United Kingdom (UK), there are over 80,000 hospital admissions with ACS annually (Weston, et al., 2017).

A prospective study conducted in Sub-Saharan Africa among 425 patients indicated that 13.5% of the patients were prevalent in ACS. About 71.5% of the patients prevalent with ACS had a final diagnosis of STEMI type and 28.5% of them were NSTEMI and in-hospital mortality was reported to be 10% (Kakou-Guikahue et al., 2016). Another prospective study was conducted in Africa, Sub-Saharan countries with a total of 111 patients indicated 5.1% ACS patients of which 56% of them had STEMI and 44% of them NSTEMI ACS. The study claimed that in-hospital mortality was about 6%–10% in the setting (Shavadia, Yonga & Otieno, 2015).

According to the WHO (2020), most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol. It is important to detect cardiovascular

disease as early as possible so that management with counselling and medicines can begin. Involving in weekly 150 minutes of moderate physical activity, reduce the risk of ischemic heart disease by about 30%. Unhealthy diet i.e. high fat diets, rich in salt and processed sugars are known to contribute to high levels of blood pressure, blood sugar and blood cholesterol which are the main risk factors for cardiovascular diseases and diabetes (WHO, 2016).

In 2016, the World Health Organization (WHO) launched its first specific initiative named "Global Hearts Initiative" targeting CVDs at the primary healthcare level. It includes three technical packages targeting tobacco epidemic, salt reduction and primary healthcare-based cardiovascular disease management (WHO, 2016). The key components at primary health level proposed are summarized as HEARTS: Healthy lifestyle (counselling on tobacco cessation, diet, physical activity and self-care), Evidence-based treatment protocols, Access to essential medicine and technology, Risk-based management, Team-based care and task-sharing and Systems for monitoring (Maher, Ford and Unwin, 2018). This initiative aimed at preventing development of acute coronary disease and its complications.

The management of ACS Clinical Practice Guidelines (CPGs) have become increasingly important. CPGs are developed to guide physicians in clinical decision-making and to decrease variability in treatment practices in order to enhance the quality of care (WHO, 2020). For the management of ACS, several guidelines exist, such as the National Institute for Health and Care Excellence (NICE) guidelines, the European Society of Cardiology (ESC) guidelines, and the American College of Cardiology/American Heart Association (ACC/AHA) guidelines.

The National Institute for Health and Care Excellence (NICE) guideline covers the early and longer-term (rehabilitation) management of acute coronary syndromes. These

include ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation myocardial infarction (NSTEMI) and unstable angina. The guideline aims to improve survival and quality of life for people who have a heart attack or unstable angina (National Institute for Health and Care Excellence, 2020).

The 2020 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation (NSTE-ACS) were developed by the effort of the European Society of Cardiology (ESC). The guidelines are intended to support the clinical practice by pragmatic recommendations based on the body of evidence available until mid-2020 and on professional experience where evidence is currently not available. For this purpose, the ESC assembled a Task Force of interventional cardiologists, non-interventional cardiologists, cardiac surgeons, and nurses. The Task Force built on the 2015 version of the guidelines on NSTE-ACS and reviewed more recent high-quality data from clinical trials and meta-analyses. The new guidelines underwent extensive independent review organized by the ESC pointing out areas of uncertainty or controversies due to inconclusive evidence (Apple et al., 2021).

The "2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain" provides recommendations based on contemporary evidence on the assessment and evaluation of chest pain. These guidelines present an evidence-based approach to risk stratification and the diagnostic workup for the evaluation of chest pain. Cost-value considerations in diagnostic testing have been incorporated and shared decision-making with patients is recommended (Members et al., 2021).

The ESC and ACC/AHA are the most known and comprise class I recommendations on acute in-hospital pharmacological treatment, risk stratification, performing coronary angiography (CA), and the prescription of discharge medications (WHO, 2020). Clinical

Practice guidelines are used to guide the clinical practice and disseminate information (Jones & Reeve, 2018). The ACLS guidelines are an essential skill for healthcare workers and are a lifesaving procedure if applied by a skilled and competent person. The ability of clinicians to respond quickly and effectively using standard guidelines for acute coronary syndrome helps to prevent further deterioration (Abass & Soliman, 2020).

Engel et al. (2017) established that adherence rates varied widely within and between 45 eligible studies, ranging from less than 5.0% to more than 95.0% for recommendations on acute and discharge pharmacological treatment, 34.3% - 93.0% for risk stratification, and 16.0% - 95.8% for performing coronary angiography. In their systematic literature review study, Seven studies indicated that higher adherence rates were associated with lower mortality. Several patient-related (e.g. age, gender, co-morbidities) and organization-related (e.g. teaching hospital) factors influencing adherence were identified. In Russia, low adherence compared with high adherence group there were significantly more patients more or equal 65 years, with chronic heart failure [CHF], previous stroke, atrial fibrillation [AF], Killip class more or equal II and high risk of death by GRACE score (Erlikh et al., 2017).

A study carried out in a tertiary institution in India showed that patients who have been managed through the use of the standard guidelines for ACS have improved outcomes and reduced mortality (Rajesh, 2019). In a recent report, in Saudi, only 42% of STEMI patients underwent primary PCI (PPCI), and of those only 62% achieved a door to balloon time below 90 minutes. An alarming finding was that around a third of all STEMI patients do not receive any form of reperfusion therapy (Alhabib et al., 2019). In this group of patients, more than half did not receive it because they presented late to a hospital. Additionally, most patients self-transport to the nearest emergency department and less than 5% of patients are transferred via emergency medical services (EMS).

Most countries in Sub-Saharan Africa (SSA) designed their health systems with a focus on managing infectious diseases but due to the rising prevalence of NCDs, there is a need to shift to a primary healthcare approach inclusive of prevention and control of NCDs in alignment with the global initiatives. Government-led response and policy changes have been achieved in some countries, however, there continues to be a huge gap in the policy frameworks guiding this process in several countries in SSA. Kenya is one of the countries in SSA experiencing a rapid demographic and epidemiological transition with a rising burden of NCDs such as CVDs, cancer, and diabetes (Maher, Ford and Unwin, 2018).

While assessing the reasons for poor blood pressure control in Eastern Sub-Saharan Africa Sorato et al. (2021) found that the reasons for non-adherence to prescribed medicines in south Africa were lack of awareness, lack of access to medicines and health services, professional inertia to intensify drugs, lack of knowledge on evidence-based guidelines, insufficient government commitment. In Tanzania, a qualitative study identified provider related, system relate and patent related barriers to diagnosis and treatment of acute coronary syndrome. The provider-related barriers included inadequate training regarding ACS and poor application of textbook-based knowledge. System-related barriers included lack of diagnostic equipment, unavailability of treatments, referral system delays, lack of data regarding disease burden, absence of locally relevant guidelines and cost of care. Patient-related barriers included inadequate ACS knowledge, inappropriate healthcare-seeking behavior and non-adherence (Hertz et al., 2020).

In Kenya, cardiovascular diseases (CVDs) are responsible for much of the NCD burden, accounts for 25% of hospital admissions and 13% of deaths (Ministry of Health Kenya, 2016). According to the world health statistics report of 2016, the global prevalence of hypertension among adults aged 18 years and above was 22.2% in 2015; while in the

African Region it was 29.6% (WHO, 2016). In Kenya, the prevalence of hypertension was 23.8% and 8% of Kenyans have severe hypertension (Ministry of Health Kenya, 2016). According to the National STEPwise Survey for NCDs carried out in 2015, in Kenya, hypertension is the most significant risk factor for CVDs (WHO, 2018).

In 2018, the Ministry of health launched the National CVD Guidelines as a key resource to improve the health outcomes of people living with heart diseases and equip health workers at all levels to prevent, treat and manage cardiovascular diseases and their risk factors. The guidelines cover the management of acute coronary syndrome which recommends the hospitals be well equipped and that all the health care workers attending to patients with ACS be ACLS trained (Ministry of Health Kenya, 2018). The guideline from the MOH emphasizes the need for hospitals to have the requisite equipment and ensure their staff are ACLS trained with the aim of reducing the complications and mortalities associated with ACS. However, despite well-developed guidelines for managing acute coronary syndromes, not all patients receive appropriate treatment. A substantial proportion of ACS patients possibly do not receive guideline-recommended care. For instance, a study by Bahiru at al. (2020) on facilitators, the context of and barriers to acute coronary syndrome care at Kenyatta National Hospital, Nairobi, Kenya: a qualitative analysis identified major barriers to ACS care at Kenyatta National Hospital as inadequate diagnostic and therapeutic capabilities, lack of hospital-wide ACS guidelines, undertraining of healthcare providers and delayed presentation of patients seeking care.

Several studies showed a wide variety of factors that were associated with (under)utilization of evidence-based therapies, but an overview of potential factors associated with guideline adherence in ACS patients is lacking. Given that in a previous study low guideline adherence in ACS patients was associated with adverse cardiac

events, such as death and myocardial infarction (MI), and ACS prevalence rates are increasing, insight in the level of guideline adherence, and clinician and hospital-based factors influencing the adherences is necessary.

1.2 Problem Statement

Sub-Saharan African countries, including Kenya, are experiencing a rapid rise in the prevalence of heart diseases and their risk factors, including aging, hypertension, diabetes, obesity, physical inactivity and dyslipidaemia in the context of urbanization and globalization. The need to strengthen the health system in sub-Saharan Africa to adequately respond to the growing trends of non-communicable chronic diseases (NCDs), including cute coronary syndrome is recognized by the World Health Organisation (WHO). In Kenya, it is estimated that 25% of hospital admissions are due to CVD and 13% of autopsies revealed CVDs as the cause of death representing the second highest cause of death after infectious/maternal/perinatal causes. CVDs are costly to diagnose and manage leading to premature death among the most productive individuals in the household and the society. They are key contributors to poverty due to catastrophic health spending and high out-of-pocket expenditure (WHO, 2018). In 2019, the total CVD mortality rate was 13.8% and the percentage of disability-adjusted life years (DALYs) resulting from CVD was 6.3%. The prevalence of atrial fibrillation (AF) and atrial flutter was 0.1%, while that of rheumatic heart disease (RHD) was 1.2%. The total RHD mortality rate was 0.14% of all deaths) (WHO, 2020).

Local cardiology societies such as the Pan-African Society of Cardiology (PASCAR) and the Kenyan Cardiac Society (KCS) advocate and support efforts to increase understanding of the burden of acute heart disease manifestations such as acute coronary syndrome (ACS) to build upon and improve current management trends (MOH, 2018).

The ministry of health has also adopted the American Heart Association guidelines for managing patients with ACS (Ministry of Health Kenya, 2018). The Kenya Ports Authority clinics have incorporated the use of AHA ACLS in the management of patients with ACS. All clinicians at KPA have successfully undergone ACLS training and recertification every 2 years. However, there are insufficient data on adherence with the standard guidelines in managing ACS since there are limited studies that have been conducted in Kenya regarding adherence with the standard guidelines in the management of Acute Coronary Syndrome. A study at Kenyatta National Hospital found that the major barriers to ACS care at Kenyatta National Hospital include inadequate diagnostic and therapeutic capabilities, lack of hospital-wide ACS guidelines, undertraining of healthcare providers and delayed presentation of patients seeking care (Bahiru et al., 2018).

A further study found that during the acute management phase, dual antiplatelet use was 87%. The rates of beta-blocker use (72%) within the first 24 hours of admission and anticoagulant use (72%; 80% enoxaparin) during hospitalization were also relatively high. After excluding transfer patients, the rate of guideline-directed in-hospital medical therapy, defined as receiving aspirin, a second antiplatelet, beta-blocker within 24 hours of admission and an anticoagulant at some point during the hospitalization was 56%. A minority (33%) of patients with STEMI was eligible for reperfusion therapy but only 5% received reperfusion. The in-hospital mortality rate was 17%, and the highest among individuals presenting with STEMI (21%) (Bahiru et al., 2018). While there are well-developed guidelines for managing acute coronary syndromes, empirical evidence has shown that not all people receive appropriate treatment due to either clinician-related or hospital-based factors. The study sought to assess adherence with the American Heart

Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

1.3 Justification

The risk factors for acute coronary syndrome and the prevalence of acute coronary syndrome are on the increase (Schiavone et al., 2020). Thus, to mitigate the effects of acute coronary syndrome to promote quick recovery and reduce ACS-related mortality, the quality of acute management interventions is the fulcrum to good outcomes. Timely quality clinical management of ACS has been associated with better clinical outcomes (Tolassi, 2022). However, the levels of quality and its determinants in the acute management of acute coronary syndrome at KPA are unknown. The study addresses the knowledge gap by assessing the determinants of adherence to the American Heart Association guidelines for acute coronary syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The knowledge of the adherence determinants may help bridge the gaps and inform intervention areas for improvement of care for acute coronary syndrome patients, thereby reducing mortality and improving the quality of life. This may effectively contribute to sustainable development goal 3 which is to ensure healthy lives and promote well-being for all ages and specifically target 4 which is to reduce premature mortality from non-communicable disorders by a third by the year 2030 (Institute of Health Metrics and Evaluation, 2020).

This is an explorative study that aimed at filling the gaps in the management of the 1152 patients with hypertension and 471 with Diabetes who are enrolled for care at the KPA Clinics and who are most likely to suffer from ACS. ACS if not managed well leads to complications that are usually debilitating causing morbidity and mortalities thus causing increased cost of health care. The study may help identify gaps that may be used by KPA

management to develop policies, standard operating procedures (SOPs), or continuous professional programs to support adherence to guidelines that may support and improve patient outcomes as well as reduce hospitalization, morbidity, and mortality rates.

The findings of this study may be utilized by the clinicians as an eye opener since they are all trained on ACLS to ensure proper application of the AHA ACLS guidelines hence preventing complications as well as reducing the overall cost of healthcare. Few studies had been carried out in the country to assess the determinants of adherence to AHA ACLS guidelines in the management of Acute Coronary Syndrome. This study adds to the body of knowledge and inform future studies related to the same and improve the overall management of patients with ACS. No similar study had been done at KPA Clinics and so the findings of this studymay be used to inform KPA management on strategies required to fill the gaps in the management of patients with ACS in addition to the training on ACLS that clinicians receive.

1.4 Objectives of the study

1.4.1 Broad objective

To assess the determinants of adherence to the American Heart Association guidelines for acute coronary syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

1.4.2 Specific objectives

i. To determine the level of adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

ii. To assess the influence of clinician-related factors on adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

iii. To determine the influence of institutional related factors on adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

1.5 Research Questions

i. What is the level of adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya?

ii. What are the clinician-related factors influencing adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya?

iii. What are the institutional related factors influencing adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya?

1.6 Hypothesis

i. H_0: There is no statistically significant influence of clinician-related factors on adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

ii. H_0: There is no statistically significant influence of institutional related factors on adherence to the American Heart Association guidelines for Acute Coronary

Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

1.7 Study Assumptions

That the study participants were honest in answering the questions in the questionnaire. This revealed the actual picture of what is happening at KPA clinics.

1.8 Operational Definition of Terms

Adherence: This is the process of acting and doing things in accordance with established guidelines and specifications

Standard Guidelines: This refers to the American Heart Association (AHA) Advanced Cardiac Life Support (ACLS) Guideline adopted and being used at the Kenya Ports Authority clinics.

Clinicians: this collectively refers to doctors, nurses and clinical officers working at the KPA Clinics that provide direct care to the patients as a team.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature related to the study subject. The chapter reviews empirical studies on the level of adherence to the American Heart Association guidelines for Acute Coronary Syndrome, clinician-related factors influencing the American Heart Association guidelines for Acute Coronary Syndrome among clinicians and also on institutional related factors influencing the American Heart Association guidelines for Acute Coronary Syndrome among clinicians. The review is presented from a global perspective to a local perspective.

2.2 Standard Guidelines

Clinical Practice Guidelines (CPG) are developed through a process that begins with a review and evaluation of the existing scientific literature and ends with a set of recommendations that incorporate both evidence and expert opinion and can thus be considered best practice (Barth et al., 2016). The American College of Cardiology (ACC)/American Heart Association (AHA) Task Force on Practice Guidelines was formed to make recommendations regarding the diagnosis and treatment of patients with known or suspected cardiovascular disease. Coronary artery disease (CAD) is the leading cause of death. Unstable angina (UA) and the closely related condition non–ST-segment elevation myocardial infarction (NSTEMI) are very common manifestations of this disease. These life-threatening disorders are a major cause of emergency medical care and hospitalizations. New understanding, modern medical practice has become increasingly sophisticated and interventional. This has inevitably resulted in a shift in clinical practice.

Guidelines for the diagnosis and treatment of acute coronary syndrome are useful tools for improving a physician's clinical approach to ACS patients daily. Guidelines are intended to give suggestions for clinical practice based on strong scientific evidence; nevertheless, clinicians rarely employ them in clinical decision-making. They are used to limit variation in practice, advise appropriateness, and evaluate care quality (WHO, 2018). Clinical Practice Guidelines (CPG) are useful in ensuring uniformity and ensuring that everyone understands their responsibilities to reduce clinical errors (Barth et al., 2016).

Evidence-based guidelines are critical for treating individuals with ACS in a safe and effective manner. In hospitals, increasing adherence to guidelines in the therapy of acute coronary syndrome (ACS) can minimize heart failure and mortality (Alkofide et al., 2022). Consistent use of the prescribed standard guidelines within the hospital improves the outcomes and survival of ACS patients (HashamVarwani et al., 2019). Clinical Practice Guidelines (CPG) are produced to compile the most current knowledge into a single document that will assist clinicians in providing the best care to their patients. There is evidence to suggest that doctors who follow the CPG get better results for their patients (Fürthauer et al., 2013; Barth et al., 2016). From this study, not all patients are treated according to these guidelines-recommended strategies, and this has led to poor outcomes and mortality of the patients.

2.2.1 Ministry of Health Guideline

As directed by the Kenya national guidelines for acute coronary syndrome management, the diagnosis of ACS is dependent of on 3 variables that include chest pain, ECG changes and elevated cardiac biomarkers. These can be utilized to score the patient to direct action.

ECG

In patients with chest pain the ECG should be performed within 10 minutes of presentation.

Biomarkers for ACS

The gold standard biomarker for the diagnosis of ACS is cardiac troponin. Most assays now use the highly sensitive troponin I and T. Blood for troponin should be drawn immediately after the ECG is performed. Usually, it takes approximately 4 hours after onset of symptoms before a rise in troponin can be elicited in the peripheral blood. It is recommended that all patients should have troponin performed at the time of presentation, and if the initial test is negative and the patient has suspicious symptoms another test should be repeated in 4 hours. A rise in troponin usually suggests a coronary cause of chest pain. A negative troponin in two serial tests and a normal ECG should trigger evaluation for non-cardiac causes of symptoms but where the index of suspicion remains high, non-invasive evaluation should be considered.

Treatment

The following are recommendations to institutions that offer care for patients with ACS; there should be clear point of contact for patients and health care professionals where help can be obtained immediately, there should be ambulances that are appropriately equipped to support ACLS care to patients with ACS, the ambulances should be equipped with an ECG machine, there should be a system that coordinates ambulances to enhance patient care, the triage system in the hospital should identify chest pain as one of the symptoms whose care is expedited, there should exist a link with cardiologist to enhance diagnostic capability and management of patients with acute coronary syndromes, there should exist a protocol for care for patients with ACS including care pathways, care bundles and care teams to expedite care for patients with ACS and there needs to have a

collaborative effort that includes hospitals and cardiologists to improve care and outcomes for ACS patients.

In the hospital: Patients with ACS should be evaluated in the acute room of the health facility, these patients should be connected to the ECG monitor and vitals assessed every 15 minutes, there should be resuscitation trolley in all hospitals that take care of STEMI patients, there should be resuscitation teams in all hospitals that take care of STEMI patients, ECG should be performed and interpreted within 10 minutes of arrival to the hospital and the ACS patients should be managed by the Emergency team in consultation with an attending cardiologist.

Tests: The following tests should be performed on patients with ACS; TBC, Renal function and electrolytes, RBS and Portable CXR. On admission, the following tests should be considered; OGTT/FBG, HBA1c, Lipid profile, Thyroid screen and HIV. Other tests should be performed depending on the complexity of the patient as guided by the clinical team. These include blood gas analysis in a patient with severe dyspnea and lactate levels in patients with hypotension and shock.

Pain should be managed with morphine or morphine derivatives such as fentanyl. The recommended doses are as follows: - Morphine – 2.5-5mgmg iv or SC and Fentanyl 25mcg -100mcg iv. Caution is given in patients with respiratory distress where these drugs can cause respiratory failure and therefore airway support should be available. NSAIDs and steroids should be avoided as these have been shown to have deleterious effects in patients with ACS. Patients with ACS should not be given fluids without a clear indication. This may precipitate heart failure in vulnerable patients. Fluids are useful in a subset of patients with inferior MI and RV infarction. Consult the cardiologist on this (Ministry of Health, 2018).

2.2.2 The AHA guideline

As per AHA guideline for patients presenting with chest pains, the first step is the initial evaluation which involves taking the history of the patient, physical examination and diagnostic testing. The history includes characteristics and duration of symptoms relative to presentation as well as related features and cardiolvascular risk assessment should be obtained.

The initial physical examination should focus on evaluating acute coronary syndrome or other potentially life-threatening causes of chest pain including aortic dissection, pulmonary embolism, esophageal rupture and complications.

The diagnostic testing goals in patients presenting to the ED or office with acute chest pain are: 1) identify life-threatening causes; 2) determine clinical stability; and 3) assess need for hospitalization versus safety of outpatient evaluation and management. These concerns entail consideration of the full extent of clinical data. The ACC/AHA STEMI and NSTE-ACS guidelines categorize chest pain cause into 4 types: STEMI, NSTE-ACS, stable angina, and non-cardiac. The 12-lead ECG, which should be acquired and interpreted within 10 minutes of arrival to a medical facility, is pivotal in the evaluation because of its capacity to identify and triage patients with STEMI to urgent coronary reperfusion. Other ST-T abnormalities consistent with possible ischemia also mandate prompt evaluation in a hospital setting. In both cases, transfer should be by EMS; personal automobile for this purpose is associated with increased risk and should be avoided.3-5 Patients with stable angina or non-cardiac chest pain that is not life-threatening should be managed as outpatients.

Patients with chest pain and new ST-elevation, ST depression, or new left bundle branch block on ECG should be treated according to STEMI and NSTE-ACS guidelines. An initial normal ECG does not exclude ACS. Patients with an initial normal ECG should

have a repeat ECG, if symptoms are ongoing, until other diagnostic testing rules out ACS. An ECG may identify other non-ischemic causes of chest pain (eg, pericarditis, myocarditis, arrhythmia, electrolyte abnormalities, paced rhythm, hypertrophic cardiomyopathy, pulmonary hypertension, congenital long QT, or normal variant). Figure 1 depicts an algorithm for the role of the ECG to help direct care for individuals presenting with chest pain or chest pain equivalents.

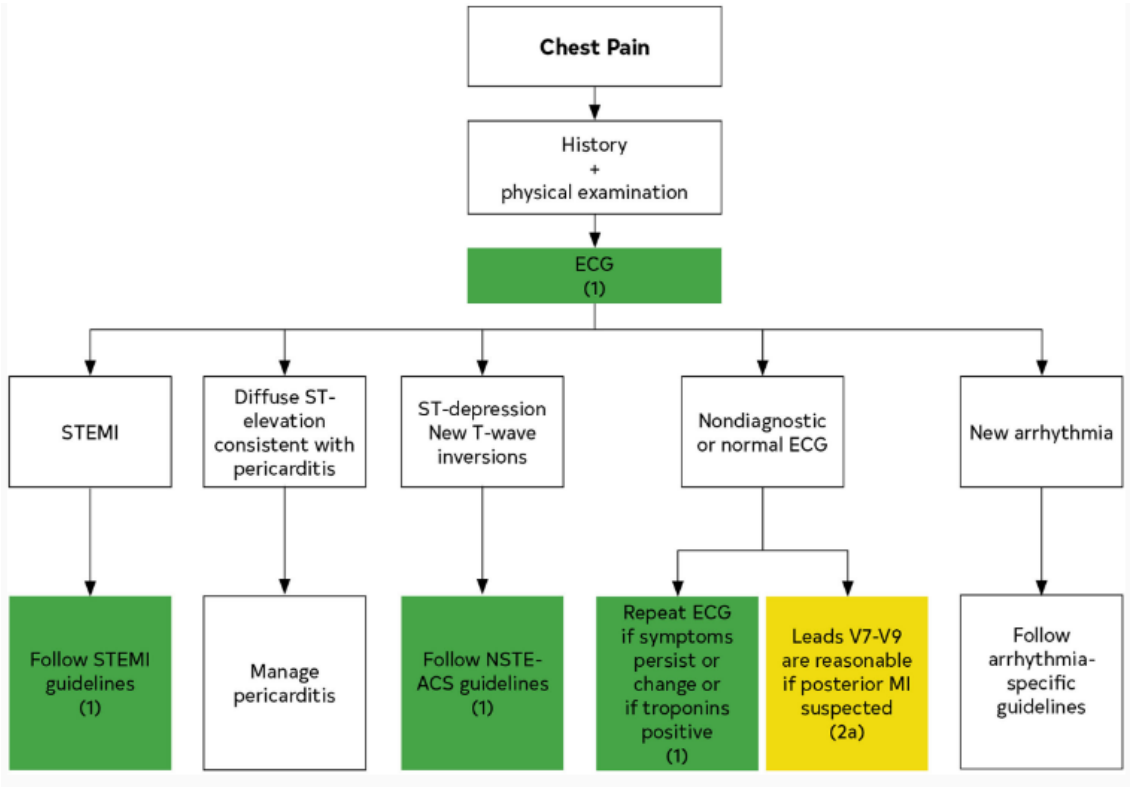

Figure 1: Electrocardiographic-Directed Management of Chest Pain

Source: Researcher (2023)

The AHA/ACC guidelines for NSTE-ACS and heart failure all recommend chest radiographs on presentation, although this should not delay urgent revascularization if it is indicated. In patients with acute chest pain and heart failure, chest radiographs are useful to assess heart size and pulmonary congestion, as well as identifying potential pulmonary causes that may have contributed to symptoms. Chest radiographs may

demonstrate a widened mediastinum in patients with aortic dissection, although they are not sensitive enough in this setting to rule out the diagnosis. Chest radiographs may be most useful in the evaluation of patients with acute chest pain to detect alternative cardiac, pulmonary, or other conditions that may cause symptoms, including pneumonia, pneumothorax, or rib fractures. Pleural effusions, pulmonary artery enlargement, and infiltrates may suggest PE, which would need to be confirmed by further testing.

Cardiovascular biomarkers can be useful for the diagnostic and prognostic assessment of patients with chest pain. Their most important application in clinical practice is for the rapid identification or exclusion of myocardial injury. The preferred biomarker to detect or exclude myocardial injury is cTn (I or T) because of its high sensitivity and specificity for myocardial tissue. hs-cTn is preferred and can detect circulating cTn in the blood of most "healthy" individuals, with different sex-specific thresholds. cTn is organ-specific but not disease-specific. Numerous ischemic, noncoronary cardiac, and non-cardiac causes of cardiomyocyte injury can result in elevated cTn concentrations. Therefore, the interpretation of cTn results requires integration with all clinical information.

Further Cardiac Testing includes Anatomic Testing and diagnostic testing. The anatomic testing involves Coronary Computed Tomography Angiography and Invasive Coronary Angiography. Diagnostic Testing which includes Exercise ECG, Echocardiography/Stress Echocardiography, Stress Nuclear (PET or SPECT) Myocardial Perfusion Imaging and Cardiovascular Magnetic Resonance Imaging.

The guideline further requires for choosing the right pathway with Patient-Centric Algorithms for Acute Chest Pain. After initial evaluation, the next step is determining whether further diagnostic testing is needed to establish a diagnosis or formulate a disposition plan. In some cases, there is clearly minimal risk of a serious medical condition although, in others, uncertainty may remain. Guidance to help clinicians make

this determination within the context of acute and stable chest pain presentations is provided. The initial assessment of patients presenting with acute chest pain is focused on the rapid identification of patients with immediately life-threatening conditions such that appropriate medical interventions can be initiated. Included among the potentially life-threatening (emergency) causes of chest pain are ACS, acute aortic syndromes, and PE. Myo-pericarditis is heterogeneous in its manifestations but can include fulminant myocarditis, which carries a high mortality rate. A subset of non-cardiovascular syndromes are also immediately life-threatening, including esophageal rupture, tension pneumothorax, and sickle cell chest crisis. Nonemergency causes of chest pain, such as costochondritis and other musculoskeletal, or gastrointestinal causes, causes predominate among patients presenting with acute chest pain; therefore, strategies that incorporate routine, liberal use of testing carry the potential for adverse effects of unnecessary investigations and unnecessary cost.

Patients with acute chest pain and suspected ACS cover a spectrum of disease likelihood and stratification into low- versus intermediate or high-risk groups once STEMI has been excluded. This stratification is important to guide subsequent management. Although most high-risk patients identified by CDPs should undergo cardiac catheterization, these patients still require a clinical assessment to determine if invasive evaluation is appropriate (ACCF/AHA Task Force, 2021).

2.3 Level of Adherence to the American Heart Association Guidelines

A review of the past studies identified several studies on the level of adherence with the American Heart Association Guidelines. Rajesh (2019) did a retrospective study on the evaluation of adherence to the Standard Guidelines and found that the median adherence index (percentage of optimal adherence with guidelines) was 0.96. In addition, a clear

relationship between the extent of guideline implementation, and 1-year mortality was shown and this relationship remained strong after stratification on the risk score at admission and the type of MI. In a systematic literature review study by Engel et al. (2017) adherence rates varied widely within and between 45 eligible studies, ranging from less than 5.0% to more than 95.0% for recommendations on acute and discharge pharmacological treatment, 34.3% - 93.0% for risk stratification, and 16.0% - 95.8% for performing coronary angiography. Seven studies indicated that higher adherence rates were associated with lower mortality.

Deedwania et al. (2017) studied adherence with guideline-directed therapy in diabetic patients admitted with acute coronary syndrome revealing that diabetic patients were less likely to get LDL checks (65% vs 70%) and less frequently prescribed statins (85% vs 89%), RAAS blockers for LV dysfunction (80% vs 84%) and dual-antiplatelet therapy (69% vs 74%). The results demonstrate gaps in adherence with guidelines-directed therapy in diabetic patients. Using a cross-sectional study, Hosseinzadeh-Shanjani et al. (2019) evaluated the adherence of cardiologist physicians to the AHA guideline in approach to risk factors of cardiovascular diseases and established a proportion of 59%, 15%, and 26% for high, moderate, and low adherence to AHA guidelines, respectively. Denlinger and Keeley (2018) found that 20% of NSTEMI patients did not receive American College of Cardiology/American Heart Association guideline-based medical therapy.

Farahzadi et al. (2015) assessed adherence to ACC/AHA Guidelines in Iran where initial management based on the current guideline including administration of aspirin and clopidogrel was performed in 98.4% and 95.0%, respectively. Intravenous heparin was administered in 67.0% of the patients, whereas 30.8% of patients received enoxaparin. Following the initial management, coronary angiography was performed in 563 (82.3%)

patients within 48 hours from admission. Adherence to ACC/AHA guidelines for the management of NSTEMI in patients who presented to a tertiary health-care center was to a high degree.

In South Africa, there was a low application of treatment guidelines which led to high readmission and mortality. This was evidenced by the serious under-use of beta-blockers, aldosterone antagonists and digoxin (Szymanski et al., 2018). Wachira & Otieno (2014) in a study on acute management of ST-elevation myocardial infarction in a tertiary hospital in Kenya revealed that in Kenya, whereas the majority of STEMI patients are evaluated within 10 min of presentation, less than 50% receive reperfusion therapy within the recommended time frame.

2.4 Clinician-Related Factors Influencing Adherence to the American Heart Association Guidelines

2.4.1 Demographics

A few studies have shown clinician demographics such as age, gender and education level have been to influence the adherence with the standard guidelines. A study carried out in Japan revealed that the male gender, clinicians with high education level and those that are highly experienced adhered more to clinical guidelines compared to their colleagues (Sasaki et al., 2020). The findings of the Japanese study differ with those of a similar study that revealed younger or less experienced professionals are more likely to follow guidelines than older, more experienced professionals (Francke et al., 2008). McGinty and Anderson (2008) established a correlation between guideline adherence and physician perception of report cards, as well as the perception of their own performance. Interventional cardiologists were more compliant than non-interventional cardiologists or hospitalists/intensivists. Patient but not physician age mattered.

Luz et al. (2020) sought the factors affecting treatment adherence of patients in a cardiac care unit. Significant differences were found between adherence and the socioeconomic factor, the health provider-and-health-team-related factor, the therapy-related factor, and the patient-related factor. In Tanzania, Pallangyo et al. (2020) evaluated medication adherence and survival among hospitalized heart failure patients in a tertiary hospital in a prospective cohort study. Of the 419 participants eligible for assessment of medication adherence, 313 (74.7%) had poor adherence and 106 (25.3%) had good adherence. Possession of health insurance was found to be the strongest associated factor for adherence (adjusted OR 8.7, 95% CI 4.7–16.0, $p<0.01$).

2.4.2 Knowledge

A knowledgeable clinician is able to apply the learned knowledge to the benefit of the patients hence having improved outcomes on the patients. A study carried out in Austria showed that the major causes of divergence from suggested therapy are physicians' lack of awareness of a guideline's existence and lack of familiarity with the guideline (Fürthauer et al., 2013). Some studies have revealed an increase in adherence to clinical practice guidelines among clinicians with frequent sensitization, having simplified standard operating procedures and making the guidelines and SOP easily accessible for them to familiarize with (Barth et al., 2016). A study on adherence to standard guidelines for the management of ACS recommends CMEs, clinical meetings, and updating the new standard protocols in the Emergency Room, Cath Lab, and CICU as ways to learn from working cardiologists and clinicians (Rajesh, 2019). This study suggested that seminars and talks with junior doctors, technicians, and nurses be held to help enhance adherence to the standard criteria.

In Los Angeles, the United States, Raz et al. (2018) found that of primary care physicians who were aware of the low-dose computed tomography guidelines, 97%

responded that the guideline was effective at reducing mortality among individuals meeting eligibility criteria, compared with 90% who were unaware of guidelines (P = .02). A larger proportion of physicians aware of guidelines utilized it and initiated a discussion on screening. Sorato (2021), established reasons for non-adherence to prescribed medicines were lack of awareness, professional inertia to intensify drugs and lack of knowledge on evidence-based guidelines.

In a study on knowledge and attitudes of primary care physicians in the management of patients at risk for cardiovascular events in the U.S, guideline adherence was inversely related to years in practice and volume of patients seen. Cost of medications, adherence to medications, adequate time for counseling, knowledge and skills to recommend dietary changes and facilitate patient adherence were cited as significant barriers to CVD risk management. Primary care physicians who have been in practice for 10 years or less were significantly more likely to make practice choices in accordance with guideline recommendations to manage low and high risk patients than physicians who have been in practice for more than 10 years (Doroodchi et al. (2008).

2.4.3 Attitude

According to a recent poll of Dutch primary care physicians, over 94 percent of respondents believe CPG are effective sources of guidance that are founded on strong evidence. Ninety percent of those in attendance felt that using CPG would result in better results. However, 35% said it was difficult to change personal habits in order to adopt CPG, and 6% said they were opposed to following CPG (Barth et al., 2016). Clinicians may disagree with a guideline suggestion due to a perceived lack of or insufficient interpretation of evidence, or a lack of applicability of guidelines in general and in particular to individual patients (Barth et al., 2016).

Galaviz et al. (2022) assessed the factors associated with adherence to guideline-recommended cardiovascular disease prevention among HIV clinicians. Clinician beliefs, motivation and self-efficacy were positively correlated with screening and advice practices (r = .55−.84), while inner setting factors negatively correlated with lifestyle-related screening and advice practices (r = −.51 to −.76). Peer pressure was positively correlated with screening and advice practices (r = .57–.89). Clinician psychosocial characteristics and perceived peer pressure positively influence adherence to guideline-recommended CVD preventive practices.

2.4.4 Level of training

A Japan study revealed that clinicians who had some form of specialty in the area of practice were likely to adhere to the guidelines compared to colleagues who had not specialty hut had some form of training on the guidelines (Sasaki et al., 2020). Some studies have also revealed that clinicians who had been trained on the guidelines were likely to adhere to them in clinical practice compared to the counterparts who encountered them in clinical practice without any form of training (Fischer et al., 2016; Jiang et al., 2020; Sasaki et al., 2020). Raz et al. (2018) found that practice size, training background, and years in practice did not affect knowledge of guidelines.

2.5 Institutional Related Factors Influencing Adherence to the American Heart Association Guidelines

In recent years, improved management options for patients diagnosed with ACS have resulted in a drop in mortality rates. Institutional-related factors have been termed as some of the environmental factors affect adherence with the standard guidelines.

2.5.1 Workload

A few studies have linked workload to medical guideline adherence. High workload makes the clinicians focus more in clearing the que and end up not adhering to every detail of the standard guidelines as per the institutional (Almazrou et al., 2020; Jiang et al., 2020). This mostly occurs in places with constrained workforce. Lack of adherence to standard clinical guidelines and policies has been associated with the shortage of the healthcare workers. This leave the only available staff with a very high workload and in the process they come up with shortcuts so as to serve all the patients (Chelogoi et al., 2019).

Good adherence to clinical guidelines has also been associated with Support from peers or superiors in adhering to the standards, as well as enough staff and time. Kissi et al. (2020) found that greater physician autonomy and greater control over the pace and content of clinical work were both associated with better professional satisfaction that allowed them to focus more exclusively on clinical care. Baradaran-Seyed et al. (2013) assessed the barriers of clinical practice guidelines development and implementation in developing countries. Practice environment theme as the key barrier. Locally, in cross sectional in Embu teaching and referral hospital comprehensive care clinic Mugoh, Kabiru and Mwaniki (2016) found that waiting time at the facilities caused by the workload were reported as key factors influencing adherence.

2.5.2 Patient Care Resources

The lack of the appropriate resources for patients' care has been considered as another key barrier in the use of standard guidelines in caring for the patients with acute coronary syndrome. Resources such as medications, equipment and other non-pharmaceutical supplies affect care delivery (Barth et al., 2016; Fischer et al., 2016; Almazrou et al., 2020). Studies suggest that the lack of resources barriers, such as time constraints and a

heavy workload, can only be addressed by allowing sufficient time to put the principles into practice, creating clear duties in terms of standing orders, and giving financial incentives (Almazrou et al., 2020; Fischer et al., 2016; Jiang et al., 2020). Lack of the appropriate medications and equipment like ECG machines and invasive procedure equipment contributed to lack of adherence to the standard guidelines among ACS patients.

In a study by Engel et al. (2017) on adherence to Cardiac Practice Guidelines in the Management of Non-ST-Elevation Acute Coronary Syndromes: Several organization-related (e.g. teaching hospital) factors influencing adherence were identified. Leighton et al. (2013) found that the institution of an EOS significantly improved adherence with ACC/AHA guidelines for cardiac monitoring at the time of admission. However, adherence worsened after the initial 48 hours, which may have been due to the ease of online reordering with our EOS. Clinically significant events were only observed in patients who met the criteria for monitoring. EOS can be a useful tool to improve adherence to guideline-based utilization of hospital resources.

Sorato, (2021) established reasons for non-adherence were insufficient government commitment, and specific health behaviors related to laws. Luz et al. (2020) sought the factors affecting treatment adherence of patients in a cardiac care unit. Significant associations were found between the type of affiliation to the health system, and the total treatment adherence degree. A study by Ashraf et al. (2021) found that a transition of care pathway for post-MI patients using readily available resources was associated with increased DAPT adherence and decreased 30-day unplanned readmissions. The results demonstrate that the availability of resources was a major factor associated with adherence. A study in Tanzania on provider-perceived barriers to diagnosis and treatment of acute coronary syndrome identified system-related barriers including lack

of diagnostic equipment, unavailability of treatments and referral system (Hertz et al., 2020).

The Ministry of health in Kenya appreciates that there are limited resources such as manpower and diagnostic equipment for the management of the acute coronary syndrome patients and recommends sharing of the available resources among various facilities (Ministry of Health Kenya, 2016). Varwani (2018) assessed the preparedness towards acute coronary care in Kenya: a survey of the county hospitals and found that most facilities surveyed appear at the moment to be insufficiently equipped for management of ACS. Gikunda et al. (2021) on the other hand found that the overall model of health system-related factors were found to be significant and this included; quality of health service, physician-patient relationship, stock out, health education, and availability of medicine.

2.5.3 Availability of the Guidelines

Guideline availability allows one to refer and remind themselves what is expected during various situations. Studies on other medical conditions have revealed that health facilities that do not have easily accessible guidelines and standard operating procedures for use by healthcare workers tend to have poor adherence of the same hence affecting the outcome of care (Mitheu et al., 2019; Olajide, et al., 2020).

While assessing the challenges in the implementation of institutional protocols for patients with Acute Coronary Syndrome. Shah and Nathan (2018) found that poor adoption of institutional protocols reduced the quality of care and efficiency. In thematic analysis, a study in Tanzania on provider-perceived barriers to diagnosis and treatment of acute coronary syndrome identified system-related barriers including lack of data regarding disease burden, absence of locally relevant guidelines and cost of care (Hertz et al., 2020).

A Kenyan study on the influence of institutional factors on access to healthcare revealed that poor implementation of health policies/protocols and shortage of drugs and essential supplies in hospitals contributed to poor outcomes and increased mortality. These findings do not exempt the standard guidelines used in the management of the Acute Coronary Syndrome (Chelogoi et al., 2019). Asiki et al. (2018) assessed the policy environment for prevention, control and management of cardiovascular diseases in primary health care in Kenya. From the documents reviewed, there was no standalone policy for CVD management and care at the PHC level, but some aspects of CVD policy were covered in general NCD policy documents. The policy makers interviewed also confirmed that there was no standalone policy for CVD management and care at the PHC level. Bahiru at al. (2018) identified major barriers to ACS care at Kenyatta National Hospital include inadequate diagnostic and therapeutic capabilities, lack of hospital-wide ACS guidelines, undertraining of healthcare providers, and delayed presentation of patients seeking care. There was notable availability of other guideline-directed medical therapies, including antiplatelets, beta-blockers, statins, anticoagulants and ACE inhibitors.

2.6 Summary of Literature

Standard guidelines help to govern the practice of evidence-based medicine and lead to improved outcomes of care to the patients. It also allows for uniformity and standardization of the care offered to the patients. Applying standard guidelines in the management of ACS will help reduce errors, and complications and improve the outcomes among patients with Acute Coronary Syndrome (WHO, 2020). A gap between evidence-based medicine incorporated in these guidelines and actual practice seems to exist, with various studies indicating that a substantial proportion of ACS patients do not

receive care according to the guidelines. In addition, previous research concluded that the extent of adherence to clinical guidelines can be influenced by factors related to the health care provider or the organization (McGinty & Anderson, 2008; Raz et al., 2018; Luz et al., 2020; Galaviz et al., 2022). When these are addressed, there may be improved outcomes among the patients and reduced healthcare costs. Nonetheless, limited local studies have been done to assess adherence to the standard guidelines in the management of the acute coronary syndrome. Thus, the need for the current study to fill this knowledge gap.

2.7 Theoretical Framework

This study applied the systems theory model. The theory was developed in 1969 by Von Bertalanffy who described the concept that systems cannot be reduced to a collection of elements working in isolation, but that understanding the interrelationships between these parts is required to comprehend the whole (Indira, 1989; Anderson, 2016). According to systems theory, a system is a set consisting of integrated, interdependent parts or components that function as a whole. Each part is necessary to make a complete and meaningful whole (Indira, 1989). The basic idea behind the systems theory is, 'The whole is greater than the sum of its parts'.

The theory's application is based on the notion that most people want to produce good work, but that they are influenced by a variety of factors, and that effective and efficient systems not only account for but also embrace these factors (Anderson, 2016). When errors occur, causal analysis based on Systems Theory states that the attention should not be primarily on individual faults, but rather on the environment that permitted such events to occur. It also claims that smart interventions, devised after observing typical patterns and behaviors throughout time, can affect results.

This theory appreciates the role played by various interrelated parts or variables to make the whole. In this study, the management of ACS is influenced by various factors. For effective utilization of AHA ACLS guidelines in the management of ACS, clinician factors and institutional factors play a key role and should be addressed accordingly. Thus, to achieve good outcomes as per the systems theory various components of the utilization of AHA ACLS guidelines need to be investigated and addressed accordingly. This explains the basis of the objectives of this study and the theory underpins the study.

2.8 Conceptual Framework

The conceptual framework demonstrates the relationship between the study variables. The dependent variable is the level of adherence with the Acute Coronary Syndrome Guideline. The level of adherence with the Acute Coronary Syndrome Guideline is determined by the vital signs that are measured by the clinicians, physical examination, recording of the patient's history and the medications provided for the Acute Coronary Syndrome cases.

The independent variables are clinician related factors and institutional related factors. The clinician related factors were measured by demographic characteristics, knowledge of the AHA guideline and the level of training. On the other end, institutional factors indicators were the workload, patient care resources and availability of the guidelines in the hospitals

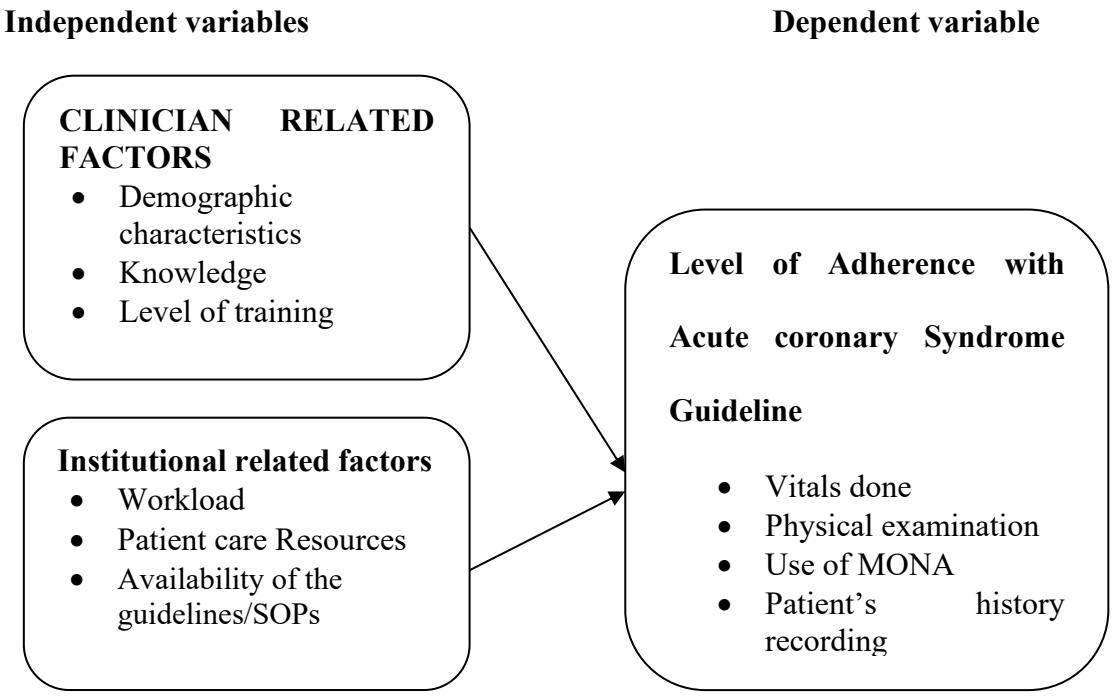

Figure 2: Conceptual Framework

Source: Research (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study Design

A descriptive cross-sectional study design was used. Quantitative data was collected over a one-month period. In this design data was collected from study participants at a specific point in time. It provides an overview of a given situation at the specific time of data collection. With this design, some limitations like loss to follow up are eliminated, it is not costly to perform and does not require a lot of time. It contains multiple variables at the time of data collection and can be used to prove or disapprove assumptions.

3.2 Study Site

The study was carried out at the Kenya Ports Authority (KPA) clinics, i.e., Bandari and Kipevu in Mombasa, Kenya. KPA clinics are located in Mombasa Island along Shimanzi Road off Moi Avenue at Mvita Constituency. KPA is a state corporation formed in 1978 with the responsibility of maintaining, operating, and regulating all scheduled seaports on the Indian Ocean coastline of Kenya, including principally the Kilindini Harbour at Mombasa where the KPA Clinics are situated. KPA has about 7000 employees with about 21,000 dependents (spouses and children). The clinics attend to an average of about 400 daily. The commonest conditions are cardiovascular diseases. There are about 2100 patients enrolled for care and follow-up at KPA Clinics for Non-Communicable Diseases (NCDs) out of which 1152 have hypertension and 471 have Diabetes. The clinics are manned by nurses, doctors and clinical officers with specialties in different fields. Patients are also attended to by other contracted visiting consultants. (Map in appendices)

3.3 Study Population

The target population was all 106 clinicians attending to patients who present with Acute Coronary Syndrome at the KPA clinics in Mombasa. These clinicians comprise 5 medical doctors, 80 nurses and 21 clinical officers who attend to these patients at the clinics as a team. All clinicians have undergone ACLS training with recertification every 2 years.

3.4 Eligibility Criteria

3.4.1 Inclusion

All medical doctors, nurses and clinical officers who are involved in direct patient care at the KPA clinics.

All medical doctors, nurses and clinical officers who gave consent to take part in the research process.

3.4.2 Exclusion criteria

Clinicians who were away on leave, sick or off duty, those whose licenses had expired, interns and those not involved in direct patient care.

Clinicians who had recently reported to the clinic less than (6 months).

3.5 Sample Size Determination

The Census method was used to determine the sample size. Census is the process where all members of a population are analyzed (Davis, 2021). The Census method was appropriate in this study since data are collected for every element of the population. This provides complete enumeration which is also known as 100% enumeration or a complete survey. It is useful when case intensive study is required, or the area is limited. The advantage is that since every study subject is considered, the conclusions are more

accurate and reliable which provides a true and better representation of the whole. In this case, all 106 clinicians comprising 5 medical doctors, 80 nurses and 21 clinical officers who are involved in direct patient care were eligible for the study.

3.6 Sampling frame, sample size

The sampling frame included all 106 clinicians comprising 5 medical doctors, 80 nurses and 21 clinical officers who are involved in direct patient care at the clinics. All clinicians who consent and provide direct patient care were eligible to participate in this study. The respondents were informed about the study before their participation. A structured checklist was used to collect data and corroborate some of the information obtained from the questionnaire.

3.7 Research Tools

3.7.1 Questionnaire

Quantitative data was collected using a self-administered, structured questionnaire. The structured questionnaire is used when trying to gain an understanding of a particular thing thus helping in developing knowledge and understanding to inform the study. The questionnaire had three sections. Section A collected information regarding clinicians-related factors, Section B collected information regarding and institutional-related factors and Section C collected data on adherence with the AHA guideline in the management of ACS.

3.8 Validity and the Reliability of the Research Instrument

3.8.1 Validity

Pretesting of the questionnaire was done with 11 clinicians (10% of the sample size) from the Kenya Pipeline Clinic which has similar characteristics. The staff manning these clinics are also trained on ACLS guidelines. Expert judgment was used on ascertaining the validity of the instrument where the supervisors reviewed the instrument and provided suggestions for some corrections to ensure the instrument obtains the required information.

3.8.2 Reliability

The data collected from the pilot study was analyzed and the areas noted to have problems were corrected in the main questionnaire. These included the ability of participants to answer questions and the ability to analyze the questions. Necessary adjustments to the questionnaires were made as informed by the findings of the pilot study to improve the reliability of the data collected in the main study.

3.9 Data collection Procedure

Two research assistants were recruited to assist in data collection. One of the requirements in the recruitment was that the candidates must be nurses. The selected research assistants were trained on the purpose of the research and the tools used for collecting. The training covered all the procedures in the data collection and ethical standards that must be upheld in the data collection process. All administered questionnaires were collected daily and stored in cabinets only accessible to the researcher. No authorized persons were allowed to access the data.

3.10 Data management

3.10.1 Data Cleaning

After the collection of the questionnaires, data cleaning and sorting was done before entry to ensure the questionnaires are properly filled without gaps.

3.10.2 Quantitative Data analysis and presentation

Data from the self-administered questionnaire was computed, coded and analyzed using Statistical Package for Social Sciences (SPSS) computer package version 25. Descriptive statistics derived from SPSS e.g., mean, frequencies and percentages were used in the data analysis. Inferential statistics including chi-square was used to assess the relationship between clinician-related factors and institutional-related factors on adherence with the American Heart Association guidelines for Acute Coronary Syndrome and testing of the hypothesis. The presentation of the analyzed data was done in tables.

3.11 Ethical Consideration

Ethical approval was sought from Mount Kenya University through the Ethics and Research Committee (MKU-ERC). Permission to conduct the study was also sought from the National Commission for Science, Technology, and Innovation (NACOSTI). Following clearance, the researcher sought authorization to conduct the study from the Kenya Port Authority's Head of Medical Services. In addition to getting informed consent from the study subjects, they were informed about the aim and advantages of the study, the confidentiality of their information, and volunteers.

The researcher sought consent from the participants. The researcher explained the purposes and the general scope and the requirements of the stud to potential respondents and those who were willing to participate signed in the written consent form. The consent

form contained details of the researcher, the topic of investigation and the purpose of the investigation. The participants were not compelled to participate in any way. Those who choose not to participate were not penalized in any way.

Participants were assured of confidentiality through anonymity, privacy during questionnaire administration and the secure storage of study materials in both soft and physical copies. By ensuring that participants do not enter their identities on the questionnaire, anonymity was preserved throughout the data gathering process. The researcher assured the participants that no dangers are anticipated in participating in the study. Participants were also notified that they would not receive any financial or other benefits from the study, but that it would be used to improve the utilization of ACLS guidelines for ACS management.

3.12 Study Limitation

The study sought some information on the institutions' practices and as such, some respondents may not have been willing to answer some of the questions in the questionnaire honestly for fear of victimization of the institution. However, the researcher explained to the respondents that the purpose of the study was academic only and the information provided would be treated with the utmost confidentiality. The study sought information on Kenya Ports Authority clinics and as such the findings of the study may not be generalized to suit other clinics in the country.

The study was likely to face the challenge of the clinicians not being willing to give personal information for fear of exposing themselves as well as being victimized but they were reassured that confidentiality would be observed. The respondents were also likely to be interrupted in the process due to their busy schedules and this would affect the data collection response rate; to this effect, the researcher recruited research assistants to

ensure that an adequate response rate is obtained. In addition, adequate time was allocated to the data collection process.

3.13 Dissemination Plan

The abstract of the research findings will be shared with Mount Kenya University Ethics and Research Committee (MKU-ERC). The research outcomes will be shared with the School of Nursing Sciences and the final research copy made available at the Mount Kenya University library for future reference. The research study will also be published in one of the peer-reviewed journals and presented in conferences.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the analysis of data and the findings of the study. The findings are presented in tables after which the interpretations are made. The chapter starts with the response rate, and demographic information followed by the respective objectives. Frequencies, percentages and chi-square tests are used in the data analysis.

4.2 Response Rate

This study sought data from 106 respondents using a questionnaire. The researcher obtained 96 complete questionnaires making a response rate of 90.6%. The study did not obtain a 100% response rate because of the inconsistencies in some responses, some questionnaires were incomplete and others were not filled at all. The response rate is presented in Table 1.

Table 1: Response Rate

	n	**%**
Complete questionnaires	96	90.6
Incomplete questionnaires	10	9.4
Total questionnaires distributed	**106**	**100**

Source: Field Data (2023)

4.3 Demographic information

The study obtained demographic information from the respondents. The demographic information included age, education, work experience, specialization and job cadres. The findings on the demographic information are presented in Table 2.

Table 2: Demographic Information

Demographic information	Category	n	%
Age Bracket	31-40 years	12	12.5
	41-50 years	54	56.3
	Over 50 years	30	31.3
Total		**96**	**100.0**
Gender	Male	45	46.9
	Female	51	53.1
Total		**96**	**100.0**
Education level	Diploma	42	43.8
	Bachelor's degree	24	25.0
	Master's Degree	30	31.3
Total		**96**	**100.0**
Work experience	5-10 years	9	9.4
	Over 10 years	87	90.6
Total		96	100.0
Specialization	Yes	53	55.2
	No	43	44.8
Total		**96**	**100.0**
Cadre	Medical doctor	5	5.2
	Nursing Officer	72	75
	Clinical officer	19	19.8
Total		**96**	**100.0**

Source: Field Data (2023)

The findings show that the majority of the respondents were in the age bracket of 41-50 years, 31.3% at the age of over 50 years and 12.5% at 31-40 years. The gender of the respondents was balanced with 53.1% being female and 46.9% male. Most of the respondents (43.8%) had attained the level of a Diploma, 31.3% had a Master's degree and 25% had Bachelor's degree.

The findings show that 90.6% had a work experience of over 10 years and 9.4% had an experience of 5-10 years. Over half of the respondents (55.2%) had specialization while 44.8% lacked specialization. The findings reveal that 75% were nursing officers, 19.8% were clinical officers and 5.2% were medical doctors.

4.4 Level of Adherence with the American Heart Association guidelines for ACS

The study requested the respondents to indicate whether they usually refer to the AHA guidelines when managing ACS patients.

Table 3: Response on Reference to the AHA guidelines when managing ACS patients

	Frequency	Percent
Yes	64	66.7
No	32	33.3
Total	**96**	**100.0**

Source: Field Data (2023)

The findings revealed that 66.7% of the respondents usually refer to the AHA guidelines when managing ACS patients while 33.3% indicated not to refer to the AHA guidelines when managing ACS patients. The findings imply that the majority of the clinical personnel usually refer to the AHA guidelines when managing ACS patients.

The study further requested the respondents to indicate why it is necessary to refer to the guidelines. The respondents indicated that referring to the guidelines keeps them posted on the latest management of the illness, ensures proper management for the best outcome, makes the procedure more precise, enables them to avoid mistakes, remove doubts and

ensure the safety of the client and ensures that they remind themselves of the procedure not to miss any step/part of the guideline.

The study sought to find out whether the respondents adhere to the AHA Acute coronary Syndrome Guideline.

Table 4: Response on Adherence to the AHA Acute Coronary Syndrome Guideline

	Frequency	Percent
Yes	68	70.8
No	28	29.2
Total	**96**	**100.0**

Source: Field Data (2023)

The findings revealed that 70.8% of the respondents indicated that they adhere to the AHA guidelines when managing ACS patients while 29.2% indicated not to adhere to the AHA guidelines when managing ACS patients. The findings imply that the majority of the clinical personnel adhere to the AHA guidelines when managing ACS patients.

The study further requested the respondents to indicate the extent to which they adhere to the AHA Acute Coronary Syndrome Guideline.

Table 5: Extent of Adherence to the AHA Acute Coronary Syndrome Guideline

	Frequency	Percent
Low	42	43.8
Moderate	48	50.0
High	6	6.3
Total	**96**	**100.0**

Source: Field Data (2023)

From the study findings, half of the respondents indicated to moderately adhered to the AHA Acute Coronary Syndrome Guideline, 43.8% indicated a low adherence while 6.3% indicated a high adherence to the AHA Acute Coronary Syndrome Guidelines. The findings imply that there is moderate adherence to the AHA Acute Coronary Syndrome Guideline among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

The respondents were further requested to identify some of the activities they conduct during the AHA Acute Coronary Syndrome Guideline process.

Table 6: Responses on Activities Conducted during the AHA ACS Treatment

Activities	**Yes**		**No**	
	N	%	N	%
I give Aspirin to patients arriving with chest pain	30	31.3	66	68.8
I advise Aspirin at discharge to patients diagnosed with ACS	78	81.3	18	18.8
I record patient's history	96	100	0	0
I do a physical examination of patients arriving with chest pains	96	100	0	0
I obtain a 12-Lead electrocardiograph (ECG) on all patients with chest pains	90	93.8	6	6.3
I use MONA(morphine, oxygen, nitroglycerin, aspirin) in the management of ACS	30	31.3	66	68.8

Source: Field Data (2023)

From the findings, all the respondents (100%) record the patient's history and do a physical examination of patients arriving with chest pains, 93.3% obtain a 12-Lead electrocardiograph (ECG) on all patients with chest pains and 81.3% advise Aspirin at

discharge to patients diagnosed with ACS. However, only 31.3% give Aspirin to patients arriving with chest pain and use MONA (morphine, oxygen, nitroglycerin, aspirin) in the management of ACS. The findings imply that the AHA Acute Coronary Syndrome Guideline is not fully adhered to among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. This has been illustrated by the fcat that most fot the respondents don not use MONA in the management of ACS.

The respondents were requested to also choose the vital signs that they check in a patient.

Table 7: Vital Signs Checked in a Patient

Vital Signs	**Yes**		**No**	
	n	**%**	**n**	**%**
Blood Pressure	96	100	0	0
Pulse Rate	93	96.3	3	3.1
Respiratory Rate	93	96.3	3	3.1
SPO_2	96	100	0	0
Temperature	90	93.8	6	6.3
Random Blood Sugar	72	75	24	25

Source: Field Data (2023)

From the findings, all the respondents (100%) indicated that they check for blood pressure and SPO2 in a patient. A greater majority (96.3%) indicated that they check for pulse rate and respiratory rate, 90% indicated they check for temperature while three-quarters of the respondents indicated that they check for random blood sugar in a patient. The findings imply that the majority of the respondents comply with the guideline by

checking the vital signs required. However, a few respondents are not compliant with the guidelines, especially in checking random blood sugar.

4.5 Influence of Clinician-related Factors on Adherence to the AHA guidelines for ACS

Table 8: Clinician-related Factors

		Yes		No	
		n	%	n	%
Have time to consult with colleagues when managing ACS cases		93	96.9	3	3.1
Knowledge on the Acute Coronary Syndrome Guideline		96	100.0	0	0
Trained on Acute Coronary Syndrome Guideline		90	93.8	6	6.3
Mode of training	ACLS	65	67.7		
	CMEs	18	18.8		
	Others	13	13.5		
Referring to the guidelines wastes your time		18	18.8	78	81.3
Necessary to refer to the guidelines		93	96.9	3	3.1

Source: Field Data (2023)

The findings show that a greater majority of the respondents (96.9%) indicated that they have time to consult with colleagues when managing ACS cases. All the respondents (100%) indicated knowing about the Acute Coronary Syndrome Guideline. In addition, 93.8% of the respondents had received training on Acute Coronary Syndrome

Guidelines. The findings show that 67.7% had been trained through ACLS, 18.8% through CMEs and 13.5% through other training. The majority of the respondents (81.3%) did not view referring to the guidelines as wasting their time and 96.9% responded that it was necessary to refer to the guidelines.

4.5.1 Chi-square tests Between Clinician-related Factors and Adherence to the AHA Guidelines

Table 9: Gender Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.990[a]	1	.025
Likelihood Ratio	5.108	1	.024
Linear-by-Linear Association	4.938	1	.026
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 9 indicate that $\alpha < \rho$-value at 95% level of confidence (α=0.025, ρ-value = 0.05%, chi-square value = 4.990). Therefore, the study rejected the null hypothesis (H0) and concluded that there is a significant association between gender and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between gender and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 10: Age Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.452[a]	2	.178
Likelihood Ratio	3.558	2	.169
Linear-by-Linear Association	.822	1	.365
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 10 indicate that ɑ > ρ-value at 95% level of confidence (ɑ=0.178, ρ-value = 0.05%, chi-square value = 3.452). Therefore, the study failed to reject the null hypothesis (H0) and concluded that there is no significant association between age and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is no significant association between age and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 11: Education Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.646[a]	2	.439
Likelihood Ratio	1.621	2	.445
Linear-by-Linear Association	.919	1	.338
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 11 indicate that ɑ > ρ-value at 95% level of confidence (ɑ=0.439, ρ-value = 0.05%, chi-square value = 1.646). Therefore, the study failed to reject the null hypothesis (H0) and concluded that there is no significant association between education level and adherence with the American Heart Association guidelines for Acute Coronary

Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is no significant association between education level and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 12: Experience Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.798[a]	1	.016
Likelihood Ratio	5.305	1	.021
Linear-by-Linear Association	5.738	1	.017
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 12 indicate that $\alpha < \rho$-value at 95% level of confidence (α=0.016, ρ-value = 0.05%, chi-square value = 5.798). Therefore, the study rejected the null hypothesis (H0) and concluded that there is a significant association between work experience and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between work experience and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 13: Specialized Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.479[a]	1	.489
Likelihood Ratio	.477	1	.490
Linear-by-Linear Association	.474	1	.491
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 13 indicate that α > ρ-value at 95% level of confidence (α=0.489, ρ-value = 0.05%, chi-square value =.479). Therefore, the study failed to reject the null hypothesis (H0) and concluded that there is no significant association between specialization and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is no significant association between specialization and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 14: Job Cadre Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.528[a]	2	.014
Likelihood Ratio	12.873	2	.002
Linear-by-Linear Association	6.564	1	.010
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 14 indicate that α < ρ-value at 95% level of confidence (α=0.014, ρ-value = 0.05%, chi-square value = 8.528). Therefore, the study rejected the null hypothesis (H0) and concluded that there is a significant association between job cadre and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between job cadre and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 15: Training Adherence to the American Heart Association Guidelines

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.047[a]	1	.006
Likelihood Ratio	9.975	1	.023
Linear-by-Linear Association	9.036	1	.009
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 15 indicate that α > ρ-value at 95% level of confidence (α=0.006, ρ-value = 0.05%, chi-square value =10.047). Therefore, the study rejected the null hypothesis (H0) and concluded that there is a significant association between the training of the medical personnel on ACS guidelines and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between training of the medical personnel on ACS guidelines and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

4.6 Influence of Institutional-Related Factors on Adherence with the AHA guidelines for ACS

The respondents were requested to indicate whether the hospital has the American Heart Association guidelines for Acute Coronary Syndrome management.

Table 16: Availability of the American Heart Association Guideline in the Hospital

	Frequency	Percent
Yes	60	62.5
No	36	37.5
Total	**96**	**100.0**

Source: Field Data (2023)

The findings show that the majority of the respondents (62.5%) indicated that the hospital had the AHA guideline for Acute Coronary Syndrome management while 37.5% indicated a lack of the guideline in the hospital. This implies that the hospital had the AHA guideline for Acute Coronary Syndrome management but some of the medical personnel were not aware of its availability.

The study further conducted a Chi-square test between the availability of the AHA guideline for the management of ACS in the hospital and adherence.

Table 17: Availability of the AHA Guideline for the Management of ACS * Adherence

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	33.629[a]	1	.000
Likelihood Ratio	34.410	1	.000
Linear-by-Linear Association	33.279	1	.000
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 17 indicate that $\alpha < \rho$-value at 95% level of confidence (α=0.000, ρ-value = 0.05%, chi-square value = 33.629). Therefore, the study rejected the null

hypothesis (H0) and concluded that there is a significant association between the availability of the AHA guideline in the hospital and the adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between the availability of the AHA guideline and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

Table 18: AHA Guideline Accessible

	Frequency	**Percent**
Yes	18	18.8
No	78	81.3
Total	**96**	**100.0**

Source: Field Data (2023)

The results show that 81.3% of the respondents indicated that the guideline is not readily accessible to healthcare workers. The findings demonstrate that the AHA guideline for the management of ACS is not readily accessible to healthcare workers.

Table 19: AHA Guideline Accessible* Adherence

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	10.070[a]	1	.002
Likelihood Ratio	15.309	1	.000
Linear-by-Linear Association	9.965	1	.002
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 19 indicate that $\alpha < \rho$-value at 95% level of confidence (α=0.002, ρ-value = 0.05%, chi-square value = 10.070). Therefore, the study rejected the null

hypothesis (H0) and concluded that there is a significant association between the accessibility of the AHA guideline in the hospital and the adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between accessibility of the AHA guideline and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

The study assessed whether the hospital offer training on the management of ACS.

Table 20: Hospital Training on the Management of ACS

	Frequency	Percent
Yes	86	89.6
No	10	10.4
Total	**96**	**100.0**

Source: Field Data (2023)

The majority of the respondents (89.6%) indicated that the hospital offer training on the management of ACS. This implies that the hospital offer training on the management of ACS. The study further assessed the type of training provided by the hospital.

Table 21: Type of training provided by the hospital

	Frequency	Percent
CMEs	18	18.8
ACLS	65	67.7
Others	3	3.1
System	10	10.4
Total	**96**	**100.0**

Source: Field Data (2023)

The findings showed that 67.7% of the respondents indicated ACLs training, 18.8% indicated CMEs and 3.1% indicated other types of training. The other types of training as indicated by the respondents include Basic Life support (BLS) training.

In addition, the study sought the frequency of the training offered.

Table 22: Frequency of Training

	Frequency	**Percent**
Twice	2	2.1
Once in two years	73	76
Others	11	11.5
System	10	6.3
Total	**96**	**100.0**

Source: Field Data (2023)

The outcome showed that 76% indicated once in two years, 11.5% indicated other frequency options, and 2.1% indicated twice in a year. Others were trained in an undefined period, CMEs weekly schedule and others on every update of AHA.

Table 23: Training Provision on the Management of ACS by the hospital * Adherence

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	8.634a	1	.022
Likelihood Ratio	8.602	1	.018
Linear-by-Linear Association	8.628	1	.018
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 23 indicate that $\alpha > \rho$-value at 95% level of confidence (α=0.022, ρ-value = 0.05%, chi-square value =8.634). Therefore, the study rejected the null hypothesis (H_0) and concluded that there is a significant association between training on

the management of ACS by the hospital and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between training on the management of ACS by the hospital and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

The study sought to establish the challenges encountered in implementing the AHA Guidelines. The indicated the following challenges; lack of funds, inadequate equipment/setup and tools like an automated external defibrillator, interpretation of electrocardiograms (ECGs), lack of personnel, lack of medicines-like aspirin and Nitroglycerin, no guideline available, lost time during reference to the guideline, lack of designated team thus everyone manages differently, lack of easy charts to refer to when in need and lack of a catheterization laboratory in the facility.

The respondents were requested to indicate whether they are usually provided with all the resources for the management of the patients.

Table 24: Resources Provision

	Frequency	**Percent**
Yes	6	6.3
No	90	93.8
Total	**96**	**100.0**

Source: Field Data (2023)

A greater majority of the respondents (93.8%) indicated that they are usually not provided with all the resources for the management of the patients. The findings imply

that the respondents are usually not provided with all the resources for the management of the patients.

Table 25: Lacking Resources

	Frequency	Percent
Non-pharmaceuticals	12	12.5
Medications	54	56.3
Equipment	24	25.0
Total	90	93.8
System	6	6.3
Total	**96**	**100.0**

Source: Field Data (2023)

The respondents indicated that the resources that lacks most of the time are medications, equipment and non-pharmaceuticals.

The listed medications were: morphine, nitroglycerine, aspirin and anti-coagulants (MONA). The equipment that lacked the most were listed as x-ray, defibrillators, AED, and cardiac beds. The other resources that were indicated by the respondents were a lack of well-trained human resources and Ambu bags.

Table 26: Resources Provision* Adherence with AHA Guidelines for ACS Management

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.909[a]	1	.004
Likelihood Ratio	14.676	1	.031
Linear-by-Linear Association	12.879	1	.003
N of Valid Cases	96		

Source: Field Data (2023)

The results in table 26 indicate that α > ρ-value at 95% level of confidence (α=0.004, ρ-value = 0.05%, chi-square value =12.909). Therefore, the study failed to reject the null hypothesis (H_0) and concluded that there is a significant association between the provision of all the resources for the management of the patients and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between the provision of all the resources for the management of the patients and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

4.6.1 Adequacy of Staffing

The study sought to assess whether the hospital was well staffed to handle all the cases of ACS following guidelines.

Table 27: Adequacy of Staffing

	Frequency	**Percent**
Yes	21	21.9
No	75	78.1
Total	**96**	**100.0**

Source: Field Data (2023)

The findings showed that over three-quarters of the respondents (78.1%) noted that the hospital was not well staffed to handle all the cases of ACS following guidelines. The findings imply that the hospital was not well staffed to handle all the cases of ACS following guidelines.

Table 28: Adequacy of Staffing* Adherence

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.218[a]	1	.000
Likelihood Ratio	18.297	1	.000
Linear-by-Linear Association	12.091	1	.001
N of Valid Cases	96		

Source: Field Data (2024)

The results in table 28 indicate that $\alpha < \rho$-value at 95% level of confidence (α=0.000, ρ-value = 0.05%, chi-square value = 12.218). Therefore, the study rejected the null hypothesis (H0) and concluded that there is a significant association between hospital staffing to handle all the cases of ACS following guidelines and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Thus, there is a significant association between hospital staffing and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

4.7 Discussion of Findings

4.7.1 Level of Adherence with the AHA Guidelines for Acute Coronary Syndrome

The study revealed that AHA Acute Coronary Syndrome Guideline is not fully adhered to among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. A majority of the clinical personnel usually refer to the AHA guidelines when managing ACS patients and also adhere to the AHA guidelines. The findings corroborate the previous findings by Engel et al. (2017) that adherence rates varied widely within and between 45 eligible studies, ranging from less than 5.0% to more than 95.0%. Consistent with the findings, a

study by Deedwania et al. (2017) demonstrates gaps in adherence with guidelines-directed. The study further found that referring to the guidelines keeps the clinicians posted on the latest management of the illness, ensures proper management for the best outcome, makes the procedure more precise, enables the clinicians to avoid mistakes, removes doubts and ensures the safety of the client. It also ensures that the clinicians remind themselves of the procedure not to miss any step/part of the guideline.

The clinical personnel record patient's history and do physical examinations of patients arriving with chest pains. The majority of the clinical personnel obtain a 12-Lead electrocardiograph (ECG) on all patients with chest pains and advise Aspirin at discharge to patients diagnosed with ACS. However, a majority do not give Aspirin to patients arriving with chest pain and use MONA (morphine, oxygen, nitroglycerin, aspirin) in the management of ACS. The findings are contrary to the findings by Farahzadi et al. (2015) where aspirin and clopidogrel were performed in 98.4% and 95.0%, respectively.

All the clinical personnel check for blood pressure and SPO_2 in a patient. A greater majority check for pulse rate, respiratory rate and temperature while three-quarters of the respondents indicated that they check for random blood sugar in a patient. The majority of the clinicians complied with the guideline by checking the vital signs required. However, some respondents are not fully compliant with the guidelines. Similarly, Denlinger and Keeley (2018) found that 20% of NSTEMI patients did not receive American College of Cardiology/American Heart Association guideline-based medical therapy.

4.7.2 Influence of Clinician-related Factors on Adherence to the AHA for Acute Coronary Syndrome

The clinical personnel have the knowledge on the Acute Coronary Syndrome Guideline and the majority have time to consult with colleagues when managing ACS cases. Galaviz et al. (2022) also found that peer pressure was positively correlated with advice practices and positively influence adherence to guideline-recommended. In addition, the majority had received training on Acute Coronary Syndrome Guidelines. The training had been done majorly through induction and job training and off-the-job training. Majority of the clinicians do not view referring to the guidelines as wasting their time and found it necessary to refer to the guidelines. The findings were consistent with the findings by Raz et al. (2018) who found that primary care physicians who were aware of the guidelines responded that the guideline compared with those who were unaware of guidelines.

There was a significant association between gender and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Consistent with the findings, in Japan Sasaki et al. (2020) revealed that gender had a significant association with adhering more to clinical guidelines. There was no significant association between age and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The findings differ from Francke et al., (2008) who established that age was more likely to be associated with adherence with the guidelines.

There was no significant association between education level and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The findings were in contrast to

the study in Japan by Sasaki et al. (2020) which included education level as having a significant association with adhering more to clinical guidelines. There was a significant association between work experience and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Similarly, the findings by Sasaki et al. (2020) included experience as having a significant association with adhering more to clinical guidelines. Consistently, Francke et al., (2008) linked work experience with adherence with the guidelines.

There was no significant association between specialization and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. There was a significant association between job cadre and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Corroborating with the findings Luz et al. (2020) found significant differences between adherence and the health provider-and-health-team-related factors.

There was a significant association between training received by the medical personnel on ACS guidelines and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Consistently, Sasaki et al., (2020) revealed that clinicians who had some form of speciality in the area of practice were likely to adhere to the guidelines compared to colleagues who had no speciality but had some form of training on the guidelines. In contrast, Raz et al. (2018) found no association between training background, years in practice and knowledge of guidelines.

4.7.3 Influence of Institutional Related Factors on Adherence to the AHA for Acute Coronary Syndrome

The hospital had the AHA guideline for Acute Coronary Syndrome management but some of the medical personnel were not aware of its availability. There was a significant association between the availability of the AHA guideline and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The findings demonstrate that the AHA guideline for the management of ACS is not readily accessible to healthcare workers. There was a significant association between the accessibility of the AHA guideline and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The findings agree with Mitheu et al. (2019) and Olajide, et al. (2020) found that health facilities that do not have easily accessible guidelines and standard operating procedures for use by healthcare workers tend to have poor adherence.

The hospital offer training on the management of ACS. The types of training provided by the hospital were ACLs training, CMEs and other types of training such as Basic Life support (BLS) training. The training was mostly offered once in two years. The study further found that there was a significant association between training on the management of ACS by the hospital and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Consistent with findings other scholars such as Fischer et al. (2016) and Jiang et al. (2020) revealed that clinicians who had been trained on the guidelines are likely to adhere to them in clinical practice compared to their counterparts who encountered them in clinical practice without any form of training.

The challenges encountered in implementing the AHA Guidelines were; lack of funds, inadequate equipment/setup and tools like automated external defibrillators, interpretation of electrocardiograms (ECGs), lack of personnel and lack of medicines-like aspirin and Nitroglycerin. Similarly, Jiang et al., 2020) found that a lack of the appropriate medications and equipment like ECG machines and invasive procedure equipment contributed to a lack of adherence. In addition, other challenges included the lack of a designated team thus everyone manages differently, the lack of easy charts to refer to when in need and the lack of a catheterization laboratory in the facility. The clinicians are usually not provided with all the resources for the management of the patients. A lack of resources and personnel means that there is a high waiting time. Mugoh, Kabiru and Mwaniki (2016) found that waiting time at the facilities caused by the workload was a key factor influencing adherence. Consistent with the findings, Baradaran-Seyed et al. (2013) on the barriers of clinical practice guidelines development and implementation in developing countries revealed that practice environment theme, resources and equipment were the key barrier.

The resources that lack most of the time are medications, equipment and non-pharmaceuticals. The listed medications were: morphine, nitroglycerine, aspirin and anti-coagulants (MONA). The equipment that lacked the most were listed as x-ray, defibrillators, AED, and cardiac beds. The other resources that were indicated by the respondents were a lack of well-trained human resources and Ambu bags. There was a significant association between the provision of resources for the management of the patients and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Similarly, Ashraf et al. (2021) found an association between readily available resources and increased DAPT adherence.

The findings showed that the hospital was not well staffed to handle all the cases of ACS following guidelines. In addition, there is a significant association between hospital staffing and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The findings corroborate Almazrou et al. (2020) and Jiang et al. (2020) who found that a high workload makes the clinicians focus more on clearing the queue and end up not adhering to every detail of the standard guidelines. In addition, Gikunda et al. (2021) found that the overall model of health system-related factors was found to be associated with adherence.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

The chapter summarizes the findings of the study. The sections provided in the chapter are; a summary of the major findings, conclusions, recommendations and suggestions for further studies.

5.2 Summary of Major Findings

5.2.1 Level of Adherence with the AHA Guidelines for Acute Coronary Syndrome

The study revealed that AHA Acute Coronary Syndrome Guideline is not fully adhered to among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Out of the total respondents (n=96), 68 (70.8%) responded Yes while 28 (29.2) responded NO to whether they adhered to ACS guidelines. On to the extend of adherence, half (50%) indicated that they moderately adhered to the guidelines while 43.8% indicated a low adherence and 6.3% indicated a high adherence. A majority of the clinical personnel (66.7%) usually refer to the AHA guidelines when managing ACS patients and adhere to the AHA guidelines (70.8%). The study further found that referring to the guidelines keeps the clinicians posted on the latest management of the illness, ensures proper management for the best outcome, makes the procedure more precise and enables the clinicians to avoid mistakes. The clinical personnel record patient's history and do physical examinations of patients arriving with chest pains. The majority of the clinical personnel obtain a 12-Lead electrocardiograph (ECG) on all patients with chest pains and advise patients with ACS to continue with Aspirin tablets on discharge home. However, the majority of the respondents do not give Aspirin to patients arriving with chest pain or use MONA (morphine, oxygen, nitroglycerin, aspirin) in the management of ACS. All the clinical

personnel check for blood pressure and SPO2 in a patient. A greater majority check for pulse rate, respiratory rate and temperature while three-quarters of the respondents indicated that they check for random blood sugar in a patient.

5.2.2 Influence of Clinician-related Factors on Adherence to the AHA Guidelines for Acute Coronary Syndrome

The clinical personnel have knowledge on the Acute Coronary Syndrome Guideline and the majority have time to consult with colleagues when managing ACS cases. In addition, the majority had received training on Acute Coronary Syndrome Guidelines through ACLS and CMEs. Majority of the clinicians do not view referring to the guidelines as wasting their time and found it necessary to refer to the guidelines.

There was a significant association between gender and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya (α=0.025). There was no significant association between age and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(α=0.178). There was no significant association between education level and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(α=0.439). There was a significant association between work experience and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(α=0.016). There was no significant association between specialization and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(α=0.489).

There was a significant association between job cadre and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(ɑ=0.014). There was a significant association between training received by the medical personnel on ACS guidelines and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(ɑ=0.06).

5.2.3 Influence of Institutional Related Factors on Adherence to the AHA Guidelines for Acute Coronary Syndrome

The hospital had the AHA guideline for Acute Coronary Syndrome management but some of the medical personnel were not aware of its availability. There was a significant association between the availability of the AHA guideline and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(ɑ=0.000). The findings demonstrated that the AHA guideline for the management of ACS is not readily accessible by healthcare workers. There was a significant association between the accessibility of the AHA guideline and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(ɑ=0.002).

The hospital offer training on the management of ACS. The types of training provided by the hospital were ACLs training, CMEs and other types of training such as Basic Life support (BLS) training. The ACLS training was offered once in two years as recommended. There was a significant association between training on the management of ACS and adherence to the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya

(ɑ=0.022). The challenges encountered in implementing the AHA Guidelines were lack of funds, inadequate equipment/setup and tools like an automated external defibrillator, interpretation of electrocardiograms (ECGs), lack of personnel, lack of medicines-like aspirin and Nitroglycerin, no guideline available, lack of designated team thus everyone manages differently, lack of easy charts to refer to when in need and lack of a specialized laboratory investigations in the facility.

The clinicians are usually not provided with all the resources for the management of the ACS patients. The resources that lack most are medications, equipment and non-pharmaceuticals. There was a significant association between the provision of all the resources for the management of the patients and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(ɑ=0.004). The findings showed that the hospital was not well staffed to handle all the cases of ACS following guidelines. In addition, there is a significant association between staffing and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya(ɑ=0.000).

5.3 Conclusions

The study concludes that AHA Acute Coronary Syndrome Guideline is not fully adhered to among clinicians at Kenya Ports Authority Clinics in Mombasa, Kenya. However, the majority of the clinicians usually refer to the AHA guidelines when managing ACS patients and also adhere to the AHA guidelines. Referring to the guidelines keeps the clinicians posted on the latest management of the illness to ensure proper management for the best outcome.

There was a significant association between gender and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya

Ports Authority clinics in Mombasa, Kenya. However, the association was insignificant between age, education level, specialization and adherence with the AHA guidelines. There was a significant association between work experience, job cadre and training received on ACLS and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. There was no significant association between specialization and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

The study concludes that the associations between the availability and accessibility of the AHA guideline and adherence among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya were significant. There was a significant association between training on the management of ACS by the hospital and adherence with the AHA guidelines for ACS among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. The hospital was not well staffed to handle all the cases of ACS following guidelines and the association between staffing of the hospital and adherence with the AHA guidelines for ACS was significant. There was a significant association between the provision of the resources for management of the patients and adherence with the American Heart Association guidelines for Acute Coronary Syndrome among the clinicians. The hospital encountered some challenges in implementing the AHA Guidelines including lack of supplies, inadequate equipment/setup and tools like an automated external defibrillator, interpretation of electrocardiograms (ECGs), lack of personnel, lack of medicines-like aspirin and Nitroglycerin.

5.4 Recommendations

The KPA should increase budget for the medical facilities to ensure adequate resources for ACS management like medications, equipment like defibrillators and AEDs as well as adequate staffing.

To improve adherence with AHA guidelines for ACS, Medical Division management should ensure that medications such as aspirin, morphine, nitroglycerine and other resourses are readily available at the point of use or care points in the clinics.

The KPA Clinics should formulate a simple algorithm that outlines the steps to be taken when managing ACS patients for ease of reference. This should include assessment tools, diagnostic test reference charts, treatment algorithms and medication dosing charts.

The KPA Clinics should ensure that their equipment is well-maintained for optimum functionality and effective management of ACS patients. This includes developing standard operating procedures (SOPs) on the use of equipment such as ECGs, defibrillators and AEDs as well as instructions on maintenance and cleaning.

The study recommends that the KPA Medical management should provide adequate equipment and ensure that it is easily accessible to the clinicians and located in areas where it is most needed. The study recommends equipping laboratory with cardiac markers panel for early diagnosis.

Training was associated with adherence to the AHA guidelines and as such, KPA should continue offering training on the latest AHA guidelines for ACS to ensure that they are abreast with updated guidelines. In addition to ACLS, the clinicians should continue receiving updates from continuous medical education, refresher courses, and user manuals.

The study further recommends random audits as well as post care audits to assess adherence to ACS guidelines. This will ensure that in circumstances where adherence

was low, mitigations to facilitate adherence to guidelines will be instituted with the aim of improving similar future incidents thus improving care provision.

5.5 Suggestions for Further Research

The study was limited to the determinants of adherence to the American Heart Association Guidelines for Acute Coronary Syndrome among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Further studies should assess the determinants of adherence to the AHA guidelines for ACS among clinicians in other hospitals in Kenya as well as to assess the determinants of adherence to other specific guidelines for Non Communicable diseases among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

The study assessed the influence of clinician-related factors and institutional-related factors on adherence with the AHA guidelines for ACS among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya. Further studies should assess other factors related to adherence with the AHA guidelines for ACS among clinicians at Kenya Ports Authority clinics in Mombasa, Kenya.

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APPENDICES

Appendix I: Informed Consent Form

Introduction: My name is Mary Kavinya Mailu, a postgraduate student pursuing a Master of Science Degree in Critical Care Nursing (MScN. CCN) at Mount Kenya University. As part of my thesis research, I request you to complete the attached questionnaire as this will enable me to accomplish this study.

Title of the study: "*Determinants of adherence to the American Heart Association (AHA) guidelines for Management of Acute Coronary Syndrome (ACS) among Clinicians at Kenya Ports Authority Clinics Mombasa, Kenya."*

Purpose of the study: The purpose of the study is to assess determinants of adherence to the American Heart Association (AHA) guidelines for the management of Acute Coronary Syndrome (ACS) among clinicians (Doctors, Nurses and Clinical Officers) at Kenya Ports Authority Clinics Mombasa, Kenya.

Benefits of the study: The study results will help raise awareness within the institution of the obstacles that must be overcome thus help KPA management to understand the areas of improvement towards its support to clinicians' management of ACS. This will in turn assist in the provision of adequate resources needed to improve the care of patients with ACS.

Confidentiality: All the information provided in this study will only be used for academic purposes and shall be treated as confidential

Informed consent to participate in this research.

Kindly tick as appropriate

[ ] I voluntarily give consent to participate in this research

[ ] I decline to participate in this research

Thank you for your cooperation and taking your time to fill and complete the questionnaire.

Yours sincerely,

Mary Kavinya Mailu

Student Mount Kenya University, Kenya

Contact: 0722839226

Appendix II: Questionnaire

Serial Number …… Date ……

INSTRUCTIONS

Please follow the instructions below

i. Please tick in the appropriate response in the space provided

ii. Do not indicate your name anywhere in the questionnaire.

Section A: Clinician Related Factors

1. What is your age Bracket (Years)

   ( ) 20-30

   ( ) 31-40

   ( ) 41-50

   ( ) Over 50

2. Gender

   [ ] Male

   [ ] Female

3. What is your education level?

   [ ] Diploma

   [ ] Bachelor's degree

   [ ] Master's Degree

4. What is your work experience in years?

   [ ] Less than 5 years

   [ ] 5-10 years

   [ ] Over 10 years

5. Do you have any specialization?

[ ] Yes

[ ] No

6. What is your cadre?

[ ] Medical doctor

[ ] Nursing Officer

[ ] Clinical officer

7. Do you usually have time to consult with colleagues when managing ACS cases?

[ ] Yes

[ ] No

8. Do you have knowledge on the Acute Coronary Syndrome Guideline?

[ ] Yes

[ ] No

9. Have you received training on Acute Coronary Syndrome Guideline?

[ ] Yes

[ ] No

10. If yes in 9 above, how were you trained?

[ ] Induction

[ ] On the job

[ ] Off the job

11. Do you think referring to the guidelines wastes your time?

[ ] Yes

[ ] No

12. Do you think it is necessary to refer to the guidelines?

[ ] Yes

[ ] No

13. Explain your answer above_____

_____

____

_____

____

_____

____

Section B: Hospital Related Factors

14. Does the hospital have the AHA ACLS guideline for management of ACS?

[ ] Yes

[ ] No

15. Is the above guideline readily accessible by healthcare workers?

[ ] Yes

[ ] No

16. Does the hospital offer training on the management of ACS?

[ ] Yes

[ ] No

17. What type of training?

[ ] CMEs

[ ] ACLS training

[ ] Others specify_____

18. How frequently are the above trainings offered?

    [ ] Once in a year

    [ ] Twice in a year

    [ ] Once every Month

    [ ] Once every 2 years

    [ ] Others, Specify_____

19. What challenges do you encounter in following/implementing ACS guidelines?

    _____

    _____

    _____

    _____

20. Are you usually provided with all the resources for management of these patients?

    [ ] Yes

    [ ] No

21. If **NO**, which ones lacks most of the times?

    [ ] Non-pharmaceuticals, Specify_____

    [ ] Medications, Specify_____

    [ ] Equipment, specify _____

    [ ] Others, specify _____

22. Do you think you are well staffed to handle all the cases of ACS following guidelines?

[ ] Yes

[ ] No

Section C: Adherence

23. Do you usually refer to the AHA guidelines when managing ACS patients?

    [ ] Yes

    [ ] No

24. Do you adhere to the AHA Acute coronary Syndrome Guideline?

    [ ] Yes

    [ ] No

25. To what extent do you adhere to the AHA Acute Coronary Syndrome Guideline?

Low extent	Moderate	High extent

26. Chose as appropriate

	Yes	No
I give Aspirin to patients arriving with chest pain		
I advise Aspirin at discharge to patients diagnosed with ACS		
I record patients history		
I do physical examination of patients arriving with chest pains		
I obtain a 12-Lead electrocardiograph (ECG) on all patients with chest pains		

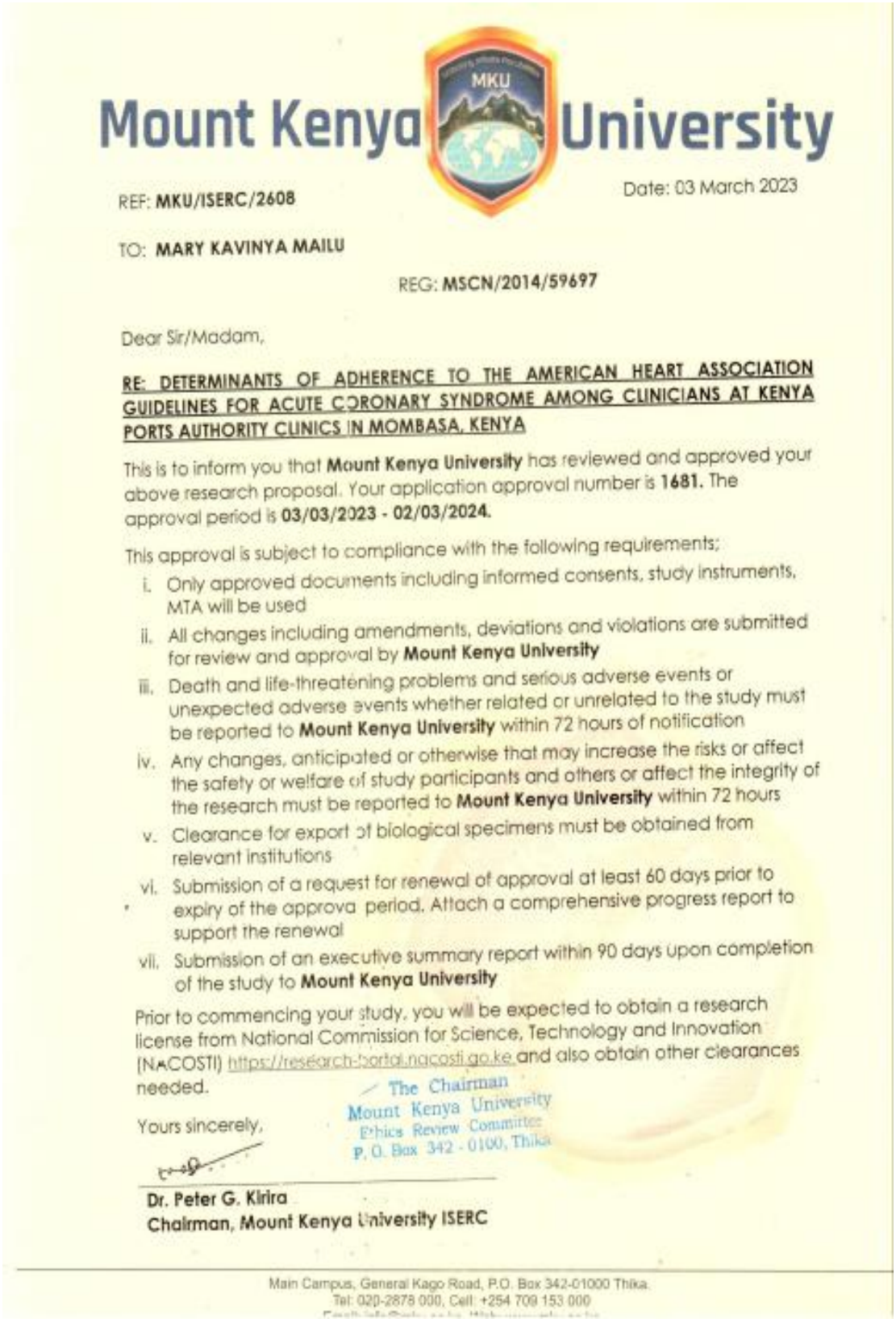
I use MONA(morphine, oxygen, nitroglycerin, aspirin) in the management of ACS		

27. Chose the Vital signs that you check in a patient.

S/No	Vital Signs	Yes	No
i.	Blood Pressure		
ii.	Pulse Rate		
iii.	Respiratory Rate		
iv.	SPO2		
v.	Temperature		
vi.	Random Blood Sugar		

Thank you for participating in this study

Appendix III: ERC Letter



Mount Kenya University

REF: **MKU/ISERC/2608**

Date: 03 March 2023

TO: **MARY KAVINYA MAILU**

REG: **MSCN/2014/59697**

Dear Sir/Madam,

RE: DETERMINANTS OF ADHERENCE TO THE AMERICAN HEART ASSOCIATION GUIDELINES FOR ACUTE CORONARY SYNDROME AMONG CLINICIANS AT KENYA PORTS AUTHORITY CLINICS IN MOMBASA, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1681.** The approval period is **03/03/2023 - 02/03/2024.**

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 **Mount Kenya University**
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 **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approva 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 **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

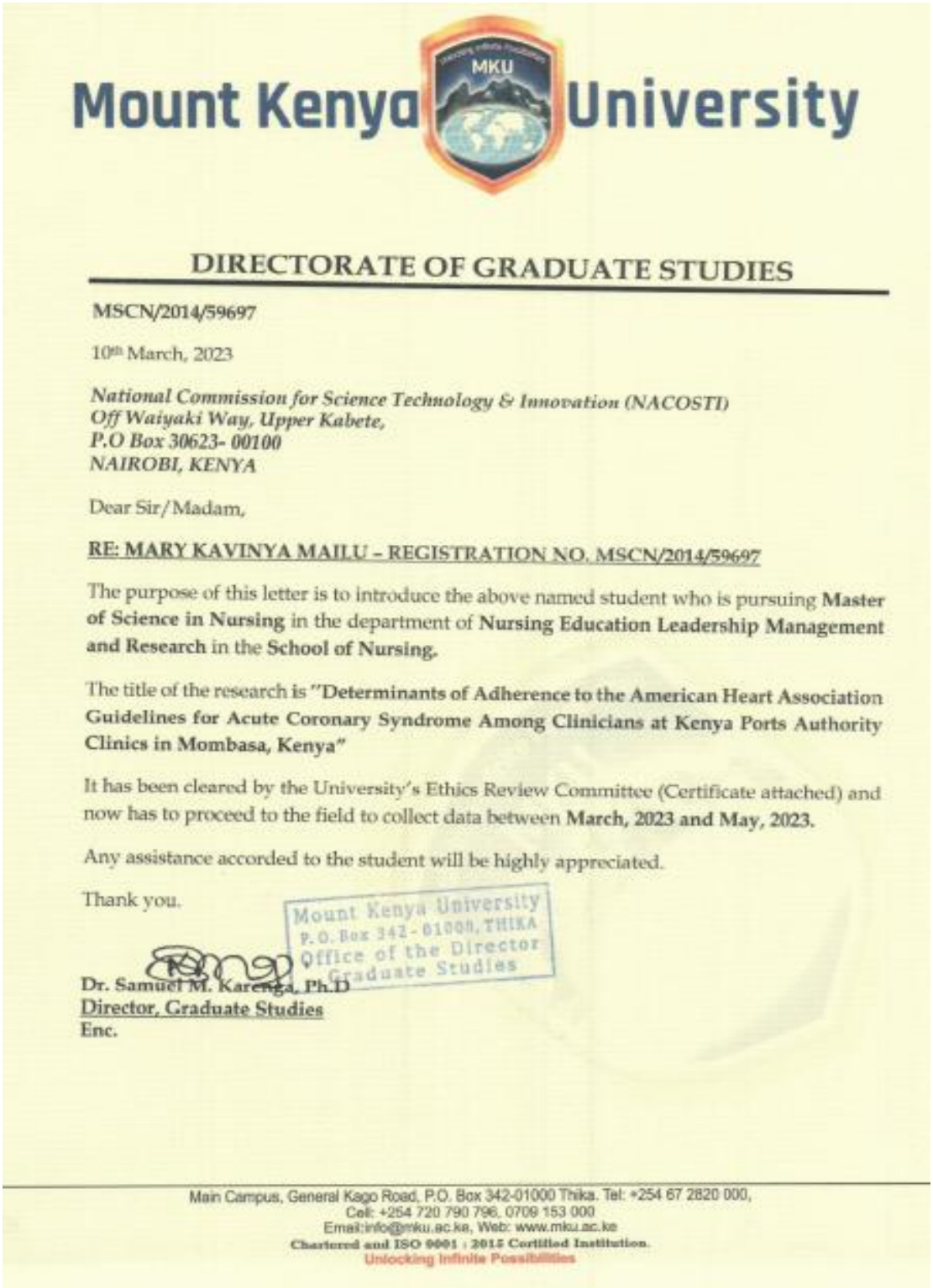
The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

Yours sincerely,

Dr. Peter G. Kirira
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika
Tel: 020-2878 000, Cell: +254 709 153 000

Appendix IV: Introduction Letter



Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MSCN/2014/59697

10th March, 2023

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: MARY KAVINYA MAILU – REGISTRATION NO. MSCN/2014/59697

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Nursing** in the department of **Nursing Education Leadership Management and Research** in the **School of Nursing.**

The title of the research is **"Determinants of Adherence to the American Heart Association Guidelines for Acute Coronary Syndrome Among Clinicians at Kenya Ports Authority Clinics in Mombasa, Kenya"**

It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **March, 2023 and May, 2023.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342-01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Appendix V: NACOSTI Authorization

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 288200

Date of Issue: 18/April/2023

RESEARCH LICENSE

This is to Certify that Miss.. MARY KAVINYA MAILU of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa on the topic: DETERMINANTS OF ADHERENCE TO THE AMERICAN HEART ASSOCIATION GUIDELINES FOR ACUTE CORONARY SYNDROME AMONG CLINICIANS AT KENYA PORTS AUTHORITY CLINICS IN MOMBASA, KENYA for the period ending : 18/April/2024.

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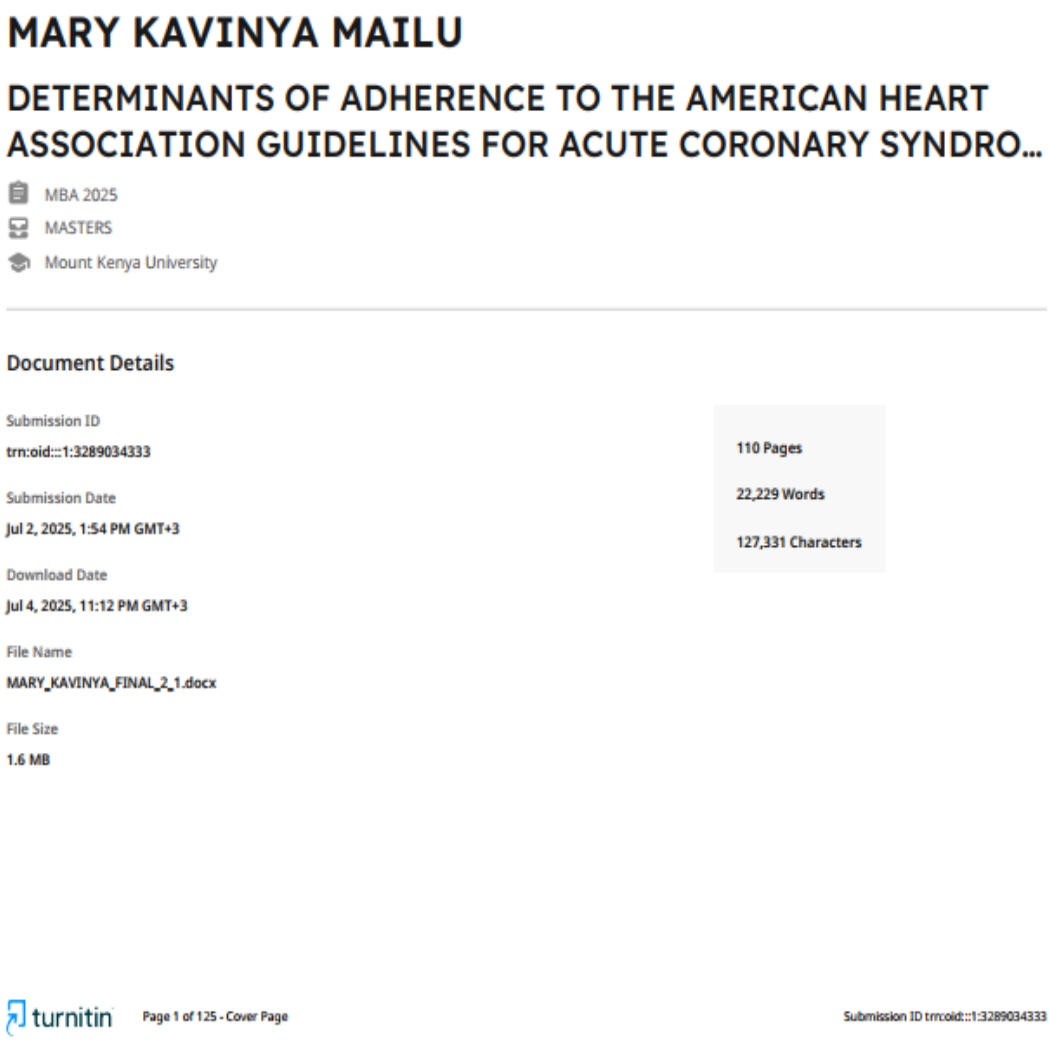

MARY KAVINYA MAILU

DETERMINANTS OF ADHERENCE TO THE AMERICAN HEART ASSOCIATION GUIDELINES FOR ACUTE CORONARY SYNDRO...

MBA 2025

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Mount Kenya University

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