ASSESSMENT OF THE REFERRAL PROCESS FOR EMERGENCY OBSTETRIC CARE IN BASIC FACILITIES IN BUNGOMA COUNTY, KENYA

BY

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A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR THE REQUIREMENT OF THE AWARD OF A MASTER OF SCIENCE IN MIDWIFERY FROM MOI UNIVERSITY.

DECLARATION

Student Declaration

I declare that this thesis is my own work and has not been presented in any other University/Institution for consideration of any accreditation. This thesis has been complemented by referenced sources that are appropriately acknowledged.

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Supervisors Declaration

The undersigned confirm that they have read this thesis and hereby recommend for acceptance by Moi University a research thesis entitled "**Assessment of the Referral Process for the Emergency Obstetric Care in Basic Facilities in Bungoma County, Kenya.**"

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DEDICATION

This Master's Thesis is dedicated to my Dad, the late Mzee Simeon Khisa Wamalwa, his resilience and sacrifice are forever remembered, May His soul RIP.

To my immediate family and the entire Mzee Simeon Wamalwa family for your continued support and inspiration. God bless you all.

ABSTRACT

Background: Emergency Obstetric Care (EmOC) refers to a package of essential healthcare services that should be available to all women during pregnancy, labour and after birth. Women who develop obstetric complications should access timely and appropriate care, including referral so as to prevent pregnancy-related morbidities and mortalities, which has largely been attributed to delays and poor management in the healthcare referral system. The World Health Organization highlights that any inability in the referral system to securely transport pregnant women to an appropriate level of care with competent personnel when complications arise can have adverse effects on maternal and fetal outcomes.

Objectives: The study objectives included: to determine the influence of communication and transport on the emergency obstetric referral process; to assess the perceived competence on the use of emergency obstetric signal functions among healthcare workers; to determine the availability of supplies and equipment in the provision of EmOC; and to assess client satisfaction with obstetric emergency referral care from level 3 and 4 facilities in Bungoma County.

Methods: A cross-sectional design was adopted. The study was conducted in Bungoma County from August 2022 to December 2022. Multistage sampling was used, comprising of stratified random sampling (for levels of healthcare - levels 3 and 4 facilities) and simple random sampling (for healthcare workers and women participants). The study participants included healthcare workers (n=161) in Level 3 and 4 obstetric units, and women (n=379) with obstetric emergencies referred from these facilities. Data was collected using questionnaires and observation checklist. Data was analyzed using descriptive statistics, including measures of central tendency and inferential statistics as applicable, and presented in summary tables.

Results: Effective communication and transport was strongly associated with quality EmOC during referral process (linear regression coefficient, T=3.24, p=0.001); healthcare workers' perceived competence on the use of signal functions was statistically associated with the provision of quality EmOC (linear regression coefficient, T=7.15, p=0.003); the availability of supplies and equipment was also strongly associated with the quality of EmOC services (Chi-square value=240.05, p=0.002); Clients' overall satisfaction with the referral process had a significant relationship with the quality of EmOC services (logistic coefficient value=0.088, p=0.002). Overall, the findings were statistically significant, highlighting a significant association between the study variables and the quality of EmOC services during obstetric referral process.

Conclusion: Effective communication and transport, healthcare workers' perceived competence on EmOC signal functions, and the availability of supplies and equipment have a direct influence on the referral process of emergency obstetric care, and the overall client satisfaction. Clients' (women) satisfaction was positively associated with Quality EmOC services during referral process.

Recommendations: The study recommends that the county ensures effective communication and transport mechanisms and constant availability of supplies and functional equipment for obstetric referrals; ensure regular support supervision and continuous professional development to enhance HCWs competence on EmOC signal functions; and to improve the overall emergency obstetric referral care in basic facilities so as to meet clients' expectations/satisfaction. A qualitative study is also warranted to provide in-depth understanding of clients' experiences and/or salient issues on satisfaction.

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ABBREVIATIONS AND ACRONYMS

ANC	Antenatal care
BEMOC	Basic Emergency Obstetric Care
CEMOC	Comprehensive Emergency Obstetric Care
EMONC	Emergency Obstetric & Neonatal Care
HCW	Health Care Worker
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MNHK	Maternal and Neonatal Health Kenya
MOH	Ministry of Health
NACOSTI	National Commission for Science Technology and Innovation
PET	Pre Eclamptic Toxaemia
PPH	Postpartum Hemorrhage
SBA	Skilled Birth Attendant
SPSS	Statistical Package for Social Sciences
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

DEFINITION OF TERMS

Referral- An official process that directs a patient to obtain consultation or specialized care from an elevated health facility or Hospital.

Referral System-Is a mechanism through which a patient's medical requirements are helped and managed comprehensively using resources that are not available where they receive treatment from, of which can be a communal unit, dispensary, health Centre or a higher-level health facility.

Health Care System-A collection of Organization, Practitioners, and supporting work force, Facilities, terminologies, regulations and data that can provide and support the provision of health care for a population.

Continuum of Care-complete spectrum of services needed to support a population optimal health, including prevention, treatment and conservation.

Obstetric Emergencies-are conditions that are life threatening to pregnant women and their unborn babies at any time during pregnancy.

Emergency Obstetric Referral-this is referral of pregnant women with health problems that are life threatening.

Referring Facility-an initiating or community unit that starts the initial outward referral process by communicating the client's condition and status.

Receiving Facility- facility or unit that the initiating unit or facility refers clients or specimens to.

Client Satisfaction- A dimension that defines how happy a client is with the services and proficiencies of an institution or facility.

Quality of Care-the extent to which health services for individuals and populations increase the ability to support preferred health outcomes.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

One of the important aspects of healthcare facilities is the referral system, especially in the case of obstetric emergencies. Timely and appropriate emergency obstetric referral to a suitable health facility is an indicator of effective health systems. Implementation of a well-managed and functional referral system leads to quality health care (Sena *et al*, 2023).

Women who have emergency obstetric problems require timely and appropriate referral and should be attended to by skilled Health Personnel. Effective referral interventions seek to reduce delays in reaching the health facility for emergency obstetric care, and may contribute to reductions in adverse pregnancy and birth outcomes, including still births and in the prevention of maternal morbidities from the causes such as hemorrhages, pregnancy- induced hypertension, obstructed labour, sepsis and complications associated with botched abortions and maternal deaths in LMICs (Alaofe *et al*, 2020).

A referral is a process in which a health worker at one level of a health system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in, or take over the management of the client's case. Referral is therefore, used to indicate the recommendation from a health care professional at a lower level of the health care system, when resources (medicine, equipment and qualified health care providers) are limited (WHO, 2022).

Due to the unpredictable nature of pregnancy and the potential for the rapid progression to endangering the mother's life, an emergency referral system is indeed an integral part of safe maternal care required (Hussein *et al,* 2019).

The World Health Organization highlights through the efforts of the safe motherhood initiative that any inability in the referral system to securely transport pregnant women to an appropriate level of care with competent personnel when complications arise can have disastrous effects on the maternal and fetal outcomes (Anita *et al,* 2020).

Effective health care systems are characterized by timely and appropriate obstetric referral to a higher level of specialized care facility. It is also a crucial part of the health care system. According to the World Health Organization, all women should be assessed properly on arrival at the health facility in order to determine whether they can be treated or managed, if not they should be quickly transferred to an advanced level of care according to the standard referral protocols. One predicament in solving the burden of maternal mortality is that most women don't receive timely emergency obstetric care (WHO, 2022).

While most women have normal pregnancies and safe deliveries, un anticipated obstetric complications and emergencies sometimes occur that need timely referral. The utility and purpose of referral is especially important in pregnancy and child birth, because a wide range of possibly fatal issues necessitate management and skills that are accessible at higher levels of care. Safe motherhood methods clearly emphasize the importance of prompt referral by frontline maternity health care providers and appropriate hospital care. Emergency obstetric care is critical especially for pregnant women who are likely to experience life-threatening maternal and /or neonatal problems (Ofosu *et al,* 2021).

Over the years, helpful process indicators have been established to evaluate availability, accessibility and quality of Emergency Obstetric care that is provided as well as access to other services. Access to appropriate level of care through a referral system is a complicated process and has remained a global public health issue (Alaofe *et al*,2020).

Kenya has a high maternal morbidity and mortality rates. According to the Kenya Demographic Health Survey (2022), approximately four women die during the maternity period for every 1000 live births. The Kenya National Commission on Human Rights (KNCHR, 2012), estimated that for every one maternal death that occurs in Kenya, there is a corresponding serious injury or disability to another 20-30 women during childbirth. The problem of high morbidity and maternal mortality ratio can be attributed to delays and poor management in health Referral system, system failures that translate to poor quality of care, insufficient numbers of trained health care providers, shortage of essential medical supplies and poor accountability of health care system. (WHO, 2023).

Kenya's health system, like most other health systems, is hierarchical. It has six tiers as follows; Level-1 for Community services, level 2-Dispensaries and clinics, level 3 are Health Centres and Maternity Nursing Homes, level 4 are the Sub- County hospitals, level 5 are the County Referral hospitals, and level 6-National Referral Hospitals (KHSRIG,2014).

As the direct and primary causes of poor maternal health and mortality are complex, a number of interventions are crucial in order to attain the necessary reduction in maternal morbidity and mortality. Packages of interventions include; antenatal interventions such as, nutritional interventions, treatment of hypertensive disorders, treatment of diabetes mellitus and post term pregnancy. Intrapartum interventions include; general,

preterm labour, preterm rupture of membranes, newborn resuscitation and essential newborn care can have a significant effect if they are properly given across the continuum of care, from prenatal to post birth care as well as individual, family, community and facility level (Gulmezoglu *et al*, 2016).

Emergency obstetric care signal functions are significant medical and protective measures that are used as a treatment for obstetric complications, which account for the vast majority of maternal mortalities across the globe (Anita *et al*,2020). Basic Emergency Obstetric Care (BEmOC) facilities provide seven signal functions of life saving obstetric services. Emergency obstetric care (EmOC) services are provided at two points of the health system.

Basic Emergency Obstetric Care includes: Use of parenteral antibiotics, Administration of parenteral anti-convulsant (magnesium sulphate), Administration of uterotonics (oxytocin). Manual removal of the placenta, Performing removal of retained products of conception. Performing assisted vaginal delivery (e.g. by vacuum extraction) as well as performing newborn resuscitation, neonatal bag, and mask resuscitation.

All the signal functions are included in comprehensive Emergency Obstetric Care PLUS Performing surgery (carrying out Caesarean section), including administration of emergency obstetric anesthesia and the administration of blood and blood products.

Basic emergency care (BEmOC) should be accessible in all health facilities irrespective of their level in the health system. Pointers of Emergency obstetric care are critical for guiding the strategies that are put in place to successfully reduce maternal and neonatal mortalities (C. Ameh *et al*, 2020)

Most deliveries in Kenya occur in level 3 and 4 facilities. The Kenya Demographic Health Survey (2014) reports that almost 62% of all Kenyan deliveries occur in health

facilities with most happening in lower-level health facilities, which are the most accessible for a majority of households. Therefore, the prevention of maternal morbidity and mortality is mostly significant in lower-level health facilities where most childbirth occurs. A critical intervention in curbing maternal deaths and complications in lower cadre health facilities is the timely referral of potentially life-threatening cases (Rafiat *et al*, 2021).

Healthcare providers play an essential role in the health referral system and by extension, in the aversion of maternal deaths and complications. It is the healthcare professionals, through their clinical judgments who determine the necessity of referral of any obstetric case. Provider related gaps were identified in the referral process; among the gaps include failure of recognition of danger signs, inappropriate pre referral intervention, failure in alerting the receiving referral hospitals, inability to maintain the critically ill mothers while on transit to the and inability to properly document referral cases. This concludes that proper engagement of healthcare providers is necessary for the mitigation of these gaps (Afari *et al* 2014).

While it is important to manage and control the maternal morbidity and mortality that prevail in the low- and middle-income Countries, the Universal Health coverage goal stresses that the health care systems must also be designed to offer care whose goal aims at meeting the needs of the women, (WHO, 2022).

Considering a multidimensional aspect, patient satisfaction is key in terms of provision of quality of care. During child birth, satisfaction of care is a phenomenon consisting of various aspects as the client may be satisfied with one aspect of care but not with another considering the experiences may change across different care providers' components. Conducting patient's satisfaction surveys in daily practice can give a

general patient's perception on services provided to them hence help to unearth gaps in the quality of care delivered during referral (Kanyesigye *et al*, 2022)

1.2 Problem Statement

According to World Health Organization report, two thirds of maternal deaths globally occurred in Sub Saharan countries, latest figure being nearly 1.5 times higher than that of the global average and far below the target of 70 per 100,000 live births to be achieved by the year 2030 (WHO, 2022).

According to ANC approach of the World Organizations (2018), all pregnant women are at risk and are to go for timely attention and get skilled attendance in their prenatal, intra and post-natal periods. Recommendations also include health system interventions to improve the utilization and quality of ANC and Women's' positive experiences. The government of Kenya has made significant strides towards reduction of maternal and neonatal deaths. These have mostly aimed at increasing coverage of facility-based services which include ANC increased hospital deliveries and offering of BEmOC service. The standard practice for referral process includes identification of appropriate facility, communicating with the receiving facility, providing feedback, documenting the referral, providing transportation as well as escorting the patient. Since devolution, a lot of progress has been made in Bungoma County in providing necessary drugs, supplies and equipment, skilled health personnel and ambulances for emergency transport. Despites the efforts to enhance the quality of the referral system for better outcomes, gaps are still noted in the referral process for emergency obstetric in the basic facilities in Bungoma County. This includes poor communication and transportation, poor coordination among staffs in different levels of care during referral, not following the clinical criteria for referral, poor referral documentation, un necessary delays knowledge and skills gaps in the intervention of signal functions, inadequacy of

supplies and equipment material and poor experiences by women during pregnancy and labour. This was a key pointer reflective of the quality of the referral process and that there's need to raise awareness of obstetric care at the basic care facilities, which need to be ascertained, monitored and improved **(**Usman *et al*, 2023).

This study therefore aimed at assessing the referral process and client satisfaction for emergency obstetric care in basic facilities in Bungoma County.

1.3 Justification of the Study

Despite the fact that active referral constitutes an important element of effective emergency obstetric care, very few research studies have tested the referral functions mainly from the viewpoint of basic facilities (sender facilities), (Moxon *et al*, 2024). Observations made on emergency obstetric referral in Bungoma County is seen to have inadequacies in the referral mechanism; that need to be addressed. The general objective of this study was to assess the referral process for the emergency obstetric care in basic facilities in Bungoma County as a major index to the corrective action in a way of combating maternal morbidity and mortality.

1.4 Significance of the Study

It is anticipated that the results of this study would be used to address the related challenges in the referral process, bring an improved and effective referral system and standard practice to enhance overall performance of emergency obstetric services and better maternal and fetal outcomes. It will also enhance close relationships between all levels of care and individuals to receive best possible care. The study findings will inform nursing and midwifery practice, allowing the provision of quality services during emergency obstetric referral process. It will also enable policy makers to make informed decisions in formulating appropriate health policies in the County.

1.5 Research Objectives

1.5.1 General Objective

The general objective of the study was to assess the referral process for the emergency obstetric care in basic facilities in Bungoma County.

1.5.2 Specific objectives

i. To determine influence of communication and transport on the quality of emergency obstetric care during referral from basic facilities in Bungoma County
ii. To assess the perceived competence on the use of emergency obstetric signal functions among healthcare workers in basic facilities in Bungoma County
iii. To determine the availability of supplies and equipment in the provision of Emergency obstetric care during referral in the basic facilities in Bungoma County.
iv. To assess the client satisfaction with the care during the emergency obstetric referral from basic facilities

1.6 Research Questions

i. Does communication and transport influence the quality of emergency obstetric care during referral of clients from basic facilities in Bungoma County?
ii. What is the perceived competence on the use of emergency obstetric signal functions among health care providers working in the basic facilities in Bungoma County?
iii. What is the availability of supplies and equipment in the provision of emergency obstetric care during referral in the basic facilities in Bungoma County?
iv. What is the client satisfaction with the care during the emergency obstetric referral from basic facilities in Bungoma County?

1.7 Hypothesis

1.7.1 Null hypothesis

H0: Transport and communication, perceived competence of HCWs in provision of signal functions and availability of drugs and equipment do not influence provision of quality emergency obstetric care during referral in basic facilities in Bungoma County

1.7.2 True hypothesis

H1: Transport and communication, perceived competence of HCWs in the provision of signal functions, and availability of drugs and equipment influence the provision of quality emergency obstetric care during referral in basic facilities in Bungoma County.

1.8 Conceptual Framework

When the health system and providers meet individual's expectations, it ensures the provision of quality services. The health system factors include transport and communication, competence of skilled HCWs, availability of drugs and other supplies, and readily available and functional equipment. An individual's satisfaction with health care involves own evaluation of health care services and collaboration with the care providers; (Sawyer *et al*, 2013).

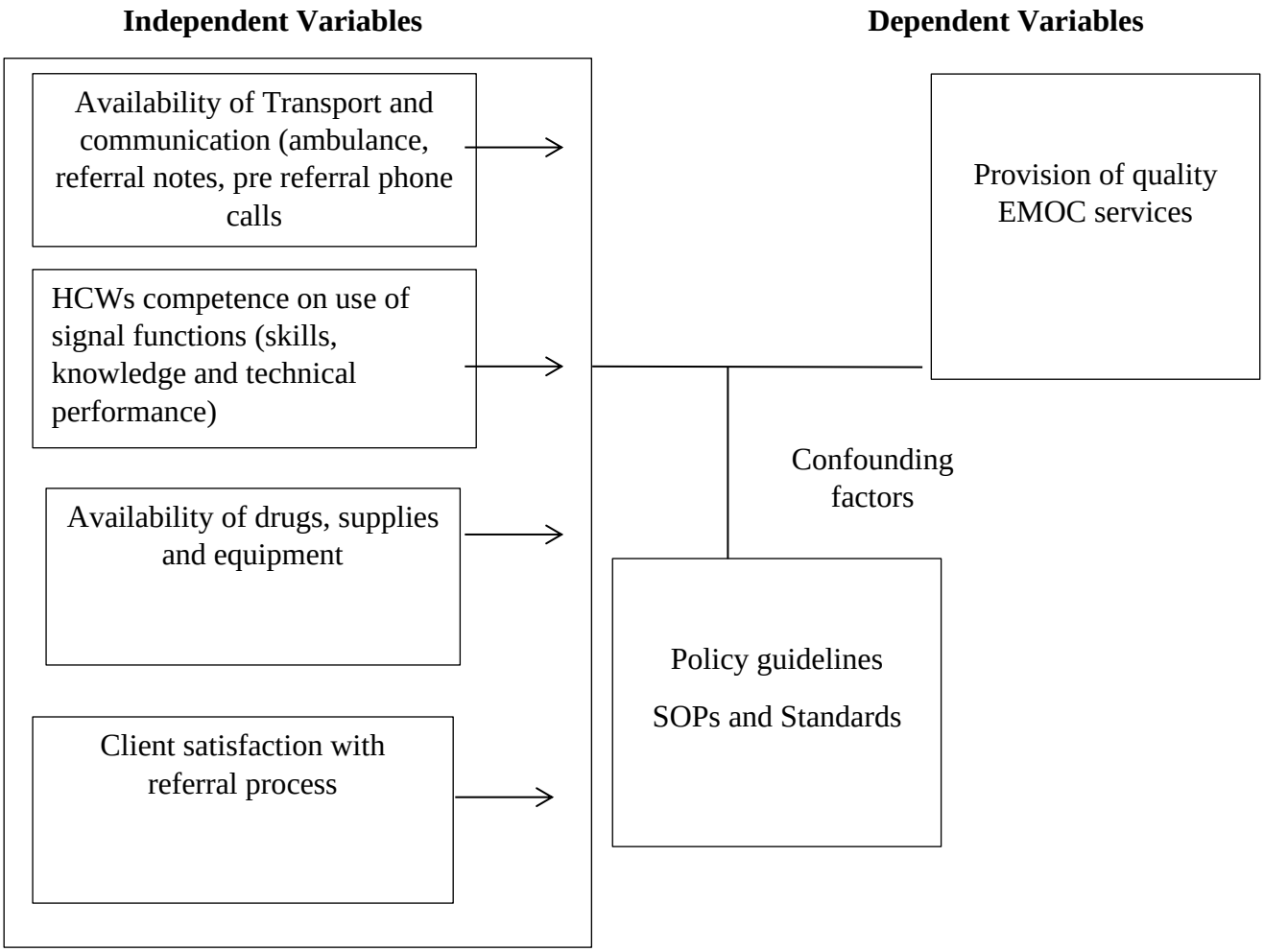

Figure 1: Conceptual framework of determinants of provision of quality emergency obstetric care during referral**(Adopted from Chaturvedi et al., 2014)**

1.9 Theoretical Framework

Health Systems Strengthening (HSS) Theory

Health Systems Strengthening (HSS) has emerged as a vital framework in global health, aimed at improving health outcomes and achieving equity in healthcare access. This theory emphasizes the importance of integrated and effective health systems that can respond to the needs of populations, particularly in low-resource settings. The purpose of this review is to explore the key components of HSS, the challenges faced, and successful case studies that illustrate its implementation.

The WHO’s 2007 framework, "Everybody's Business," outlines a comprehensive approach to strengthening health systems to improve health outcomes, underscoring the necessity of a coordinated response to health challenges (World Health Organization, 2007).

The health workforce is another critical component of HSS. A well-trained and adequately resourced workforce is essential for delivering quality healthcare services. Strategies for workforce training, retention, and professional development are crucial in addressing health system challenges.

Communication Theory

Communication Theory plays a critical role in healthcare, as it underpins the interactions between healthcare providers, patients, and the broader healthcare system. Effective communication is essential for the delivery of quality care, particularly in high-stakes environments such as emergency services. This theory posits that the exchange of information significantly impacts patient outcomes, satisfaction, and overall healthcare efficiency.

At its core, Communication Theory emphasizes the importance of clear, accurate, and timely information dissemination. In healthcare settings, miscommunication can lead to delays in treatment, medication errors, and even adverse health outcomes. Research has shown that effective communication among healthcare professionals fosters teamwork and collaboration, essential components for delivering quality care.

Coordination among these groups is essential for implementing health initiatives and addressing systemic challenges. For example, a study by Kislov et al. (2018) highlights how effective communication strategies can improve stakeholder engagement and resource allocation in health programs, ultimately enhancing health system

performance. In summary, Communication Theory provided a valuable framework for understanding the dynamics of information exchange in health facilities.

Client Satisfaction Theory

Client Satisfaction Theory is a critical framework in healthcare that posits patient satisfaction as an essential indicator of the quality of care received. It emphasizes that the experiences and perceptions of patients significantly influence their overall satisfaction with healthcare services. This theory is grounded in the understanding that satisfied patients are more likely to adhere to treatment recommendations, maintain ongoing relationships with healthcare providers, and engage in positive health behaviors, ultimately leading to improved health outcomes.

One of the core tenets of Client Satisfaction Theory is that patient satisfaction encompasses various dimensions, including the quality of care, the interpersonal relationships with healthcare providers, the physical environment of the healthcare facility, and the accessibility of services. For instance, a patient's perception of the competence and empathy of healthcare workers can greatly affect their satisfaction level. Research has shown that when healthcare providers communicate effectively, show compassion, and involve patients in decision-making, patients report higher satisfaction levels (Otani et al., 2017).

Furthermore, the theory highlights the importance of feedback mechanisms in healthcare settings. By actively soliciting patient feedback through surveys, interviews, or focus groups, healthcare organizations can gain valuable insights into the strengths and weaknesses of their services.

However, it is essential to recognize the factors that can influence patient satisfaction beyond the control of healthcare providers. Variables such as socioeconomic status,

cultural background, and previous healthcare experiences can shape a patient's expectations and perceptions. Consequently, understanding the diverse needs and backgrounds of patients is crucial for healthcare organizations striving to enhance client satisfaction. Tailoring services to meet the unique needs of different patient populations can lead to a more inclusive approach to care, ultimately improving satisfaction rates across diverse groups (Bardach et al., 2013).

In conclusion, Client Satisfaction Theory serves as a valuable framework for understanding the dynamics of patient experiences in healthcare settings. By emphasizing the multifaceted nature of satisfaction and the importance of feedback, this theory encourages healthcare providers to prioritize the patient experience. As the healthcare landscape continues to evolve, fostering patient satisfaction will remain vital to achieving high-quality care and improved health outcomes for all patients.

Competency-Based Education and Training Theory

Competency-Based Education and Training (CBET) Theory emphasizes the development of specific skills and knowledge necessary for effective performance in various professional contexts, particularly in healthcare. This educational approach is rooted in the idea that learners should achieve defined competencies, demonstrating their ability to apply what they have learned in real-world situations. CBET focuses not just on theoretical knowledge but also on practical skills, ensuring that learners can perform tasks effectively and with confidence.

One of the core principles of CBET is the alignment of educational outcomes with the needs of the workforce. In the healthcare sector, this means training professionals who can respond to the dynamic challenges of patient care. For instance, in emergency obstetric care, healthcare workers must be proficient in a range of signal functions, such

as managing complications during childbirth and performing life-saving procedures. By emphasizing competency, educational programs can better prepare healthcare workers to meet these demands and improve patient outcomes.

Assessment is a crucial component of CBET. It moves beyond standard testing methods to include practical evaluations that reflect real-life scenarios.

Furthermore, CBET fosters a culture of continuous improvement. As healthcare practices and technologies evolve, ongoing training becomes essential. Competency-based programs can incorporate regular updates and additional training modules, ensuring that professionals remain current with best practices. This adaptability is vital in healthcare, where new research and guidelines can significantly impact patient care.

The application of CBET in healthcare education has shown promising results. Studies indicate that competency-based training leads to improved performance among healthcare workers, which translates to better patient care. By equipping healthcare workers with the necessary skills and knowledge, CBET contributes to more efficient and effective health systems.

In conclusion, Competency-Based Education and Training Theory offers a robust framework for developing skilled healthcare professionals. By focusing on specific competencies, personalized learning, practical assessment, and continuous improvement, CBET addresses the complex needs of modern healthcare. As the demand for high-quality care grows, this study adopted CBET to assess the referral process for emergency obstetric care in basic facilities in Bungoma County.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

An effective and functional referral system leads to the provision of quality emergency obstetric care services in basic facilities, this chapter reviewed the existing evidence and gaps in the health care referral system of emergency obstetric care. Equity in health care provided through the referral health system, continuum of care, requirements for an efficient referral system, the referral system challenges, and how other countries' referral systems operate are all discussed.

This chapter is about literature on other research studies done on the Emergency Obstetric referral process in basic facilities. The literature review presented according to the study variables that included; Communication and transport, the perceived competence in the use of emergency obstetric signal functions among healthcare workers, the availability of supplies and equipment, and the client satisfaction with the care during the emergency obstetric referral from basic facilities. The literature sources included key journal articles from the internet, Google Scholar, HINARI, Pubmed, WHO, and KDHIS publications. The words used in the search were transport and communication during Emergency Obstetric referral, availability of drugs and equipment during Obstetric referral, competence in the provision of Emergency signal functions during Emergency Obstetric referral, and level of satisfaction during Emergency obstetric referral, Emergency obstetric referral system.

2.2 Overview of the Referral System in Kenya

The Kenyan health system is well spelled out, and it is recommended that it be applied through a referral system, which is a network of facilities arranged in a pyramidal pattern. The teaching and referral hospitals are located at the network's top, with the

community at the bottom. Dispensaries, clinics, health Centres, and level 3, 4, and 5 hospitals lie in between. Facilities become more advanced as they offer sophisticated services both diagnostic, therapeutic, and rehabilitative at the upper levels.

2.3 Communication and Transportation during an Emergency Obstetric Referral from the Basic Facilities

In a health care system, a referral is a set of events undertaken by the health care worker or facility in response to its incapability to deliver the quality or type of intervention appropriate for the patient's need in a health care system. A functioning continuum of care between home, primary health care centers, and secondary health care facilities where emergency obstetric care can be provided is required to link women and newborns to quality care with minimum delay. During an obstetric emergency, every moment of delay in seeking and receiving skilled obstetric care increases the risks of stillbirth neonatal, and maternal death. (Alaofe ete al, 2020).

Even though most women have healthy pregnancies and safe deliveries, unanticipated obstetric problems and emergencies may arise from time to time. Many causes of maternal deaths are preventable or treatable, such as severe bleeding during and after childbirth, prolonged labor, obstructed labour, blood pressure disorders, and post-delivery infections (Kanyesigye *et al*, 2022).

In spite of a well-defined referral system, lack of basic essential care at referral facilities, inadequate information exchange between referring sites, and direct referrals from primary to tertiary level facilities contribute to poor referrals (Sushmita *et al*, 2023).

In Countries with low and medium incomes, transport interventions contribute to declines in adverse pregnancy and birth complications, including maternal stillbirths and neonatal mortality. Reliable transportation is often the missing link to timely and

affordable emergency care. Improved road, infrastructure, readily available vehicles(ambulances), and funds for fuel and maintenance costs are necessary to bridge the time between complication onset (decision to seek the higher level of care and utilization of care at the next level of the referral chain), (Alaofe *et al*, 2020).

Enhanced communication, during referral facilitates smooth referral and quality of care. Communication as a factor improves the provision of high-quality healthcare services that can satisfy the client's needs. In areas with limited resources, many women give birth at home or in inadequately equipped medical institutions, making sure that those who suffer obstetric complications during pregnancy and childbirth get the care they need. These clients should be delivered promptly to where they can receive top-notch emergency obstetric care to ensure good outcomes (Atuonye *et al*, 2015).

A referral starts with the initiating facility (a facility that decides to refer a client). When the decision to refer is made, the receiving facility should be made aware (referral communication), so that they can anticipate the client's arrival. After management, feedback should be provided to the initiating facility on the outcome of care and any follow-up measures necessary. This communication can speed up the sharing of patient information, lessen treatment delays allow swift and smooth exchange of patient information. In particular, prior communication can give a receiving facility time to get ready to receive the patient. Additionally, before the transfer, communication enables the referring facilities to obtain advice for stabilizing the patient. Feedback is critical since it informs the staff of referring facilities of the outcomes and management strategies, which could facilitate their learning. (Avoka C. et al, 2022).

A high-quality referral system requires multisectoral collaboration and a degree of care that is well-coordinated. Transport programs can help in dealing with delays in reaching health facilities for emergency obstetric care in Low and middle-income Countries.

Transportation interventions could aim at reducing the time it takes to get to a health facility for emergency obstetric treatment, e.g. by providing direct transportation to higher facilities (Kanyesigye *et al*, 2022).

System of transport for emergency referral can greatly affect EmOC service provision, this is consistent with a study done in Ghana that highlighted that; poor, absent, or inappropriate means of transport can affect quality service delivery. In poor resource settings, where many women deliver at home or in inadequately equipped health facilities, ensuring that those who get obstetric emergencies during childbirth are quickly transported to facilities where they can receive quality emergency obstetric care can be a difference between life and death (Kanyesigye *et al*, 2022).

The World Health Organization WHO, the United Nations; Population Fund (UNFPA), and the United Nations Children's Education Fund (UNICEF) created an integrated strategy in emergency obstetric care that aimed at equipping facilities to effectively attend to key causes of pregnancy or childbirth-related maternal and neonatal deaths (WHO,2022).

Lack or poor transportation is a common barrier to effective referral and affects the functionality of the referral system. The availability of vehicles and promptness of services can help respond to emergency and referral cases at all levels of care. Transport issues contribute to the delay in receiving health care services and are one of the contributing factors to deaths among women with obstetric problems (Afari *et al.*, 2014).

The ideal healthcare delivery system would be able to provide both the type and possibilities for care to meet the desires of people at all levels of the public. Good maternal care can only be provided if there is a functioning referral system, access to a phone/or vehicle, and emergency money to transfer urgent cases day or night.

Women with obstetric emergencies and critically ill newborns will benefit from proper record keeping and the use of detailed referral letters which will assist in reducing the delay in the care. Lack or poor communication can affect the quality of referral care. Communicating before the transfer of patients can lead to the delivery of quality care as the receiving facility might have enough time to prepare for the coming patient. For appropriate management of obstetric emergencies and to ensure continuity of care, it's critical for health providers to effectively communicate with one another in both the community and the point of referral (Avoka et al, 2022).

To handle the women under care effectively, the referring facility's healthcare provider must communicate with the receiving facility. The receiving facility is also required to provide feedback and assist the referring facilities in determining what was wrong or right in their management as well as receiving the outcome.

Atuonye (2015), identified various shortfalls in several components of the referral process, but insignificant information was particular on the communication of transfers and feedbacks, as well as other health system issues that affect emergency care. Preferably, the referral procedure should begin with communication from the sending facilities through telephone calls: nevertheless, while at the Comprehensive Emergency Obstetric Maternal Care (CEmOC) facility, the patients, relatives, or their escort may encounter a deficiency of referral information. Health care providers are supposed to present the forms which contain a summary of the patient's personal information, a

brief medical history, diagnosis, and treatment given. Several studies have highlighted that even though most patients and referral notes were accurate, sometimes the information provided by the sending facilities was occasionally insufficient. Rarely do the healthcare care providers depend on referral notes: instead, they conduct their examination and establish their diagnosis for continued care (Cephas K. *et al.*, 2022).

A critical analysis of the Health Referral System in Kenya by the Ministry of Health (2014), revealed some of the challenges that afflict the referral system it reports that the health referral system across the various levels of care is weak hence contributing negatively to the provision of quality healthcare.

Transport interventions seek to decrease the delay in reaching a health facility for emergency obstetric care and, are thus believed to contribute to reductions in such adverse pregnancy and childbirth outcomes as maternal deaths, stillbirths, and neonatal mortality in low- and middle- income Countries (Alaofe *et al*, 2020).

Obstetric care is critical in preventing maternal pregnancy and childbirth-associated mortalities. Referral of patients from lower levels of care to higher levels of care is part of a crucial component of the health care delivery system. Studies have been done aimed at discovering the referral practices for pregnant and newborns that are delivered according to acknowledged standards by competent healthcare providers and are tailored in line with the needs of pregnant women (Anita *et al*., 2020).

Even though ambulance services are free in the public sector in Kenya, especially in the management of obstetric patients by policy, ambulances in most cases are not available or are inaccessible to the mothers. There are a range of hurdles that may be encountered throughout the referral process; which fall under the following: referral transportation system for referral-receiver, communication constraints between

referral-recipients and referee; poor documentation of the referral notes, lack of adequate information and feedback (Atuonye *et al.*2015).

2.4 Perceived Competence in the use of Emergency Obstetric Signal Functions among Health Care workers in the basic Facilities during referral

Maternal mortality refers to a gauge of a pregnant woman's risk of dying during childbirth or the first 42 days post-delivery. Direct obstetric complications, such as antepartum hemorrhage, and postpartum hemorrhage account for more than 80% of maternal deaths obstructed labour, severe PET or eclampsia, uterine rupture, problems related to abortion, and post-partum sepsis are all possible causes of post-partum sepsis.

By 2030, all Nations must meet SDG 3.1 maternal mortality objectives of less than 70% deaths per 100,000 live births. It is obligatory to increase the coverage and usage of evidence-based interventions. The efficiency of emergency obstetric treatment in reducing mortality rates is critical. EmOC signal functions are the nine interventions constituting the emergency obstetric care (EmOC) services bundles. They were preferred based on their efficiency in tackling the principal causes of maternal mortality and the majority of perinatal deaths (fetal distress and respiratory distress (IAWG, 2023).

Several promising strategies have progressed over time, and new interventions have focused on reducing the delay between the onset of a pregnancy complication and the decision to seek care, the time it takes to go to a health facility, and the time taken to receive the services. Quality referral can be described as the identification of signal functions as soon as possible, the establishment of guidelines of standards, staff accompaniment, acceptable documentation, and effective care by competent healthcare providers (Anita *et al,* 2020).

Signal functions for emergency Obstetric care (EmOC) have been approved by Global health experts as the most efficient medical interventions for resolving direct maternal complications and increasing maternal survival. To attain this, it requires the availability of adequate drugs, appropriate supplies, equipment, infrastructure, trained staff to diagnose and treat complications competently, and a fair distribution of facilities to meet the needs of the populations required (UNFPA, 2020).

The availability and utility of signal functions cannot be gainsaid. This is in as far as there is evidence that emergency obstetric and neonatal care is critical to avoid mortalities. It is commonly held that whereas most countries are interested in monitoring the proportion of births attended by Skilled Birth Attendants (SBA), unfortunately, there is a lack of information regarding the availability and performance of emergency obstetric care (EmOC) signal functions by various health professionals (Anita *et al*, 2020).

As propagated by the World Health Organization, the signal functions are a series of critical interventions that target direct obstetric causes of maternal deaths. Therefore, for health facilities that are mandated to provide basic Emergency Obstetric Care (BEmOC), the prescribed seven signal functions are necessary, while for facilities providing comprehensive Emergency Obstetric care (CEmOC); the prescribed nine signal functions are required.

Whereas there is overwhelming evidence that several Countries such as Ethiopia, Ghana, and Kenya have adopted National level referral guidelines, it should be noted however that none, has been tailored towards maternal and neonatal conditions. Experience has shown that referrals for maternity care are frequently required typically because of the issues that call for the use of life-saving services or ‘signal functions’ as

the World Health Organization advises, which the referring facility cannot provide. However, realistically and to satisfy the requirements of each mother, these services are critical and therefore must be offered at a health facility 24 hours a day. (Moxon *et al*, 2024).

Emergency obstetric signal functions, when available and utilized, can reduce maternal and perinatal mortality, this makes it the most effective service package for directing and improving maternal and neonatal prognosis (Anita *et al*, 2020).

Although there is the existence of an immense literature which is replete with evidence that the application of signal functions is an efficient medical intervention for managing obstetric complications, maternal mortality has remained a problem in many low- and median-income countries, of which many women have continued to die due to unpredictable but avertible obstetric complications such as hemorrhage, pregnancy-induced hypertension/eclampsia, anemia, sepsis, and retained placenta.

The foregoing illustration therefore is proof that emergency obstetric care functions should be incorporated into the Martenal-Child health (MCH) care package. All health facilities, independent of their levels in the health system, should provide basic emergency obstetric care (BEmOC.).

Through theory and practice and as prescribed by World Health Organization, it is now held that if a health facility performs seven signal functions, it is classified as Basic emergency obstetric care (BEmOC); It is important to note that several signal functions are recommended for Basic emergency obstetric care (BEmOC) and thus include the following: Administration of parenteral Antibiotics, Administration of uterotonic drugs e.g.(oxytocin), Anticonvulsants (e.g. magnesium sulphate), Manual removal of the retained placenta from the uterus, Removal of other products of conception that are

fatal, performing assisted vaginal birth and Neonatal resuscitation(newborns) (Anita *et al*, 2020).

Besides the signal functions listed above, two additional services are recommended in the case of Comprehensive emergency obstetric care (CEmOC)care which are: Caesarean section and blood transfusion. The majority of these health facilities are usually considered as hospitals. Consequently, following a normal assessment of the mother using a standard protocol, any of these services may necessitate referral. This should include appropriate communication of information sharing and feedback to relevant medical personnel.

In terms of ascertaining the viability of signal functions and subsequently monitoring progress in reducing maternal mortality, emergency obstetric care has the benefit of being evaluable even in tiny units like health centers, which permits the capture even at the County and sub-county levels of the procedures that can help avoid these deaths, (WHO, 2020).

2.5 Availability of supplies and equipment in Basic Facilities during Emergency obstetric referral

The prerequisites for effective and efficient delivery of (BEmOC) and (CEmOC) services have been defined by several authorities including the World Health Organization. Of crucial significance is the fact that quality emergency obstetric care is dependent on the existence of skilled /experienced healthcare providers operating in a setting where medications and medical supplies are available when needed and of acceptable and assured quality. Thus according to WHO, addressing the challenges facing maternal and newborn health necessities among other things, ensures that there is an availability of essential medicine and equipment for the delivery of evidence-based interventions (WHO,2022).

Similarly, cognizance is taken of the fact that improving maternal health indicators call for health systems strengthening. This constitutes one of the six essential health system pillars that ensure the availability of emergency obstetric drugs, supplies, and equipment in health facilities. On the other hand, to address the direct causes of maternal deaths, critical medicines including parenteral antibiotics, and uterotonic drugs, and equipment such as delivery sets, vacuum extractors, manual vacuum aspirators, and sets for basic neonatal resuscitation must be available and provided for since they are equally important in addressing the direct causes of maternal deaths (Jean. *et al*, 2024).

As a warning to the healthcare providers, evidence gathered from middle and low-income countries revealed that lack of drugs and supplies contributes to the poor trend in maternal mortality. The Ministry of Health in collaboration or partnership with UNFPA commissioned a survey to analyze emergency obstetric care (EmOC) indicators in areas that show similar challenges. Based on the findings, this study concluded that a key component of a facility's level of preparedness publicized that emergency obstetric care is determined by the availability of drugs, supplies, equipment, and skilled personnel (WHO, 2020).

Obtaining drugs and medical supplies compromises the timely provision of quality EmOC. Multiple approaches should be used to address challenges within the health system that prevent access to essential drugs and supplies for maternal health. The unreliability Investments should be made to ensure that primary healthcare centers are continuously equipped with essential resources to meet the ever-growing demand for obstetric care in Sub–Saharan Africa (Rafiat, 2021).

2.6 The Client Satisfaction with Emergency Obstetric Referral process from basic facilities

In the current programming in the health sector, it is apparent that multilateral organizations such as UNICEF, UNFPA, etc. have prioritized the need to address Maternal Newborn and Childhood Health (MNCH). Reducing maternal mortality has been the primary goal of the worldwide effort to improve maternal health, which has made progress over time and has shown a significant discrepancy between low- middle- and high-income countries throughout time. This prioritization is emphasized by the formulation of the Sustainable Development Goal (SDG) 3 which advocates for better MNCH (maternal and newborn child health) with a strategy that seeks to ensure healthy lives and promote well-being for all age groups and it includes the ultimate goal of subsequently reducing maternal mortality. Furthermore, it is positively held that timely access to emergency care when it is needed is a sign of successful health infrastructure (WHO, UNFPA, 2020).

The health of women worldwide is important not only to the women themselves but also to their newborns, immediate family, and the Nation as a whole hence the need to ascertain their level of satisfaction with the services being offered in the respective health care facilities.

Ideally, satisfaction with client care pertains to a subjective assessment of health care services and all of the providers as a whole. Obtaining feedback from patients is critical since it has the tendency to determine the outcome levels of their satisfaction and how best to provide quality health care. It is widely acknowledged that client satisfaction is an important component of quality of care. This is based on positive research findings which have shown that patients provide the best possible source of information since

they are the service consumers. Their opinions are henceforth useful in planning and assessing satisfaction levels to improve the standard of care (Nyongesa *et al*,2014).

Looking at the multidimensional aspect, patient satisfaction is key in terms of the provision of quality of care. During childbirth, satisfaction of care is a phenomenon consisting of various aspects of satisfaction as the client may be satisfied with one aspect of care but not with another factoring and experiences may change across different care providers' components (Mehata *et al*, 2015).

A clear understanding of women's perspectives including their needs during pregnancy, childbirth, and early postpartum period, and addressing them as part of the quality improvement process can make delivery of care safe and respectful. Maternal satisfaction may drive maternal health facilities' utilization, which can be linked to birth outcomes and reduction of maternal morbidity and mortality. There is a need for quality service delivery in general and in maternity services in particular to expect a decrease in maternal morbidity and mortality (Habimana et *al*, 2022).

To be able to request appropriate referral recommendations, patients ought to be informed about the services available at each stage and what the services themselves offer. To advance ideas for improvement and sustainability, it is critical to assess the client's satisfaction with the care provided during an obstetric emergency referral. Some of the key things highlighted include; inadequate transportation and poor patient management during transit-an ambulance to enable continuity of care, Women's involvement in referral decisions, type of care at the receiving facility, and whether it's worth the time and women's companions during referral are the key point to note (Afari *et al*, 2014).

A positive experience during the process of child birth is important to the woman, newborn's health, their well-being and relationship. Maintaining of high client numbers depends on patient satisfaction. Maternal dissatisfaction may lead to poor or reduced utilization of available health services and maternal and newborn health outcomes (Kanyesigye *et al*, 2022).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter defines and comprehensively describes the methodology adopted in this study with a focus on the research design, study site, target population, sampling procedure, data collection methods and instruments and description of variables, methods of data analysis as well as the legal and ethical considerations. It also gives the map of the county that was covered.

3.2 Research Design

A cross-sectional design was adopted in this study. The design facilitated the identification of respondents in line with the study objectives where the respondents were asked to complete the questionnaires. Primary data was acquired from women participants, HCWs and observation via the use of checklist during the period of field based data collection. (August 2022 to Dec 2022).

Consequently, the study participants involved HCWs (objective (1,2, &3) and referred women with obstetric complications (objective 4), including an observation check list by the researcher (objective 3).

3.3 Study Location

The study was carried out in Bungoma county which lies between latitude 0^0 33’ 48.60” North of the Equator, and longitude 34^0 33’ 37.98” East of the Greenwich.

According to the census report of 2019, the population of Bungoma County was estimated at 1.67 million spread within an area of 2,069Km^2. Bungoma County is administratively divided into 10 sub-counties and its economy is mainly driven by

agriculture. In Bungoma county women of reproductive age are approximately 885,000 accounting for 53% of the total population. The poverty level is 47% (KNBS, 2021). Bungoma County has several public facilities ranging from level 2(dispensaries) to level 5(County Referral hospital). The research study focused on level 3 and level 4 health facilities. Level 3 is staffed by nurse-midwives and clinical officers. Level 4 has nurse-midwives, clinical officers, and more qualified health professionals like medical officers. Level 3 and 4 health facilities make most of the obstetric referrals to Bungoma County Referral Hospital.

The Comprehensive Emergency Obstetric Care Facility (CEmOC) (that is, the Bungoma County Referral Hospital) is a government health care facility located in Bungoma town along Bungoma-Mumias road. The hospital has one labor room with three delivery beds and an ANC room with eight beds. The Bungoma County Referral Hospital receives referrals from lower levels within the County and occasionally outside the County. Based on the hospital records, over 3 months (October-December 2021), Bungoma County Hospital had about 350 referrals from basic facilities which was a key point that there is a high maternal referral from the basic facilities.

3.4 Target Population and Study Population

The study population was all obstetric women who had been referred for any obstetric emergency from basic facilities and health care workers working in obstetric units in these facilities in Bungoma County.

The target population was all HCWs working in obstetric units and women referred with obstetric emergency complications referred from level 3 and 4 facilities in Bungoma County.

The clients (Women) were assessed for satisfaction level with care during emergency obstetric referral process. These included both in patients and discharged patients.

3.5 Sample Size Determination

3.5.1 Sample size for Health Care Workers

The County has 10 sub counties of which seven refer to Bungoma County Referral hospital. The level 4 facility has 10 HCW while level 3 has eight HCW working in obstetric units all of which constitute 244 Health care workers. Only 23 facilities of category level 3 and 4 health facilities that referred to the County Referral hospital were sampled.

Of the 23 health facilities, 16 are level 3 while 7 were level 4 facilities.

The study adopted Cochran Yamane's(1967) formula, for 95%confidence level and e=0.05

$$n = \frac{N}{1+e^2}$$

where;

N is the population size of health care workers and e is the level of precision

Giving,

$$n = \frac{244}{1+(0.05)^2} = 151$$

$$\text{Of the 23 health facilities,} = \frac{151}{23} = 6.56 \quad n = 7\ HCW$$

Seven HCW were sampled from each facility giving a total 161of health care workers that participated in the study.

Table 1: Showing how participants(HCWs) were distributed under various levels

S/No	Facility Name	Facility Level	sample size
1	Cheptais	4	7
2	Sirisia	4	7
3	Chwele	4	7
4	Mt.Elgon	4	7
5	Bumula	4	7
6	Mech Meru	3	7
7	Kimilili	4	7
8	Kabuchai	3	7
9	Malakisi	3	7
10	Siboti	3	7
11	Kimaeti	3	7
12	Kopsiro	3	7
13	Kimalewa	3	7
14	Luanda	3	7
15	Makhoge	3	7
16	Nasianda	3	7
17	Nalondo	3	7
18	Sachia	3	7
19	Ngalasia	3	7
20	Bukembe	3	7
21	Bokoli	3	7
22	Kabula	3	7
23	Lwandanyi	3	7
Total			**161**

3.5.2 Sample Size for the Referred Clients

To get a representative sample for women to assess their satisfaction level with the referral process, the desired sample size was determined by using Fisher *et al* 1998

$$n = \frac{Z^2}{d^2} \text{ p q}$$

Where;

n-desired sample size

Z-standard normal distribution, level of significance (0.05) =1.96 corresponding to a 95% confidence interval

P=0.56 proportion of the postpartum women attending public hospitals satisfied with maternity services in Nairobi City County) (Nyongesa *et al*, 2014)

q=1-p (proportion of the population being measured)

d-degree of accuracy (0.05) i.e. at 95% confidence interval.

Giving,

$$n = \frac{1.96^2}{0.05^2} 0.56 \text{ x } 0.44$$

1536=379

379 women were sampled to participate in the study to assess the satisfaction level of care during the emergency referral process.

3.6 Sampling Techniques

This study employed a stratified random sampling technique. A list of all the health facilities in the county was obtained from the County health office and used to select the health facilities, (levels 3 and 4). Most of the referrals received in Bungoma County

Referral Hospital were from the 7 sub-counties that were selected using stratified random sampling which consisted of 23 health facilities of levels 3 and 4 respectively.

A random sampling technique was used to identify HCWs in the respective facilities.

Similarly, a random sampling technique was used in the selection of women participants for the assessment of satisfaction level in the referral process.

3.7 Inclusion and Exclusion Criteria

3.7.1 Inclusion Criteria

The study included all emergency obstetric referred clients (pregnant and postpartum women) from level 3 and 4 public health facilities as well as all the HCWs working in maternity units in the selected facilities (level 3 and 4) who had worked in obstetric units for more than 1 year during the study period and were able to provide verbal and written consent to be engaged in the study.

3.7.2 Exclusion Criteria

The research excluded all referred women from private health facilities and those from other Counties as well as those with recorded mental disability (or could not consent). The health care workers excluded from the study were those who were on leave as well as the ones who could not consent to participate in the study.

3.8 Method of Data Collection and Data Collection Tools

The primary data collection method was by use of the pre-tested, structured interviewer-administered questionnaire which was developed concerning the research objectives. Questionnaires for healthcare workers were used to determine if communication and transport influenced the quality of emergency obstetric referral of clients from the basic facilities, to assess the perceived competence on the use of emergency obstetric signal functions among the healthcare workers as well as to determine the availability of

drugs/supplies and equipment in the provision of Emergency obstetric care during referral in Bungoma County. A questionnaire for women participants was developed to assess their satisfaction level with the referral process for emergency obstetric care. This was adopted from the satisfaction level assessment tool by the Ministry of Health.

An observation checklist was also used to assess the availability of drugs and supplies, as well as a list of equipment and their functionality. This was developed to obtain information of interest in each category. Independent research assistants were trained in research integrity and objectives to limit the risk of bias. The questionnaires were administered by trained research assistants. They were monitored, guided, and supervised by the researcher. The ward staff would help identify all the referred women, and the research assistant would then get them eligible to participate in the study. The questionnaires for women participants had both English and Kiswahili versions. To maintain confidentiality and prevent data loss, all the completed questionnaires were collected, and stored in locked cabinets during the study and only the researcher had access to them.

3.9 Pre-testing the Data Collection Tool

The developed research instrument was pretested in Webuye County Hospital and level 3 and 4 facilities that make referrals to (Webuye Hospital) since it had similar characteristics as the final area of study. A total of 16 questionnaires were administered to healthcare workers while 38 questionnaires were administered to women participants to assess the satisfaction level which was 10% of the sample size in line with Kothari's (2004) recommendation. The questionnaires were personally administered and picked by the researcher for the case of the health care workers while for the women participants, one interviews were conducted by use of a questionnaire. The interviewees took note of specific areas where questions were not clear to the respondents, where

they noted the uneasiness of respondents to answer, and where an omission of some important questions was observed. The responses from the pre-testing study were used to adjust the questionnaires accordingly.

The pre-testing was very instrumental and thus proved quite useful in the modification of the final research instruments to take care of the relevance of the subject matter of the study and ease of comprehension by the respondents. The preliminary findings from the process allowed for the required modification of the checklist to ensure that the final interviewees provided appropriate responses and to eliminate any potential data recording errors.

3.10 Validity and Reliability of Research Instruments

3.10.1 Validity of the Instrument

To validate the instrument, construct validity, face validity, and content validity were used. Content validity was performed by sharing the questionnaires with experts (supervisors) to check whether it was relevant and measuring what they purported to measure. The language used was checked whether it would be understood by the respondents. Pre-testing of the questionnaires was done and the observation detected addressed to improve content validity. Face validity was performed by the researcher by perusing the questions in the questionnaire and confirming that the questions were relevant and were a good measure of the study variables. Construct validity was tested for the Likert scale which was considered the most reliable test for the questionnaire.

3.10.2 Reliability of the Research Instrument

The researcher adopted and modified the tool to fit the research objectives, pretesting study with 10% of survey respondents (who are not to be included in the main analysis for control purposes) was chosen purposefully to fill out questionnaires to measure its reliability as part of pilot testing. Internal accuracy was measured using Cronbach's

alpha to determine the questionnaire's reliability. Cronbach's index is a number between 0 and 1 that expresses the accuracy of a test scale Cronbach, (1999). Any instrument with a reliability of 0.7 or higher is considered to have a satisfactory degree of reliability. This study had Cronbach's values that were more than 0.7. This suggested acceptable levels of internal consistency.

Table 2: Reliability Statistics

Variables	**Number of Observations**	**Cronbach's Alpha**
Communication and Transport	16	0.7390
Competence	16	0.9661
Equipment	16	0.8906
Client Satisfaction	38	0.8329
Mean (standardized items)		**0.9267**

Source: Reliability test by the researcher

3.11 Ethical Considerations

This study took into cognizance of the fact that there are several reasons why it is imperative to adhere to ethical norms in research. An ethical approval was formally sought and obtained from the Institutional Research Ethics Committee of MTRH /Moi University as vividly shown in; [Appendix IV], permission from the School of Nursing and Midwifery as shown in [Appendix VII], as well as the research permit from National Commission for Science Technology and Innovations [NACOSTI] as shown in [Appendix VIII]. Permission was also sought from the County Government of

Bungoma, the Ministry of Health, Office of the County Director [Appendix IX] for data collection.

3.12 Training Research Assistants

Before embarking on the data collection exercise, the research assistants were trained, oriented, and instructed on the requirements for research.

3.13 Consent Procedures

Once the respondents accepted the invitation, the researcher and research assistants obtained written and verbal consent from the participants i.e. (health care workers as well as the women participants) by signing informed consent attached to the questionnaire, where the purpose and nature of the study were explained. For their safety, respect, and privacy, the respondents' identities were hidden in the questionnaire. The respondents also received a restatement of the secrecy phrase, which included a promise that the information they provided would only be used for the research. Due care was taken to ensure that security was given to the raw data to deter individuals from unauthorized access and sharing. No woman was denied services at the facility because she declined to take part in the research. For the participants under 18 years of age, their consent was sought alongside parental consent, their independence was respected and those who were willing to participate in the study signed an assent. Additionally, a proper explanation of the question was done in an age-appropriate way so that they could understand what the study involved and that they could voluntarily choose to participate. Further, the study ensured the research environment was safe and appropriate for the respondents.

3.14 Data Management and Analysis

Quantitative data was entered and saved in the Microsoft Excel program. Missing and inconsistent values were identified and corrected as part of the data cleaning and editing

process The researcher oversaw the data input process. The Statistical Package for Social Sciences (SPSS) software version 25 was then used to transfer the data. Both descriptive and inferential statistics were applied in the quantitative data analysis. Descriptive statistics were used to characterize and show the demographic data, such as frequency tables, percentages, and means.

A linear regression model was used to determine if communication and transport influence the quality of emergency obstetric care during the referral of clients from the basic facilities. It was also used to assess the competence, knowledge, and skills in the use of obstetric signal functions among midwives and HCWs working in basic facilities. Chi-square. The test was used to determine the availability of supplies and equipment in the provision of Emergency obstetric services during referral in the basic facilities. A logistic Regression model was used to assess the client's satisfaction with care during the emergency obstetric referral process. The relationship between the dependent variables was examined at a 95% confidence interval, and a p-value of less than 0.05 was deemed significant.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter presents research findings as well as the elaboration on the predictor affecting the emergency obstetric referral process from basic facilities (Level 3 and 4 facilities) in Bungoma County. The areas of study included communication and transport during emergency obstetric referral of clients from the basic facilities, perceived competence in the use of emergency obstetric signal functions among healthcare workers, availability of supplies and equipment in the provision of emergency obstetric care during referral as well as Client's satisfaction during emergency obstetric referral from level 3 and 4 facilities. The study was conducted from August to December 2022 and data was analyzed immediately thereafter. The researcher used the social science statistical package (SPSS) version 25. The results are presented in tables, and charts and organized about the study objectives.

4.2 Response Rate

Response rate is a key variable in the analysis since it determines the quality of data collected and the significance of the study findings. Therefore, this study analyzed the response return rate and presented it in Table 3.

Table 3: Sample Population and Response Rate

Description	**Target**	**Dully Filled**	**Percentage**
Questionnaires to healthcare workers	161	161	100%
Questionnaires to Referred Clients	379	379	100%
Checklists to health facilities	23	23	100%
Total	**563**	**563**	**100%**

Results from Table 4.1 revealed that there was a response rate of 100% although it involved several callbacks to attain this excellent achievement. This showed that the instruments were well collected from the respondents after they were through with them. It also indicated that the data would be sufficient for analyses and therefore lead to reliable results that can be used for predicting, forecasting, and decision-making about assessing the referral process for emergency obstetric care in basic facilities in Bungoma County.

4.3 Demographic Characteristics of Participants

Demographic attributes of the respondents are paramount parameters in research since they determine the nature of the results. Therefore, this study evaluated some key demographic variables as outlined below.

4.3.1 Age of the respondents

The age distribution of the respondents was analyzed and the findings are shown in Table 4.

Table 4: Age of Respondents

Category	Age in years	Frequency	Percentage
Referred clients	Below 18	17	4.5
	18-23	157	41.4
	24-29	90	23.7
	30-35	87	23
	36-41	20	5.3
	42-47	8	2.1
	Total	**379**	**100.00**
Health Care Workers	20-24	38	23.6
	25-29	0	0
	30-39	87	54
	Above 39	36	22.4
	Total	**161**	**100.00**

From Table 4, the majority of women participants 157 (41.4%), were between 18 years to 23 years old. On the other hand, the least women participants were 8 (2.1%) aged between 42 years to 47 years. The findings showed that the age of 18 to 23 was the highest in terms of referrals. Fertility progressively declines as the age of the women increases. However, this study recorded that there were 17 (4.5%) women participants who were below 18 years old and had delivered at least once. The result of this study showed that more than 95% of the respondents were more than 18 years and therefore they were more likely to give informed responses on the referral process for emergency obstetric care in basic facilities in Bungoma County.

The majority of the health Worker respondents 87 (54%), were between 30 years to 39 years. On the other hand, the least health workers participants were 36 (22.4%) aged above 39 years. This was an indication that most healthcare workers had sufficient experience to handle pregnancy referral challenges.

4.3.2 Education Level and Qualifications of the Respondents

The highest academic level of the respondent determines how effective one can handle referral processes for emergency obstetric care in basic facilities. Therefore, education level was a key demographic variable that was analyzed and the findings were displayed in table 5.

Table 5: Distribution of Respondents by their Highest Academic Level and Qualifications

Category	Education	Frequency	Percentage
Woman Participants	Primary	68	17.9
	Secondary	198	52.2
	Tertiary	113	29.8
	Total	**379**	**100**
Health Care Workers	Certificate	6	3.7
	Diploma	142	88.2
	Degree	13	8.1
	Total	**161**	**100**

The results in Table 5 showed that the majority of women participants 198 (52.2%) had schooled to the secondary level. Additionally, 142 (88.2%) of the healthcare workers had diplomas.

4.3.3 Professional Qualification of Health Care Workers

Professional Qualification of Health Care Workers, marital status, and facility type were also key demographic variables that were analyzed and the findings were displayed in Table 6.

Table 6: Distribution of Professional Qualification, Marital Status and Facility

Variable	Category	Frequency	Percentage
Professional Qualification	Nurse-Midwife	131	81.4
	Clinical Officer	30	18.6
	Total	**161**	**100.00**
Marital status	Single	86	22.7
	Married	250	66
	Separated	32	8.4
	Divorced	11	2.9
	Total	**379**	**100.00**
Facility type	Level 3	168	44.3
	Level 4	211	55.7
	Total	**379**	**100.00**

The finding of professional qualifications showed that 131 (81.4%) of the healthcare workers were Nurse-Midwives, while (18.6%) were clinical officers.

The outcome from the table above indicated that 250 (66%) of the respondents were married. The outcome also revealed that 86(22.7%) were single, 32(8,4%) had separated while 11(2.9%) were divorced.

56% of the women participants were referred from level 4 facilities, while 44% of the women respondents were referred from level 3 facilities.

4.4. Number of births per Woman Respondent

The parity of the women respondents was analyzed and the findings were displayed as shown in table 7 below.

Table 7: Parity of the Respondents

Number of births	**Frequency**	**Percentage**
1	189	49.9
2	69	18.2
3	51	13.5
4	28	7.4
5	24	6.3
6	2	0.5
7	5	1.3
8	5	1.3
9	4	1.1
10	2	0.5
Total	**379**	**100**

From the table above, most women participants, 189 (49.9%), reported to have had only one delivery. 2 women participants revealed that they had 10 deliveries.

4.4.1 Employment Type of Women Respondents

This study determined if the referred women were employed or not and further established the type of employment they had. Employment would determine affordability of finance and the socio-economic status which would prove the socio-support in the family and that would enable the positive transitioning into motherhood as well as face the few challenges that would come up in terms of management of bills etc. The findings are displayed in Table 8

Table 8: Type of Employment of the Respondents

Type of Employment	Frequency	Percentage
Formal	77	20.3
Unemployed	198	52.2
Peasant	104	27.4
Total	**379**	**100**

The study revealed that most of the respondents 198 (52.2%) were unemployed. A total of 77 (20.3%) of the referred women reported that they were formally employed while 104 (27.4%) were peasants.

4.4.2 Number of ANC Attendance

This study further analyzed the number of ANC visits by women respondents. This was a key variable to determine the birth preparedness of the mother and assessment for high risk mothers for this would help in reducing complications during pregnancy, labour and postnatal period. The findings were displayed as shown in table 9 below.

Table 9: ANC Attendance

Number of Attendance	Frequency	Percentage
Once	14	3.7
Twice	38	10
Thrice	104	27.4
4 times	196	51.7
Above 4	27	7.1
Total	**379**	**100**

ANC results output revealed that 196 (51.7%) of the women participants had 4 ANC visits. On the other hand, 27 (7.1%) of the women had more than 4 ANC visits.

4.4.3 Reasons for Referral

This research study examined various reasons that led to the subsequent referral of women clients to Bungoma Level 5 Referral Hospital. Analysis of the results were displayed in table 10

Table 10: Reasons for Referral

Reason for Referral	**Frequency**	**Percentage**
Obstructed Labour	52	13.7
Fetal distress	56	14.8
Previous scar	29	7.7
Anaemia	19	5
Twin pregnancy	24	6.3
Bleeding before delivery	24	6.3
Bleeding after delivery	29	7.7
Retained placenta	21	5.5
Pregnancy induced HTN	26	6.9
Other Reasons	99	26.1
Total	**379**	**100**

13.7% of the participants reported that their referrals were prompted by obstructed labour and (56) 14.8 % were due to fetal distress respectively, on the other hand and as shown in table 4.8, the majority (99) 26.2% of the women respondents had varied reasons as the leading to the cause of their referrals. These reasons were listed as; prolonged labour, preterm rupture of membranes, intrauterine foetal death, mal presentation, preterm labour, postdatism, big baby and CPD. Fetal distress was the second highly ranked reason for referral at 14.8%, while Obstructed labour ranked third as the leading cause of referral at (52)13.7%.

4.5 Satisfaction Rating on the Referral Processes

4.5.1 Clients' Satisfaction with Care during Emergency Obstetric Referral

Descriptive summary analysis was used to evaluate the average satisfaction on the quality of Emergency Obstetric Referral process in Bungoma County. Each statement (variable) was rated in a likert scale with values ranging from 1 to 5. The results of the rating were displayed in table 11.

Table 11: Rating on Clients' Satisfaction with the care during Emergency Obstetric Referral

Statements	**VD (1)**	**QD (2)**	**N (3)**	**S (4)**	**VS (5)**	**mean**	**Mode**	**Std. Dev**
The time it took for the referral decision to be made was satisfactory	17 (4.5%)	102 (26.9%)	30 (7.9%)	198 (52.2%)	32 (8.4%)	3.33	4	1.096
The time taken for the ambulance to reach your facility to transport you to the referral unit was satisfactory	21 (5.5%)	94 (24.8%)	39 (10.3%)	188 (49.6%)	37 (9.8%)	3.31	4	1.118
Thinking about your most recent birth, how satisfied are you with the quality of services you received?	19 (5%)	79 (20.8%)	42 (11.1%)	191 (50.4%)	48 (12.7%)	3.45	4	1.10
Treatment was given before and/or during transfer to the referral hospital and was satisfactory	13 (3.4%)	81 (21.4%)	48 (12.7%)	184 (48.4%)	53 (14.0%)	3.48	4	1.08
You were treated with dignity and respect during the referral process	5 (1.3%)	73 (19.3%)	32 (8.4%)	208 (54.9%)	61 (16.1%)	3.65	4	1.00
Decision making by the attending health care worker was satisfactory	9 (2.4%)	75 (19.8)	44 (11.6%)	193 (50.9%)	58 (15.3%)	3.57	4	1.04

The health care workers were helpful in providing information related to the referral	9 (2.4%)	52 (13.7%)	24 (6.3%)	252 (66.5%)	42 (11.1%)	3.70	4	0.922
You and your family were involved in the referral decisions making process	5 (1.3%)	51 (13.5%)	35 (9.2%)	244 (64.4%)	44 (11.6%)	3.72	4	0.887
The health care workers were helpful and friendly towards you during the referral process	10 (2.6%)	55 (14.5%)	44 (11.6)	213 (56.2%)	57 (15.0%)	3.66	4	0.987
There was good communication in the handing over process to the receiving health care worker	3 (0.8%)	36 (9.5%)	38 (10%)	252 (66.5%)	50 (13.2%)	3.82	4	0.81
The interaction with the health care workers was satisfactory	1 (0.3%)	43 (11.3%)	35 (9.2%)	257 (67.8%)	43 (11.3%)	3.79	4	0.80
The health care workers attended to you with respect, dignity as well as offered emotional support	3 (0.8%)	46 (12.1%)	39 (10.3%)	227 (59.9%)	64 (16.9%)	3.80	4	0.889
Your companion support was respected	8 (2.1%)	58 (15.3%)	35 (9.2%)	215 (56.7%)	63 (16.6%)	3.70	4	0.988
Thinking about the care from your home facility, through the referral process, and taking everything into consideration, overall, how satisfied were you with the care you received?	7 (1.8%)	59 (15.6%)	43 (11.3%)	204 (53.8%)	66 (17.4%)	3.69	4	0.993

Very Dissatisfied (VD)=1, Quite Dissatisfied (QD)=2, Neutral (N)=3, Satisfied (S)=4 Very Satisfied (VS)=5

Most of the respondents (252) 66.5% agreed that there was good communication in the handing over process to the receiving health care worker. This had the highest overall mean of 3.82 with a mode of 4 and a standard deviation of 0.81. Similarly, (227) 59.9% of the respondents agreed that the health care workers attended to them with respect,

dignity and also were offered emotional support. Dignity, respect and emotional support had the second highest overall mean of 3.80 with a mode of 4 and a standard deviation of 0.889. Additionally, (257) 67.8% of the respondents agreed that interaction with the health care workers was satisfactory, and this had the third highest overall mean of 3.79 with a mode of 4 and a standard deviation of 0.80.

On the other hand, (188) 49.6% of the respondents agreed that the time taken for the ambulance to reach their facility to transport them to the referral unit was satisfactory. This had the lowest satisfaction with the least overall mean of 3.31 with a mode of 4 and a standard deviation of 1.118.

This study evaluated an overall rating on clients' satisfaction with the care during Emergency obstetric referral, where respondents agreed that the care from their home facility, through the referral process, and taking everything into consideration, they were satisfied with the care received. A total of *(204)* 53.8% of the respondents were satisfied. This had an overall mean of 3.69 with a mode of 4 and a standard deviation of 0.993.

Table 12: Communication and Transportation During an Emergency Obstetric Referral

Is emergency obstetric care referral a common occurrence in your working facility?	Yes	No	Don't Know	-
	158 (98.1%)	3 (1.9%)	0	-
What is the average distance from your health facility to the referral hospital in KM?	0-2KM	2-5KM	6-10KM	More than 10KM
	1 (0.6%)	57 (35.4%)	0	103 (64%)
Which means of transport do you use in the referral process?	Ambulance	Private Car	Boda boda (commercial motorcycle)	Bicycle
	156 (96.9%)	1 (0.6%)	3 (1.9%)	1 (0.6%)
Approximately how long does it take to transport the mother to the referral facility?	1 hr	1-2hrs	More than 2hrs	-
	137 (85.1%)	22 (13.7%)	2 (1.2%)	-
How do you make communications to the receiving facility in cases of obstetric emergency?	Facility phone	Personal phone	Client phone	Other specify
	127 (78.9%)	33 (20.5%)	1 (0.6)	-

Findings on communication and transport during the emergency obstetric referral revealed that (n=158) 98% of the participants agreed that emergency obstetric referral was a common occurrence in their working facilities.

The survey also revealed that the average distance from the referring facility to the tertiary facility was more than 10 km (n=156) 64%, however (n=57) 35.4% covered 2-5 km.

On the means of transport used, (n=156)96.9% used ambulance while (n-3)1.9% used bodaboda.

On approximation of the average time taken for the mother to be transported to the referring facility, (n=137) 85.1 % took 1 hour whereas (n=22) 13.7 % took between 1-2 hours.

All the interviewed healthcare workers made pre-referral phone calls, where (n=127) 78.9% used facility phones (n=33) 20.5% used their phones while (n=1) 0.6% used client phones.

Assessment of the healthcare workers on communication and transportation during an emergency obstetric referral was analyzed on a Likert scale with values ranging from 1 to 5. The results of the rating are displayed in Table 13.

Table 13: Rating of Communication and Transport During Emergency Obstetric Referral

Statements	**SD**	**D**	**N**	**A**	**SA**	**mean**	**Mode**	**Std. Dev**
Transportation affects the emergency obstetric referral process	2.1 %	8.9 %	7.4 %	33.2 %	48.4 %	4.17	4	0.01
Transportation of emergency obstetric cases to the referral facility is effective	0.1 %	2.9 %	7.1 %	26.5 %	63.6 %	4.29	4	0.06
Communication is an important component of the referral process in emergency obstetric care	5.2 %	13.6 %	3.9 %	37.5 %	39.7 %	4.31	4	0.04
Communication between referral-receiving hospitals is key for easy coordination of the referral process	8.8 %	12.3 %	4.4 %	12.6 %	61.8 %	4.47	4	0.034
Communication improves the overall quality of care in the management of obstetric care	7.8 %	9.4 %	3.6 %	37.4 %	41.7 %	4.11	4	0.04
Proper detailed documentation of referral notes including date, little medical history diagnosis, and treatment given is necessary and a key component in the continuum of care	6.8 %	15.0 %	8.4 %	27.3 %	42.6 %	4.45	4	0.01
Proper documentation of the referral notes avoids the potential for errors of omission	4.4 %	11.8 %	5.0 %	31.8 %	37.1 %	4.14	4	0.03
Good documentation during referral ensures the satisfaction of the patient and the protection of the healthcare workers	5.5 %	8.4 %	8.4 %	37.5 %	40.2 %	4.42	4	0.11
Feedback information about the client referral is part of the referral management	8.6 %	18.4 %	2.9 %	29.1 %	41 %	4.29	4	0.03

The use of an ambulance regarding the accessibility and safety of the client in the continuity of care is important	2.9 %	17.1 %	8.9 %	31.4 %	39.7 %	4.09	4	0.081
Professional escort during referral is important for continued monitoring of parameters, and any other emergency can be handled by the HCW while in transit	2.6 %	13.4 %	3.1 %	41.8 %	39.1 %	4.16	4	0.086
Cost of transport &long travel distance affect the referral process for emergency obstetric care	4.9 %	29.9 %	5.2 %	29.7 %	30.2 %	3.41	4	0.084
Formalized communication and transportation are part of the requisites for a successful maternal referral system and improved clinical outcomes	3.1 %	7.6 %	2.3 %	35.7 %	51.3 %	4.21	4	0.0734

Strongly Disagree (SD)=1, Disagree (D)=2, Neutral (N)=3, Agree (A)=4 Strongly Agree (SA)=5

The outcome rating on communication and transportation during an emergency obstetric referral showed that over (112) 60% of the respondents strongly agreed that Communication between referral-receiving hospitals is key for easy coordination of the referral process with the mean of 4.47 and mode of 4 and a standard deviation of 0.01. Similarly, (96) 50% of the respondents strongly agreed that formalized communication and transportation are part of the requisites for a successful maternal referral system and improved clinical outcomes, with a mean of 4.21 and a standard deviation of 0.0734.

About (72)42.6% of the participants strongly agreed that proper detailed documentation of referral notes including date, little medical history, diagnosis, and treatment given is necessary and a key component in the continuum of care. This had an overall mean of

4.45 with a mode of 4 and a standard deviation of 0.01. Similarly, (66) 40.2% of the respondents strongly agreed that good documentation during referral ensures satisfaction of the patient and protection of the health care workers which had an overall mean of 4.42 with a mode of 4 and a standard deviation of 0.11. Additionally, (6)39.7% of the respondents strongly agreed that communication is an important component of a referral process in emergency obstetric care. This had a mean of 4.31 with a mode of 4 and a standard deviation of 0.04.

Furthermore, (48) 30.2% of the respondents strongly agreed that the cost of transport and long travel distances affect the referral process of emergency obstetric care. This had the lowest satisfaction with the least overall mean 3.41 with a mode of 4 and a standard deviation of 0.08.

4.5.2 Perceived Competency in the Use of Signal Functions during Emergency Obstetric Referral

Table 14: Perceived competency on the use of Signal functions in Emergency Obstetric Care

For how long have you been working in an obstetric unit?	1 year	2-3yrs	3-5yrs	More than 5yrs	-
	32 (19.9%)	65 (40.4%)	46 (28.6%)	18 (11.2%)	-
Are you conversant or familiar with the phrase obstetric signal functions?	Yes	No	Don't Know	-	-
	155 (96.3%)	5 (3.1%)	1 (0.6%)	-	-
Are signal functions for emergency obstetric care available in your health facility	Yes	No	-	-	-
	159 (98.8%)	2 (1.2%)	-	-	-
Are Emergency obstetric signal functions critical in any basic health facility?	Yes	No	Don't Know	-	
	158 (98.1%)	-	3 (1.9%)	-	-
Based on your experience, has this facility been successfully handling the referrals for emergency obstetric care?	Yes	No	-	-	-
	142 (88.2%)	19 (11.8%)	-	-	-
How do you rate your knowledge and skills in the use of emergency obstetric signal functions?	Poor	Fair	Good	Very Good	Excellent
	2 (1.2%)	21 (13%)	122 (75.8%)	15 (9.3%)	1 (0.6%)

The finding revealed that (n=65)40.4% had worked in the obstetric units for 2-3 years, whereas (n=46) 28.6 % had 3-5 years. However, (n=18)11.2 % had worked for more than 5 years.

The majority of the HCWs were conversant with obstetric signal function, (n=155) 96.8%. Approximately(n=159) 98.8% of HCWs agreed that signal functions were available in their facilities. Moreover, (n=158) 98.1% agreed that emergency obstetric signal functions are critical in any basic facility.

In the survey done on HCW(n=142), 88.2 % had successfully handled the referrals for emergency obstetric care whereas (n=19) 11.8% were not able to,

An overall rating on the knowledge and skills on the use of signal functions, (n=122) 75.8% rated as good, while (n-15) 9.3 % rated as very good while only (n=1) 0.6% rated excellent. This denotes that there is a knowledge deficit in the provision of signal functions.

Assessment of perceived competency for the health care workers on the use of signal functions in emergency obstetric care was analyzed on a Likert scale with values ranging from 1 to 5 (*Strongly Disagree (SD)=1, Disagree (D)=2, Neutral (N)=3, Agree (A)=4 Strongly Agree (SA)=5*). The results of the rating are displayed in Table 15.

Table 15: Rating on Perceived Competency in the Use of Signal Functions during Emergency Obstetric Referral

Statements	**SD**	**D**	**N**	**A**	**SA**	**Mean**	**Mode**	**Std. Dev**
Can Administer parenteral antibiotics	4.7 %	18.4 %	5.2 %	32.3 %	39.4 %	4.12	4	0.074
Able to Administer parenteral anticonvulsants e.g magnesium sulfate	2.8 %	26.8 %	2.9 %	23.9 %	43.6 %	4.17	4	0.071
Able to Administer parenteral uterotonic agents	3.1 %	5.5%	4.7 %	24.1 %	62.5 %	4.39	4	0.063
Can perform removal of the placenta	8.6 %	18.4 %	6.9 %	29.1 %	37%	4.04	4	0.077
Have skills in the removal of retained products of conception (MVA)	2.6 %	3.9%	1%	29.1 %	63.3 %	4.34	4	0.073
Can skillfully Perform assisted vaginal delivery	6.8 %	15.0 %	8.4 %	27.3 %	42.6 %	4.03	4	0.01
Competent in Performing basic neonatal resuscitation	6%	13.6 %	9.7 %	12.6 %	58.1 %	4.28	4	0.076

Strongly Disagree (SD)=1, Disagree (D)=2, Neutral (N)=3, Agree (A)=4 Strongly Agree (SA)=5

The results rating competency on the use of signal functions in emergency obstetric care showed that over 62.5% of the respondents strongly agreed and therefore reported that they were able to administer parenteral uterotonic agents. This proportion of

respondents, drawn mainly from emergency obstetric care units had the highest overall mean of 4.39 with a mode of 4 and a standard deviation of 0.063. Similarly, 63.3% of the respondents strongly agreed and therefore reported that they had the requisite skills in the removal of retained products of conception (MVA). Again this proportion had the second highest overall mean of 4.34 with a mode of 4 and a standard deviation of 0.073. Additionally, 58.1% of the respondents strongly agreed that they were competent in Performing basic neonatal resuscitation. This had the third highest overall mean of 4.28 with a mode of 4 and a standard deviation of 0.076.

On the other hand, 42.6% of the respondents strongly agreed that they can skillfully Perform assisted vaginal delivery". This had the lowest satisfaction with the lowest overall mean of 4.03 with a mode of 4 and a standard deviation of 0.01.

4.5.3 Assessment of the Availability of Drugs and Equipment During Emergency Obstetric Referral

The assessment of the availability of drugs and equipment in the provision of emergency obstetric care was analyzed on a Likert scale with values ranging from 1 to 5. The results of the rating are displayed in Table 16.

Table 16: Rating of Availability of Drugs and Equipment

Statements	**SD**	**D**	**N**	**A**	**SA**	**mean**	**Mode**	**Std Dev**
Referrals of emergency obstetric cases can occur following a lack of drugs and equipment	0.1%	2.9%	7.1%	36.5%	53.6%	4.28	4	0.067
Specific drugs, supplies, and equipment are needed for effective obstetric care	10.2%	13.6%	13.9%	37.5%	24.7%	4.41	4	0.053
As health care workers, we face different challenges of inadequate supplies and equipment unavailability of equipment for the provision of emergency obstetric care	8.8%	22.3%	4.4%	2.6%	61.8%	4.37	4	0.054

Strongly Disagree (SD)=1, Disagree (D)=2, Neutral (N)=3, Agree (A)=4 Strongly Agree (SA)=5

The results rating on availability of drugs and equipment in the provision of emergency obstetric care showed 61.8% of the respondents strongly agreed that as health care workers, they face different challenges of inadequate supplies and equipment unavailability for the provision of emergency obstetric care. This had the highest overall mean of 4.37 with a mode of 4 and a standard deviation of 0.054. Similarly, 53.6% of the respondents strongly agreed that referrals of emergency obstetric cases can occur following a lack of drugs and equipment. This had the second highest overall mean of 4.28 with a mode of 4 and a standard deviation of 0.067. Additionally, over 24% of the respondents strongly agreed that specific drugs, supplies, and equipment are needed for effective obstetric care. This had the third-highest overall mean of 4.41 with a mode of 4 and a standard deviation of 0.053.

4.5.4 Descriptive Summary on Availability of Drugs and Equipment in Basic Facilities

The availability of drugs, supplies, and equipment was analyzed in all the selected 23 basic facilities in Bungoma County. These basic facilities included; Cheptais SCH, Sirisia SCH, Chwele SCH, Mt. Elgon SCH, Bumula SCH, MechiMeru, Kimilili SCH, Kabuchai, Malakisi, Siboti, Kimaeti, Kopsiro, Kimalewa, Luanda, Makhoge, Nasianda, Nalondo, Sachia, Ngalasia, Bukembe, Bokoli, Kabula and Lwandanyi. Analysis of availability of essential medicine, Equipment, Labour room setting, and infection prevention set-up was carried out and results were displayed in table 17

Table 17: Descriptive summary on Availability of drugs, supplies and equipment in Basic Facilities

Description	Products	Number of Facilities Reporting Availability (N=23)	Number of Facilities Reporting Non Availability	Availability Percentage
Essential medicine	Uterotonics	23	0	100%
	Antibiotics Parental	23	0	100%
	Anticonvulsant-MgSo4	5	18	22%
	Antihypertensives	17	6	74%
Equipment	Bp apparatus	23	0	100%
	Thermometers	22	1	96%
	suction machine	18	5	78%
	Oxygen cylinder	6	17	26%
	masks and tubes	17	6	74%
Labour room	Wall clock	18	5	78%
	Newborn Resuscitation (Ambu bag, penguin sucker)	23	0	100%
	Sterilized delivery sets	18	5	78%
	Vacuum extractors	11	12	48%
	Baby weighing scale	23	0	100%
	MVA kits	23	0	100%
Infection Prevention	Hand washing soap/water	23	0	100%
	Disinfectant	23	0	100%

The results revealed that Uterotonics, parental antibiotic, BP apparatus, Newborn Resuscitation (Ambu bag, penguin sucker), Baby weighing scale, MVA kits, hand washing soap/water, disinfectant and waste disposal were all available in the 23 facilities. Besides having uterotonic drugs, the cold chain management in terms of

storage was very poor. Additionally, anticonvulsant drugs magnesium Sulphate (MgSo4) was missing in most of the facilities and its availability was at (22%), where out of 23 facilities, it was only available in 5 facilities.

However, it was also observed that a number of facilities had no oxygen despite having oxygen cylinders, (it was noted that these cylinders were empty). Furthermore, some level 3 facilities lacked newborn warmers most facilities had empty emergency trays, PET and PPH trays and some facilities had poor infection prevention measures.

4.6 Test of Linear Regression Assumptions

Linear regression was used to assess the effect of the referral process on the quality of emergency obstetric care services. To achieve reliable results, this study conducted some diagnostic to test the fitness of this model. These tests included; normality test, Linearity test and test of outliers

4.6.1 Normality Test

This was tested at 0.05 alpha level where the null hypothesis was accepted since all the p-values were greater than 0.05 as shown in the table below.

Table 18: Normality Test

Variables	Statistic	Df	Sig.
Communication and Transport	.136	357	.103
Competence	.150	160	.454
Equipment	.128	22	.156
Client Satisfaction	.093	357	.200

4.6.2 Linearity Test

This study adopted normal probability plots to test for linearity between Communication and Transport, Competence of Health Care Workers, availability of equipment, and the dependent variable (quality of emergency obstetric care services). The results are displayed in figure 2, 3, and 4

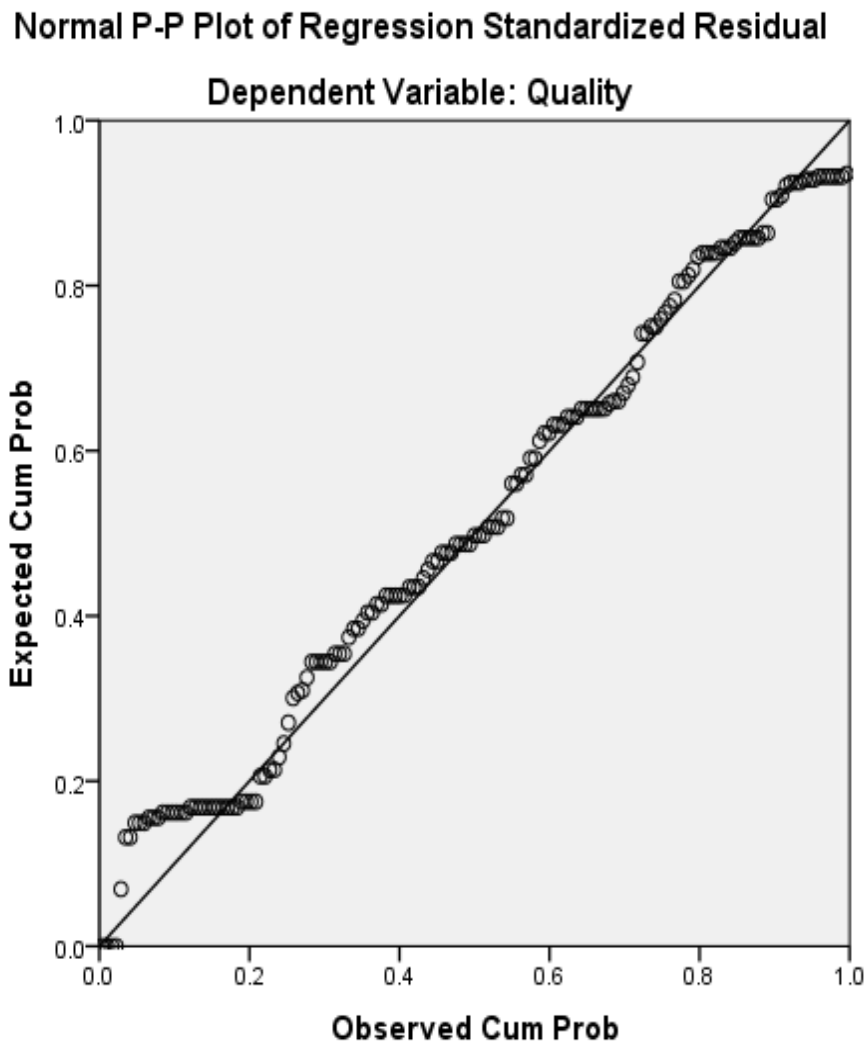

Figure 2:Normal P-P of regression Standardized Residual between Communication and Transport and Quality of Emergency Obstetric Care Services

Figure 2 shows that residual points followed the straight line. This was an indication that there was a linear association between Communication and Transport and Quality of Emergency Obstetric Care Services.

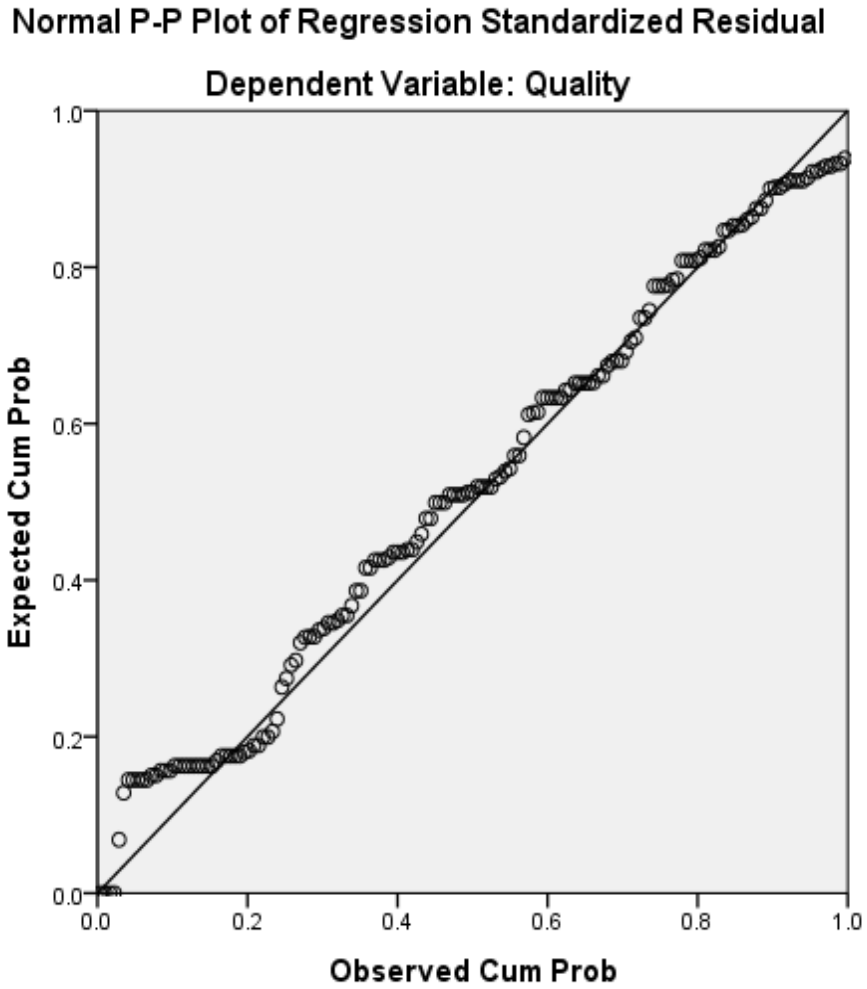

Figure 3: Normal P-P of regression Standardized Residual Between Competency of Health Care Worker and Quality of Emergency Obstetric Care Services

Figure 3 shows that residual points followed the straight line. This was an indication that there was a linear association between the competency of health care worker and quality of Emergency Obstetric Care Services.

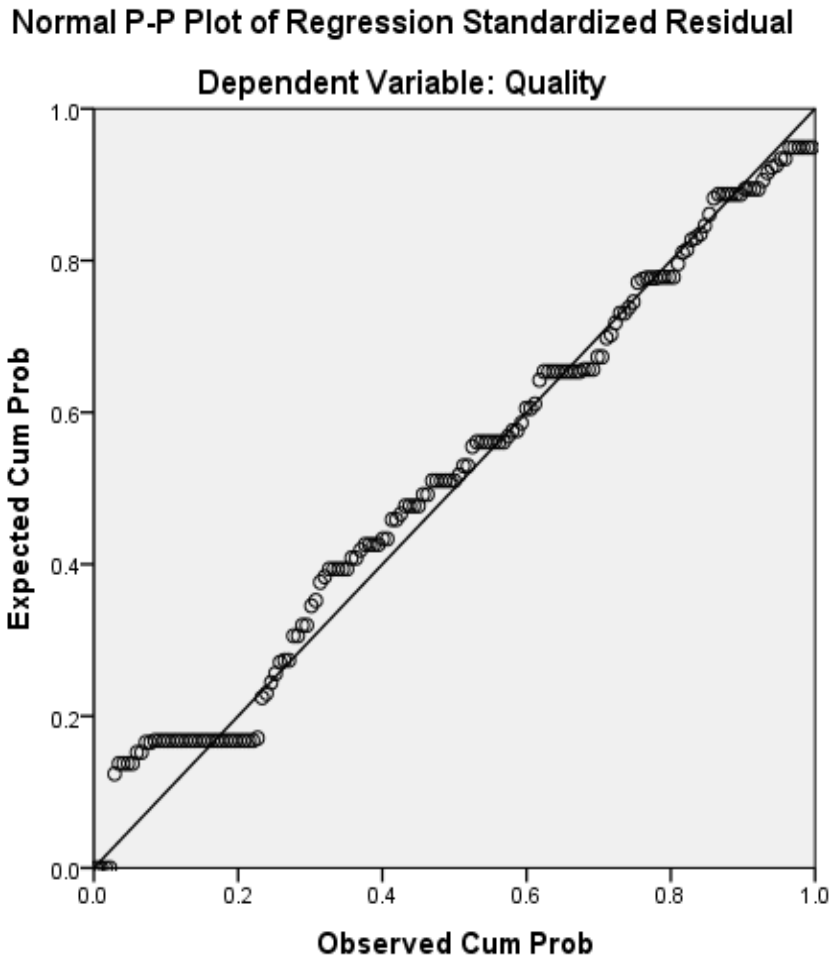

Figure 4: Normal P-P of regression Standardized Residual Between Availability of drugs and Equipment and Quality of Emergency Obstetric Care Services

Figure 4 shows that residual points followed the straight line. This was an indication that there was a linear association between the availability of drugs and equipment and the quality of emergency obstetric care services.

4.6.3 Test of Outliers

This study conducted the outlier test using a box plot and the results were displayed in Figure 5

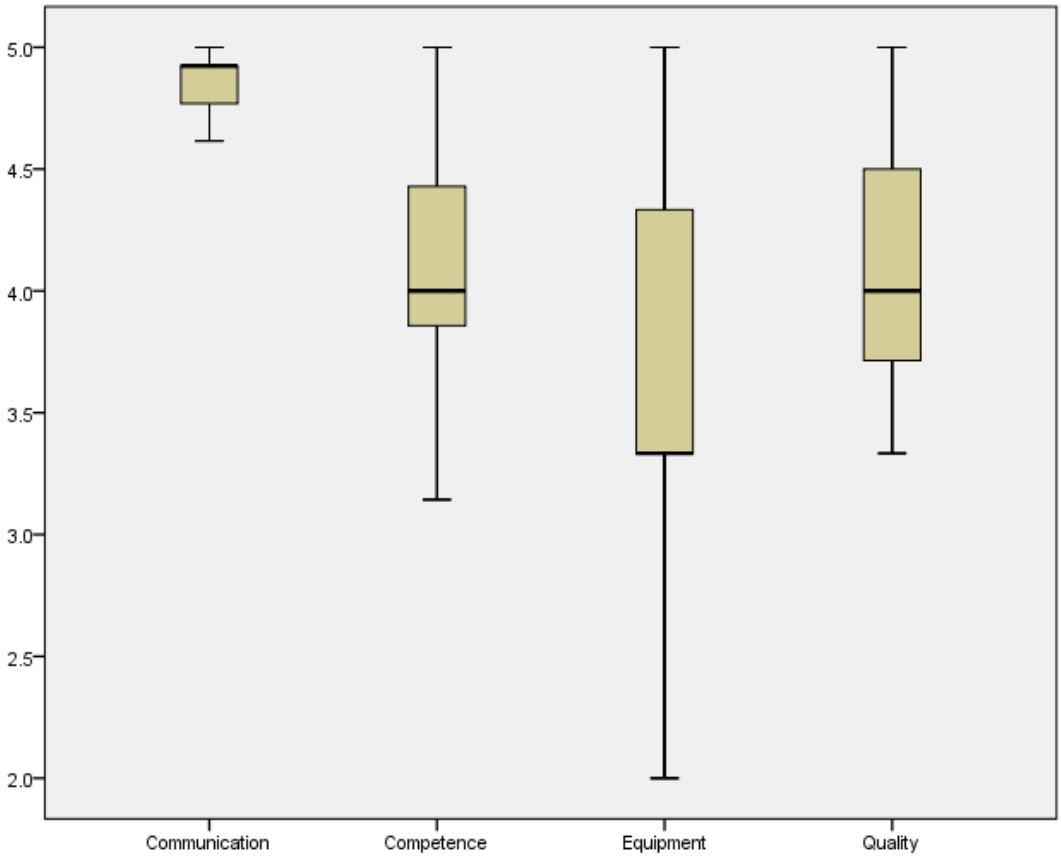

Figure 5: Plot of Test of Outliers

Results in figure 5 indicated that there were no outliers in the data variables which were; Communication and Transport, Competence of Health Care Workers in provision of signal functions, availability of drugs and equipment, and the dependent variable (quality of emergency obstetric care services). Therefore, the study concluded that all the assumptions of linear regression had been met and the study variables were fit to run linear regression to assess the referral process for emergency obstetric care in basic facilities in Bungoma County.

4.7 Testing of the Study Hypothesis

This study adopted linear regression to test the hypothesis and determine if there was a statistical influence of communication and transport on the quality of emergency obstetric care services.

4.7.1 Linear Regression of Influence of Communication and Transport on the Quality of Emergency Obstetric Care Services

Simple linear regression was used to test the null hypothesis that stated that, *communication and transport have no statistically significant effect on the quality of emergency obstetric care services in Bungoma County.* The findings of the linear regression are displayed in Table 18

Table 19: Linear Regression of Influence of Communication and Transport on Quality of Emergency Obstetric Care Services

Variable	Coefficient	T	p-value
Constant	3.031	7.545	0.002
Communication and transport	0.641	3.235	0.001

Table 19 revealed that Communication and Transport had a linear regression standardized coefficient of 0.641 with a T value of 3.235 which was statistically significant(P=0.001)95% CI. This coefficient implied that a unit change in Communication and Transport would result in a 64.1% increase in the quality of emergency obstetric care services in Bungoma County. Thus a p-value of 0.001 implies that the null hypothesis H0: *communication and transport have no statistically significant effect on the quality of emergency obstetric care services in Bungoma County* should be rejected since effective transport and communication significantly influence the quality of EmOC in Bungoma County.

4.7.2 Linear Regression on the Influence of Competence of Healthcare Workers on the Use of Signal Functions in the Provision of Quality Emergency Obstetric Care Services in Bungoma County

Simple linear regression was used to test the second null hypothesis that stated that the competence *of Health Care Workers on the use of signal functions has no statistical significant effect towards the quality of emergency obstetric care services in Bungoma County.* The findings of the linear regression are displayed in Table 20

Table 20: Linear Regression on Influence of Competence for Health Care Workers on the use of signal functions in the provision of quality Emergency Obstetric Care during Referral in Bungoma County

Variable	**Coefficient**	**T**	**p-value**
Constant	1.942	5.801	0.001
Competence of Health Care Workers	0.575	7.148	0.003

Table 20 revealed that the Competence of Health Care Workers in the use of signal functions in the provision of emergency obstetric services had a linear regression standardized coefficient Beta of 0.575 with a T value of 7.148 which was statistically significant testing (p=0.003) 95% C I. This coefficient implied that a unit change in Competence of Health Care Workers in the use of signal functions would result in 57.5% increase in on the quality of emergency obstetric care services in Bungoma County.

Consequently, the HO: the perceived competence of HCWs on the use of signal functions in the provision of EmOC has no influence on the quality of EmOC during referral in Bungoma County is rejected.

4.7.3 Chi-Square Test on Availability of drugs and equipment on the provision of Quality Emergency Obstetric Care Services in Bungoma County

A chi-square test was performed to test the association between the availability of drugs and equipment and the quality of Emergency Obstetric Care Services in Bungoma County. The null hypothesis that was being tested was that; the *availability of drugs and equipment does not influence the quality of Emergency Obstetric Care Services in Bungoma County*. The Chi-square output is shown in Table 21

Table 21: Chi-Square Output for Availability of Equipment

Statistics	**Value**	**df**	**P-value**
Pearson Chi-Square	240.054[a]	180	.002
Likelihood Ratio	186.000	180	.364
Linear-by-Linear Association	2.607	1	.106

From the output, the Pearson chi-square statistic value was 240.054 with the associated p-value of 0.002 which was less than the alpha value of 0.05 and therefore this study concluded that the availability of drugs and equipment was associated with the provision of quality Emergency obstetric care during referral.

4.7.4 Logistic Test on Clients' Satisfaction with the quality of emergency obstetric care services in Bungoma County

A logistic regression model with both categorical and continuous variables was run. Results of the logistic regression are given in Table 22

Table 22: Logistic Regression Output

Variables	**Coeff. T**	**P-value**
Constant	*1.212*	-
Gender	-0.292	0.136
Education level of Respondent	0.628	0.098
Satisfaction on Ambulance Time taken	1.304	**0.003**
Satisfaction with the decision for Referral	3.322	**0.001**
Satisfaction with Quality of Services Received	0.225	**0.014**
Satisfaction with Dignity offered	0.007	0.967
Satisfaction with communication in Handing Over	0.106	**0.006**
Satisfaction with the overall referral process	0.088	**0.002**

The logistic regression model that this study was testing was;

Log odds of quality provision of Emergency Obstetric Care Services in Bungoma County (outcome) = 1.212 -0.292(Gender) + 0.628(Education) + 1.304(*Decision for Referral*) + 0.225(*Quality of Services*) + 0.007(*Dignity offered*) + 0.106(*Handing Over*) + 0.088(*overall referral process*)

From this logistic regression model, *Satisfaction with the Decision for Referral* had a statistically significant coefficient testing it at a 5% significance level. It had the highest coefficient of 3.322 in comparison to the other variables. A one-unit increase in the number of people who became Satisfied with the *decision for referral* would result in the highest increase in the log odd of quality provision of Emergency Obstetric Care Services in Bungoma County. The gender of the respondents had the lowest coefficient (-0.292) which would result in a very small change in the increase in the *quality of Emergency Obstetric Care Services during referral in Bungoma County* was not significant at a 5% significance level.

The association between *Decision for Referral, Quality of Services, Handing Over,* and *overall referral process* and *quality of Emergency Obstetric Care Services in Bungoma County* was positive and statistically significant ($p < 0.05$).

A total of five variables were found to have a significant relationship between Clients' satisfaction with the quality of emergency obstetric care services and the outcome (that is, *quality of Emergency Obstetric Care Services)*. Therefore, the null hypothesis that states; Client satisfaction is not influenced by the provision of Emergency Obstetric care during referral. Therefore, the study rejects the null hypothesis that stated Clients' satisfaction is not influenced by the provision of quality Emergency obstetric care during referral.

CHAPTER FIVE

5.0 DISCUSSION

Integration of activities at various levels of basic healthcare facilities is key to better service delivery. An efficient referral system facilitates this integration by linking different levels of care for optimal utilization of health services. There is a paucity of studies exploring referral systems in rural settings in the western part of Kenya. Therefore, this study fills the gap by documenting emergency obstetric referrals in basic public facilities in Bungoma County.

This study uncovers substantial factors that influence the quality of the referral process for emergency obstetric care in basic facilities. Most of the identified barriers were relatively similar in various settings related to the influence of communication and transport, the perceived competence on the use of emergency obstetric signal functions among healthcare workers as well as the availability of supplies and equipment in the provision of Emergency obstetric care during referral in the basic facilities.

The findings of this study revealed that the respondents in the study had good academic qualifications and therefore were more likely to give informed opinions on referral processes for emergency obstetric care in basic facilities in Bungoma County.

A total of 56% of the women participants were referred from level 4 facilities, while 44% of the women respondents were referred from level 3 facilities. The distribution was disproportionate with more referrals having been recorded from level 4 facilities. In general, Bungoma County Referral Hospital received emergency obstetric referral cases from both level 3 and 4 basic health facilities. All the women participants had at least delivered once and this was an indication that the respondents were in a position to give information on challenges faced during the delivery process.

Over 96% of the women had more than one ANC visit, this is considered a good practice as more number of ANC visits has been observed as ideal as it tends to reduce unforeseen complications during delivery.

The findings also revealed that there is a disproportionate cadre of specialized midwifery professionals handling all pregnancy emergencies within the study area. This study is in line with the study done by (WHO, UNFPA&ICM, 2021) which revealed that Kenya is among countries that have an acute shortage of midwives, a report stated that' Kenya has only 2,092 midwives against the required number of at least 28,000. (World Health Organization, UNFPA and the International Confederation of Midwives., 2021)

5.1 Communication and Transport during an Emergency Obstetric Referral

Communication between the referring and receiving facilities is crucial for prompt referral and to allow the receiving facility to prepare for emergencies. Usually, the referral begins with communication from the referring facility through telephone calls to the receiving facility, based on the nature of the obstetric emergency of the pregnant woman.

The study revealed that communication and transport had a positive influence on the quality of emergency obstetric care services in Bungoma County. The result of this study concurred with the findings of the study done by Alaofe (2023). In his study, he reported that lack or poor transportation is a common barrier to effective referral care service. He further added that the availability of prompt vehicles helps to respond to emergency and referral cases at all levels of care. He summarized by reporting that the challenges associated with transport issues contribute to the delay in receiving health

care services and were one of the contributing factors that impede efforts aimed at preventing deaths among women with obstetric problems.

In line with the results of this study Atuonye *et al*, 2015, also observed that communication as a factor improves the provision of high-quality healthcare services that can satisfy the client's needs. He further reported that women who suffer obstetric complications during pregnancy and childbirth should be quickly transported to facilities where they can receive quality emergency obstetric care for this can be the difference between life and death for the pregnant woman and her Foetus.

Additionally, according to Kanyesigye *et al*, 2022, a well-organized transport program helps deal with delays in reaching health facilities for emergency obstetric care in low and middle-income Nations. They concluded by reporting that proper communication and good transport reduce maternal morbidity and deaths associated with delays in reaching and obtaining appropriate care.

Similarly, a study done by Halimatou et al, (2020) revealed that emergency transportation interventions were more effective when integrated within an enhanced referral system for it aims at improving quality of service.

The findings of this study were in agreement with the result of (Sushmita, 2023) who reported that to handle the women under care effectively, the referring facility's health care provider must communicate with the receiving facility. Sushmita further observed that the receiving facility is also required to provide feedback and assist the referring facilities in determining what was wrong or right in their management as well as receiving the outcome.

5.2 Competency in the Use of Signal Functions during Emergency Obstetric Referral

The study revealed that the competence of Health Care Workers in the use of signal functions has a positive influence on the quality of emergency obstetric care services. The results of this study concurred with the findings of (Anita *et al*, 2020) who argued that emergency obstetric signal functions when available and utilized, reduce maternal and perinatal mortality. Through this line of thought, they further reported that emergency obstetric signal functions are the most effective service package for improving maternal and neonatal prognosis. Subsequently, they concluded by reporting that signal functions for emergency Obstetric and newborn care, (EmONC) are the most effective medical interventions for resolving direct maternal complications and it improve maternal survival.

The results of this study were also in line with the results of (Moxon *et al*, 2024) who reported that Emergency obstetric care functions should be integrated into the Maternal-Child health (MCH) care package since signal functions are effective medical intervention for managing obstetric complications.

A study done by Tembo *et al*, 2017, revealed that inconsistency in providing EmOC services caused health facilities to offer a compromised quality of emergency services.

Another study was done in Tanzania by Tembo et al, 2017 which found that inconsistency in providing EmOC services caused the health facilities to offer compromised quality of emergency services. Andrea (2017), in his study also concluded that the ability or lack of competent, skilled services to offer comprehensive EmOC services contributes to poor outcomes even after clients have reached the health facility.

This led to the rejection of the null hypothesis that stated H0: *Competence of Health Care Workers has no statistical significant effect towards the quality of emergency obstetric care services in Bungoma County.* The study therefore concluded that competence of Health Care Workers on the use of signal functions had positive influence on the quality of emergency obstetric care services in Bungoma County

5.3 Availability of Drugs and Equipment during Emergency Obstetric Referral

Bungoma County level 3 and 4 facilities had short of the required drugs and equipment for BEmOC services as stipulated by the United Nations recommendations, this finding correspond well with studies conducted elsewhere in low- and middle-income countries(Jean.*et al*, 2024).

The study also noted that availability of drugs and equipment influences the provision of quality Emergency Obstetric Care Services. These findings have been supported by findings of another research conducted by (Ofosu, 2021) which affirmed that provision of quality emergency obstetric care relies upon the availability of trained and hence skilled health attendants working in an environment where the requisite medical infrastructures such as drugs and medical supplies are available when needed and in adequate quantity and of assured quality.

Ofosu further revealed that insufficient equipment and supplies including drugs, poor physical infrastructures of lower facilities that offer BEmOC are some of the challenges which contribute to the poor quality of services offered in the identified facilities.

Similarly, a study done by (*Rafiat et al*, 2021) revealed that availability of drugs, supplies and functional equipment are important in addressing the unexpected emergencies and it improves the standards of care.

This implied that, the result was statistically significant. Therefore, the analysis reject Ho: *availability of drugs and equipment has no influence on the provision of quality*

Emergency Obstetric Care Services in Bungoma County. The study concluded that, availability of drugs and equipment influenced the provision of quality Emergency Obstetric Care Services in Bungoma County

5.4 Client Satisfaction with Care During Emergency Obstetric Referral

Based on the research findings, this study concluded that client satisfaction is influenced by the quality of emergency obstetric care services in Bungoma County. Involvement of women in decision making, provider friendliness, interpersonal interactions between health care providers and women in seeking services during labour and delivery was found to have significant impact on their satisfaction. Involvement of patients in decision making prepares them to accept the most probable outcome and boosts their confidence, Nyongesa *et al*, 2014.

The study results also revealed a significant influence of ANC attendance on the level of satisfaction. Attendance of antenatal clinics and receiving of advice from health care workers including birth preparedness improves mother's satisfaction with maternity services received. Majority of the women attended ANC 3 or 4 times. This showed that there was an opportunity to detect and treat inherent diseases, preventing adverse pregnancy outcomes thus enhancing maternal satisfaction, (WHO,2016).

Comparatively, the findings concurred with the study carried out by (Anita and Abuosi 2020), who proved that there is a positive association between Clients' satisfaction and the quality of services received in hospital. In their consideration, they were convinced that patient satisfaction is a critical factor in evaluating access since it serves as a medium between service quality and behavioral intentions. To reinforce this point, they argued that the quality of health care was not just concerned with how the services of

medical personnel providing services to patients was being offered, but also on whether the patient felt comfortable with the conditions and situations that hospitals create.

Various studies have been conducted focusing on Communities, birth attendants and health facilities which are a continuum of emergency maternal and newborn care. For instance, a study conducted by (Habimana *et al*, 2022) established that good quality of service creates user satisfaction with the service and ultimately provide several benefits, including the establishment of a pleasant relationship between the providers of services and their clients. They were further emphatic on the fact that the quality of service has a close relationship with patient satisfaction and has the potentiality to establish strong ties with the health facility. Subsequently such interactions result in bonding among the key stakeholders which then provides a fertile ground for hospitals to understand carefully the patient's expectations and needs.

The patient's satisfaction regarding referral process, which includes communication regarding the need for referral, arrangements made for safe transfer of the patient and care at the tertiary facility should be evaluated, (Rafiat *et al*, 2016)

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusion and recommendations based on the objectives of the study.

6.2 Conclusion

Strengthening the referral systems plays a critical role in timely management of high – risk obstetric cases and eventually improve maternal outcomes. The study concluded that effective communication between health providers and the point of referral is essential and lack or poor communication affects the quality of referral care. Communicating before transfer of patient lead to the provision of quality care since the receiving facility will have enough time to prepare for the incoming patient.

Lack of critical BemOC requirements leads to preventable maternal deaths thus it is not enough to have equipment in the facility that are not functional but ensure promptness to provide all the necessary interventions to ensure quality service delivery. This include availability of drugs, equipment, transport and skilled health workers.

This study also concluded that signal functions for emergency Obstetric care, (EmOC is the most effective medical interventions for resolving direct maternal complications and it improves maternal survival.

Additionally, based on the evidence of this research, this study can justifiably posit that the provision of quality emergency obstetric care relies largely on the availability of trained and hence skilled health attendants working in an environment where drugs and medical supplies are available when needed. In addition, insufficient equipment and

supplies including drugs were some attributing factors to poor quality of services offered.

On the client's satisfaction during emergency obstetric referral from basic facilities, it was noted that there is a positive association between clients' satisfaction and the quality of Emergency Obstetric care services. Quality service creates user satisfaction with the service provider and ultimately provides several benefits, including the establishment of a harmonious relationship between the providers of services with the clients. Additionally, client satisfaction allows hospitals to understand carefully the patient's expectations and needs.

Effective referral system can greatly improve provision of EmOC services. Therefore, viable strategies aimed at improving transportation system for obstetric emergencies are vital in guaranteeing patient's safety and stability of care during transfer. Similarly, Communication between referring and receiving facilities is so critical that efforts should be directed at improving the same among the key stakeholders.

Based on the findings of this study, it became apparent that a strong collaborative engagement between the County referral hospital and level 3 and 4 facilities is necessary since this has the potentiality to boost communication on referral and health care delivery. Concurrently support supervision of the lower facilities and continuous medical education would be ideal to keep health care personnel updated.

6.3 Recommendations

Based on the findings of the assessment, the study recommends the following;

i. The health facilities should be availed with telephones and /or hotlines to improve communication networks including emergency vehicles(Ambulances)for timely obstetric referral cases.

ii. The County Department of health should ensure continuous support supervision on provision of BEmOC services, ANC risk evaluation through comprehensive assessments of the mothers and birth planning. Further there is need for continuous medical education to enhance the HCW's competence in obstetric care particularly EmOC signal functions.

iii. Standard obstetric referral forms be developed, tested and used in the referral system to ensure comprehensive and completeness to facilitate effective communication and timely action for referrals. Further, regular exit interviews/ surveys are needed to evaluate the effectiveness of the referral process.

iv. iv. The health department of the County Government of Bungoma need to establish mechanisms of ensuring that facilities offering BEmOC services maintain constant supply of all drugs and have functional equipment at all times

v. v. The County could initiate innovative interventions such as maternal shelter homes for high-risk mothers near the referral facilities that would help mitigate delays in transportation to the referral facilities.

6.4 Recommendation for Future Research

Based on the invaluable findings of this research, it is imperative that;

i. The study should be replicated in other basic referral facilities in the Country in order to relate findings with the aim of generating more knowledge on referral process. This will enable key stakeholders in devolved Governments to find ways of streamlining the referral system to ensure provision of quality EmOC services at the referral facilities and thus improve on maternal and foetal outcomes.

ii. The findings that this study leaned more towards the quantitative approaches hence the resultant quantitative analysis and descriptions and therefore there is

need to probe and determine the satisfaction level for mothers being referred from basic facilities in Bungoma County using a qualitative study design.

iii. Studies have to be conducted in the receiving facilities(tertiary)to help inform appropriate interventions needed to improve the entire referral system for obstetric emergencies.

iv. To have an in-depth understanding of women's satisfaction including salient issues in obstetric referral process such as individual experiences hence qualitative study would provide more insight on such.

6.5 Strengths and Limitations

One of the critical outcomes of this study is that it provides comprehensive information regarding the referral of obstetric emergencies from level 3 and 4 to the tertiary facility (Bungoma County referral hospital). It thus contributes to the body of knowledge of obstetric emergency referrals to tertiary facilities.

The study has also identified challenges and possible solutions or mitigation strategies which are relevant for the target population such as constant availability of supply and equipment, transport and communication if addressed then can positively impact on emergency obstetric referrals from basic facilities in more effective and efficient and with a cascading effect of significantly improving maternal and neonatal health in Bungoma County.

While the study results may not be generalizable to other basic facilities in the Country, they can stimulate other county specific researches and offer insights and useful recommendations which could lead to improved referral system for obstetric emergencies.

Additionally, the study only looked at the sender facilities of the referral system, so it was necessary to have an inclusive view of the challenges of the entire system. It will also be practical to include receiving facilities.

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APPENDICES

Appendix I: Consent

MOI UNIVERSITY COLLEGE OF HEALTH SCIENCES AND
MOI TEACHING AND REFERRAL HOSPITAL
INSTITUTIONAL ETHICS AND RESEARCH COMMITTEE
INFORMED CONSENT FORM

Study Title:

ASSESSMENT OF THE REFERRAL PROCESS FOR THE EMERGENCY OBSTETRIC CARE IN BASIC FACILITIES IN BUNGOMA COUNTY, KENYA

JACQUELYNE NEKESA WAMALWA

Supervisors: Dr Elijah Kirop (phD)

Mr Benson Millimo (MSc.N.)

Name of Institution: Moi University

Address: P.O. Box 4606 Eldoret

Telephone Number: 0710729666

Informed Consent Form for: Health workers

This Informed Consent Form has two parts:

• Part I: Information Sheet [to share information about the study with you]

• Part II: Certificate of Consent [for signing if you choose to participate in the study]

PART I: INFORMATION SHEET

Introduction: My name is Jacquelyne Nekesa Wamalwa (MS/NUR/5303/21), A student at Moi University pursuing a Master's degree in Advanced Midwifery. Am carrying out a Research study on **Assessment of the Referral Process for the Emergency Obstetric Care in Basic Facilities in Bungoma County, Kenya.**

Study purpose: The study seeks to assess knowledge, skills and use of signal functions by the health care workers on emergency obstetric care, communication and transportation process of emergency obstetric referrals as well as explore client's

satisfaction with care during the emergency obstetric referral process as a major index to the corrective action in a way of combating maternal morbidity and mortality. It is anticipated that the findings will be used to formulate new strategies and/or policies in improving the referral system in the provision of quality services in Bungoma County.

Study procedure: I am requesting you to participate in this research by giving your views and opinions on the above subject. Our interview questionnaire or discussion will take about 30 minutes. Your participation in this study will greatly contribute to the purpose of the research. Informed consent will be obtained by signing the consent form and identified by use of codes /initials and not names. You are required to tick/fill the responses in the spaces provided. You are free to seek clarification on aspects related to the study. The data collected will be kept under key and lock, only accessible to the Researcher. Your participation in this study would be voluntary. There will be no penalties for declining and you can withdraw at any time of the study under no intimidation.

Benefits: Your participation in this study will provide us with the necessary information ensuring new strategies in policy formation and hence improve the health of the women and their new born babies in Bungoma county. The study is academic and there will be no monetary or individual benefits for participation. Declining the interview will not affect your rights to health care or any other services.

Risks/discomfort: there will be no harm or risks associated with your participation in the study

Confidentiality: the interviews will be held in private settings within the facility (for women participants). All information will be confidential as your identity and information will not be disclosed and the information given will only be used for the purposes of this study only.

Contact information

In case of any questions regarding this study, you may contact my supervisors

Mr Benson Milimo, Lecturer, Moi University:0722583478

Dr Elijah Kirop (PhD), Lecturer, Moi University:0721222325

Or The chairman, Ethics Review Committee

Moi University

P.O BOX 4606 Eldoret

Principal investigator's statement

I, the undersigned, have explained to the volunteer participant in a language that best understands the proceedings to be followed in the study and the risks and benefits involved.

Jacquelyne Nekesa Wamalwa: jackiewams2000@gmail.com

0710729666

Signature Date

…… ……

PART II: PATICIPANT DECLARATION:

I have read or have had someone read to me the description of the research study. I have understood the explanation and I agree by consenting to voluntarily participate in the study. I understand that I can withdraw from the study any time and I will not undergo any intimidation or penalties for doing so.

Participant's name	Signature /Thumbprint	Date
_____	_____	_____
Name of Witness [Optional]	Signature of Witness	Date
_____	_____	_____
Research Assistant Name	Signature	Date
_____	_____	_____

Appendix II: Questionnaire for Health Care Workers

Do not Indicate your Name **QUESTIONAIRE NUMBER ……**

Part 1. Socio demographic data

1. Age

1) 20-24Yrs ( ) 2. 25-29 Yrs( ) 3. 30-39 Yrs. ( ) 4. 39 and above ( )

2 Level of facility

1] Level 3 ( )

2] Level 4 ( )

3 Educational level

1 Certificate ( ) 2 Diploma ( ) 3 Degree ( ) 4 masters ( )

4 Professional Qualification:

1 Nurse-midwife ( )

2 Midwife ( )

3 Clinical officer ( )

4 Other ( )

5 Years of experience

1) 1-2 years ( )

2) 3-5years ( )

3) 5-7years ( )

4) more than 7 years ( )

1.Communication and transportation during an emergency obstetric referral

1. Is emergency obstetric care referral a common occurrence around your working facility?

1. Yes ( ) 2. No ( ) 3. Don't know ( )

2. What is the average distance from your health facility to the referral hospital in KM?

1 0-2KM ( ) 2 3-5 KM ( ) 3 6-10KM ( ) 4 More than 10 KM ( )

3. Which means of transport do you use in the referral process?

1 Ambulance ( ) 2 Private Car ( ) 3 Boda boda ( ) 4 Bicycle ( )Other (specify)

4. Approximately how long does it take to transport the mother to the referral facility?

1 Less than 30 mins ( ) 2 1 hr ( ) 3 1-2 hrs ( ) 4 more than 2 hours ( )

5 How do you make communications to the receiving facility in cases of obstetric emergency?

1 Facility phone ( ) 2 Personal phone ( ) 3 Client phone( )4 Other specify……

Indicate your opinion about each statement by ticking the appropriate initial in the blank spaces provided:

Strongly agree (SA), agree (A), not sure (NS), disagree (D) and strongly disagree (SD)

Communication and transportation during an emergency obstetric referral

	Statement	**SD**	**D**	**NS**	**A**	**SA**
6	Transportation affects emergency obstetric referral process					
7	Transportation of emergency obstetric cases to the referral facility is effective					
8	Communication is an important component of a referral process in an emergency obstetric care					
9	Communication between referral- receiving hospitals is key for easy coordination of the referral process					
10	Communication improves the overall quality of care in the management of obstetric care					
11	Proper detailed documentation of referral notes including date, little medical history diagnosis and treatment given is necessary and key component in the continuum of care					

12	Proper documentation of the referral notes avoids potential for errors of omission					
13	Good documentation during referral ensures satisfaction of the patient and protection of the health care workers					
14	Feedback information about the client referral is part of the referral management					
15	Use of ambulance in regards to accessibility and safety of the client in the continuity of care is important					
16	Professional escort during referral is important for continued monitoring of parameters is vital and any other emergency can be handled by the HCW while on transit					
17	Cost of transport and long travel distance affects the referral process of the emergency obstetric care					
18	Formalized communication and transportation is part of requisites for successful maternal referral system and improves clinical outcomes					

2. Perceived competency on the use of signal functions in emergency obstetric care

1. For how long have you been working in an obstetric unit??

   1. 1year ( ) 2. 2-3 years ( ) 3. 3- 5 years ( ) 4. more than 5 years ( )

2. Are you conversant or familiar with the phrase obstetric signal functions?

   1. Yes ( ) 2. No ( ) 3. Don't know ( )

3. Are signal functions for emergency obstetric care available in your health facility

   1 Yes ( ) 2 NO ( )

4. Are Emergency obstetric signal functions critical in any basic health facility?

	Statement	SD	D	NS	A	SA
7	Competent in administering parenteral antibiotics					
8	Able to administer parenteral anticonvulsants e.g magnesium sulphate					
9	Able to administer parenteral uterotonic agents					
10	Competent in performing manual removal of the placenta					
11	Have the skills to remove retained products of conception (MVA)					
12	Can skillfully perform assisted vaginal delivery					
13	Competent in performing basic neonatal resuscitation					

Yes [ ] 2. No [ ] 3. Don't know [ ]

5. Based on your experience, has this facility been successfully handling the referrals for emergency obstetric care?

   1 Yes ( ) 2 NO ( )

6. How do you rate your knowledge and skills on the use of the following emergency obstetric care signal functions in emergency obstetric care?

   1 Poor ( ) 2 Fair ( ) 3 good [ ] 4 Very good [ ] 5 Excellent ( )

Indicate your opinion on the knowledge and skills on the use of signal functions in emergency obstetric care in your facility

Strongly agree (SA), agree (A), not sure (NS), disagree (D) and strongly disagree (SD)

3. Availability of drugs/ supplies and equipment in the provision of emergency obstetric care services

	Statement	**SD**	**D**	**NS**	**A**	**SA**
14	Referrals of emergency obstetric cases can occur following lack of drugs and equipment					
15	Specific drugs, supplies and equipment are needed for effective obstetric care					
16	As health care workers, we face different challenges of inadequate supplies and equipment unavailability of equipment for provision of emergency obstetric care					

Appendix III: Checklist

FACILITY NAME,,,,,,,,,,,,,,,,,,,,,,,,,,,, LEVEL……….. DATE…………………….

SN	Description		Y	N	Remarks
1	Essential medicine	❖ Uterotonics ❖ ABC parenteral ❖ Anticonvulsant-MgS04 ❖ Antihypertensives			
2	Equipment	**Emergency area** ❖ Bp apparatus ❖ Thermometers ❖ suction machine ❖ Oxygen cylinder, ❖ masks and tubes			
3	Labour room	Wall clock Newborn Resuscitation (Ambu bag, pinguin sucker) Sterilized delivery sets Vacuum extractors Baby weighing scale MVA kits			
4	Infection prevention	Hand washing soap/water Disinfectant Waste disposal			
Final comments Name……………………………. sign…………………….….…					

Appendix IV: Questionnaire for Women Participants

MOI UNIVERSITY COLLEGE OF HEALTH SCIENCES AND
MOI TEACHING AND REFERRAL HOSPITAL
INSTITUTIONAL ETHICS AND RESEARCH COMMITTEE
(MUCHS-MTRH IERC) REVIEW
INFORMED CONSENT FORM

Study Title:

ASSESSMENT OF THE REFERRAL PROCESS FOR THE EMERGENCY OBSTETRIC CARE IN BASIC FACILITIES IN BUNGOMA COUNTY, KENYA

JACQUELYNE NEKESA WAMALWA

Supervisors; Dr Elijah Kirop (PhD.)

Mr Benson Millimo(MSc. N.)

Name of Institution: Moi University

Address: P.O. Box 4606 Eldoret

Telephone Number: 0710729666

Informed Consent Form for: Women participants

This Informed Consent Form has two parts:

• Part I: Information Sheet [to share information about the study with you]

• Part II: Certificate of Consent [for signing if you choose to participate in the study]

PART I: INFORMATION SHEET

Introduction: My name is Jacquelyne Nekesa Wamalwa (MS/NUR/5303/21), A student at Moi University pursuing a Master's degree in Advanced Midwifery. Am carrying out a Research study on Assessment of the Referral Process for the Emergency Obstetric Care in Basic Facilities in Bungoma County, Kenya.

Study purpose: The study seeks to assess knowledge, skills and use of signal functions by the health care workers on emergency obstetric care, communication and transportation process of emergency obstetric referrals as well as explore client's satisfaction with care during the emergency obstetric referral process as a major index to the corrective action in a way of combating maternal morbidity and mortality. It is anticipated that the findings will be used to formulate new strategies and/or policies in improving the referral system in the provision of quality services in Bungoma County.

Study procedure: I am requesting you to participate in this research by giving your views and opinions on the above subject. Our interview questionnaire or discussion will take about 30 minutes. Your participation in this study will greatly contribute to the

purpose of the research. Informed consent will be obtained by signing the consent form and identified by use of codes /initials and not names. You are required to tick/fill the responses in the spaces provided. You are free to seek clarification on aspects related to the study. The data collected will be kept under key and lock, only accessible to the Researcher. Your participation in this study would be voluntary. There will be no penalties for declining and you can withdraw at any time of the study under no intimidation.

Benefits: Your participation in this study will provide us with the necessary information ensuring new strategies in policy formation and hence improve the health of the women and their new born babies in Bungoma county. The study is academic and there will be no monetary or individual benefits for participation.

Declining the interview will not affect your rights to health care or any other services.

Risks/discomfort: there will be no harm or risks associated with your participation in the study

Confidentiality: the interviews will be held in private settings within the facility (for women participants). All information will be confidential as your identity and information will not be disclosed and the information given will only be used for the purposes of this study only.

Contact information

In case of any questions regarding this study, you may contact my supervisors

Dr Elijah Kirop (PhD), Lecturer, Moi University:0721222325

Mr Benson Milimo,(MSc,N.) Lecturer, Moi University:0722583478

Or The chairman, Ethics Review Committee

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P.O BOX 4606 Eldoret

Principal investigator's statement

I, the undersigned, have explained to the volunteer participant in a language that best understands the proceedings to be followed in the study and the risks and benefits involved.

Jacquelyne Nekesa Wamalwa: jackiewams2000@gmail.com

0710729666

Signature Date

PART II: PATICIPANT DECLARATION:

I have read or have had someone read to me the description of the research study. I have understood the explanation and I agree by consenting to voluntarily participate in the study. I understand that I can withdraw from the study any time and I will not undergo any intimidation or penalties for doing so.

Participant's name	Signature /Thumbprint	Date
_____	_____	_____
Name of Witness [Optional]	Signature of Witness	Date
_____	_____	_____
Research Assistant Name	Signature	Date
_____	_____	_____

PART III: ASSENT FORM

I have read or have had someone read to me the description of the research study. I have understood the explanation, my parent/ guardian is aware of the study and I agree by assenting to voluntarily participate in the study. I understand that I can withdraw from the study any time and I will not undergo any intimidation or penalties for doing so.

Participant's name	Signature of participant/Thumbprint	Date
_____	_____	_____
Name of Witness	Signature of Witness	Date
_____	_____	_____
Research Assistant Name	Signature	Date
_____	_____	_____

Clients' satisfaction with the care during emergency obstetric referral

This survey is about your experience and perceptions of the care received from the maternity service during the referral process of your recent birth. It will cover Antenatal, labour, birth and immediate postnatal care.

1) SOCIO DEMOGRAPHIC DATA

a. Age … …

b. Parity……

c. Marital status

1. single ( ) 2. married ( ) 3. separated ( ) 4. divorced ( )

d. Level of education

e. 1 Primary ( ) 2 Secondary ( ) 3 Tertiary ( )

f. Employment status

1 Formal ( )2 Unemployed ( ) 3 Peasant ( )

g. ANC-attendance-visits

1. 1 time ( ) 2. 2times ( ) 3. 3times ( ) 4. 4times ( ) 5. more than 4 times ( )

h. Type of facility you were referred from

1 Level 3 ( ) 2 level 4 ( )

i. Reason for referral- what was the reason for the referral to this facility?

1.Obstructed labour ( )

2. Feotal distress ( )

3.Previous scar/s ( )

4.Anaemia ( )

5.Twin pregnancy ( )

6 Bleeding before delivery APH [ ]

7.Bleeding after delivery [PPH] ( )

8. Retained placenta ( )

9. Prolonged labout ( )

10. Others ….....

j. The time it took for the referral decision to be made was satisfactory

1.Very dissatisfied ( )

2.Quite dissatisfied ( )

3.Neither satisfied nor dissatisfied ( )

4.Satisified ( )

5.Very satisfied ( )

1)The time taken for the ambulance to reach your facility to transport you to the referral unit was satisfactory

1.Very dissatisfied ( )

2.Quite dissatisfied ( )

3.Neither satisfied nor dissatisfied ( )

4.Satisified ( )

5.Very satisfied ( )

2) Thinking about your most recent birth, how satisfied are you with the quality of services you received?

1.Very dissatisfied ( )

2.Quite dissatisfied ( )

3.Neither satisfied nor dissatisfied ( )

4.Satisified ( )

5.Very satisfied ( )

3) The services given to you before referral was satisfactory

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

4) You were treated with dignity and respect during the referral process

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

5) Treatment was given before and/or during transfer to the referral hospital and was satisfactory

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

6) Decision making by the attending health care worker was satisfactory

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

7) The health care workers were helpful in providing information related to the referral

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

8) You and your family were involved in the referral decisions making process

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

9) The health care workers were helpful and friendly towards you during the referral process

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Saisfied ( )

5Very satisfied ( )

10) There was good communication in the handing over process to the receiving health care worker

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisified ( )

5Very satisfied ( )

11) The interaction with the health care workers was satisfactory

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Saisfied ( )

5Very satisfied ( )

12) The health care workers attended to you with respect, dignity as well as offered emotional support

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Saisfied ( )

5Very satisfied ( )

13) Your companion support was respected

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Saisfied ( )

5Very satisfied ( )

14) Thinking about the care from your home facility, through the referral process, and taking everything into consideration, overall, how satisfied were you with the care you received?

1Very dissatisfied ( )

2Quite dissatisfied ( )

3Neither satisfied nor dissatisfied ( )

4Satisfied ( )

5Very satisfied ( )

Nyongeza V: Dodoso(maswali) kwa wanawake washiriki

CHUO KIKUU CHA MOI CHA SAYANSI YA AFYA

NA HOSPITALI YA UALIMU

NA RUFAA MOI

KAMATI YA MAADILINA UTAFITI YA TAASISI

(MUCHS-MTRH IREC) UHAKIKI

FOEM YA RIDHAA INAYOFAHAMISHWA

Kichwa cha Masomo:

TAATHMINI YA MCHAKATO WA RUFAA KWA HUDUMA YA DHARURA YA UZAZI KATIKA HOSPITALIZE MSINGI JIMBO KUU IN BUNGOMA, KENYA

JACQUELYNE NEKESA WAMALWA

Wasimamizi: Dr Elijah Kirop (PhD.)

Mr Benson Millimo

Jina la Chuo Kikuu: Moi

Anwani: P.O. Box 4606 Eldoret

Nambari ya Simu: 0710729666

Fomu ya kibali kwa kwa Wanawake Washiriki

Fomu hii ya idhiniina sehemu mbili:

• Sehemu ya 1: Karatasi ya taarifa [kushiriki nawe taarifa kuhusu utafiti]

• Sehemu ya 11: Cheti cha idhini [ya kusainiwa ikiwa utachagua kushiriki katika utafiti]

SEHEMU YA I: KARATASI YA HABARI

Utangulizi: Jina langu ni Jacquelyne Nekesa Wamalwa (MS/NUR/5303/21), mwanfunzi wa Chuo cha Kikuu cha Moi kufuatia Shahada ya Uzamili katika Ukunga wa Juu. Ninafanya Utafiti wa **Tathmini ya mchakato wa Rufaa kwa huduma ya Dharura ya Uzazi katika vituo vya msingi katika Kaunti ya Bungoma, Kenya**.

Madhumuni ya Utafiti:Utafiti unalenga kutathmini ujuzi, ujuzi na matumiziya kazi za ishara

Madhumuni ya utafiti: Utafiti unalenga kutathmini ujuzi, ujuzi na matumizi ya kazi za ishara na wafanyakazi wa huduma ya afya juu ya huduma ya dharura ya uzazi, mawasiliano na mchakato wa usafiri wa rufaa ya dharura ya uzazi na pia kuchunguza kuridhika kwa mteja na huduma wakati wa mchakato wa rufaa ya dharura kama njia ya dharura. ripoti kuu ya hatua za kurekebisha katika njia ya kupambana na magonjwa ya uzazi na vifo. Inatarajiwa kuwa matokeo hayo yatatumiwa kuunda mikakati na/au sera mpya katika kuboresha mfumo wa rufaa katika utoaji wa huduma bora katika
Utaratibu wa Utafiti: Ninakuomba ushiriki katika utafiti huu kwa kutoa maoni na opinions yako kuhusu somo lililo hapo juu.Hoja yetu au mjadala wetu wa mahojiano utachukua kama dakika thelathini.. Kushiriki kwako katika utafiti huu kutachangia pakubwa madhumuni ya utafiti.Idhini iliyoarifiwa itapatikana kwa kutia saini fomu ya idhini na kutambuliwa kwa kutumia misimbo/ufupisho wa jina wala sio majina kamili.Unatakiwa kuweka tiki/kujaza majibu katika nafasi ilizopewa. Uko huru kuulizia ufafanuzi kuhusu vipengele vinavyohusiana na utafiti. Data iliyokusanywa itawekwa salama, kufungiwa chiini ya ufunguo na kifuli, ili iweze kufikiwa na Mtafiti pekee.Kushiriki kwako katika utafiti huu kutakuwa kwa hiari. Hakutakuwa na adhabu kwa kukataa kushiriki mchakata huu, naunaweza kujiondoa wakati wowote wa utafiti bila vitisho.

Manufaa: Kushiriki kwako katika utafiti huukutatupatia taarifa zinazohitajika kuhakikisha mikakati mipya katika uundaji wa sera na hivyo kuboresha afya ya wanwake na watoto wao wachanga katika Kaunti ya Bungoma.Utafiti ni wa kitaaluma na hakutakiuwa na faida zza kifedha au mtu binafsi kwa kushiriki.

Kukata mahojiano hakutaadhiri haki zako za kupata huduma ya afya au huduma zingine zozote.
Hatari/usumbufu: hakutakuwa na madhara au hatari zinazohusiana na ushiriki wako katika utafiti huu.
Usiri: Mahojiano yatafanyika katika mazingira ya faraghandani ya kituo cha huduma ya afya(kwa washiriki wanawake). Taarifa zote zitakuwa siri kwani utambulisho na taarifa zako hazitafichuliwa nautambulizi wako hautafichuliwa na habariyako iliyotolewa itatumika kwa madhumuni ya utafiti huu pekee.

Maelezo ya mawasiliano

Ikiwa kuna maswali yoyote kuhusu utafiti huu,unaweza kuwasiliana na wasimamizi wangu

Dr Elijah Kirop (PhD), Muhadhiri,Chuo Kikuu cha Moi:0721222325

Mr Benson Milimo,(MSc,N.) Muhadhiri,Chuo Kikuu cha Moi :0722583478

Au Mwenyekiti ,Kamati ya Mapitio ya Maadili

Chuo Kikuu Cha Moi,

P.O BOX 4606 Eldoret

Kauli ya Mchunguzi Mkuu

Mimi,niliyetia sahihi hapa chini,nimemweleza mshirikialiyejitoleakwa lugha ambayo inaelewa vyema taratibu zinazopaswa kufuatwa katika utafiti na hatari na manufaa yanayohusika.

Jacquelyne Nekesa Wamalwa: jackiewams2000@gmail.com

0710729666

Signature Tarehe

SEHEMU YA II: TAMKO LA MSHIRIKI:

Nimesoma au kuna mtu amenisomea maelezo ya utafiti huu. Nimeelewa maelezo na ninakubali kushiriki kwa hiari katika utafiti. Ninaelewa kuwa ninaweza kujiondoa kewnye utafiti wakati wowote na sitapitia vitisho au adhabu kwa kufanya hivyo.

Jina la Mshiriki	Saini /Alama ya Kidole gumba	Tarehe
_____	_____	_____
Jina la shahidi [Hiari]	Saini ya shahidi	Tarehee
_____	_____	_____
Jina la msaidizi wa utafiti	Saini	Tarehe
_____	_____	_____

SEHEMU YA II1: FOMU YA TATHMINI

Nimesoma au kuna mtu amenisomea maelezo ya utafiti huu. Nimeelewa maelezo na ninakubali kushiriki kwa hiari katika utafiti. Ninaelewa kuwa ninaweza kujiondoa kewnye utafiti wakati wowote na sitapitia vitisho au adhabu kwa kufanya hivyo.

Jina la Mshiriki	Saini /Alama ya Kidole gumba	Tarehe
_____	_____	_____
Jina la shahidi [Hiari]	Saini ya shahidi	Tarehe
_____	_____	_____
Jina la msaidizi wa utafiti	Saini	Tarehe
_____	_____	_____

MASWALI KWA WANAWAKE WASHIRIKI

NAMBA YA MGONJWA…….. TAREHE YA KUINGIA HOSPITALINI…….……

Kuridhika kwa mteja na huduma wakati wa rufaa ya dharura ya Uzazi

Utafiti huu unahusiana na kuridhika kwa mteja na huduma wakati wa rufaa ya dharura ya uzazi
na mtazamo wa utunzaji uliopokelewa kutokana na huduma ya uzazi wakati wa mchakato wa rufaa wa kujifungua kwako hivi majuzi. Itashughulikia katika hali ya uja uzito, leba, kujifungua na utunzaji wa wa haraka baada ya kuzaa.

1) DATA YA DEMOGRAFIK YA JAMII

a. Umri … …

b. Namba ya kujifungua kwa Mama……

c. Hali ya Ndoa

1. Sijaoleka ( ) 2. Kuolewa ( ) 3. Kutengana ( ) 4. Kuachwa ( )

d. Kiwango cha Elimu

e. 1 Msingi ( ) 2 Sekondari ( ) 3 Taasisi ya baada ya Sekondari ( )

f. Hali ya Ajira

1 Ajira Rasmi ( )2 Asiye na ajira ( ) 3 Mkulima ( )

g. Mahudhurio ya Kiliniki ya uja uzito

1. Mara moja ( ) 2. Mara mbili ( ) 3. Tatu ( ) 4. Mara Inne ( ) 5. Zaidi ya mara Inne ( )

h. Aina ya Kituo cha Hospitali ulichorejerewa kutoka

1 Kiwango cha 3 ( ) 2 kiwango cha 4 ( )

i. Sababu ya Rufaa- Ni sababu gani ya rufaa ilikuleta kwa kituo hiki?

1.Leba iliyozuiliwa ( )

2. Mtoto kuchoka ( )

3.Operesheni ya awali ( )

4.Upungufu wa damu ( )

5.Mimba mapacha ( )

6 Kuvuja damu kabla ya kujifungua ( )

7.Kutokwa na damu baada ya kujifungua ( )

8. Placenta kushindwa kutoka ( )

9. leba iliyochukua mda mrefu ( )

10. Sababu Ingine ….....

j. Muda uliochukua kwa uamuzi wa rufaa kufanywa ulikuwa wa kuridhisha

1.Kutoridhika sana ( )

2.Kutoridhika kiasi ( )

3.Kutoridhika wala Kuridhika ( )

4. Kuridhika ( )

5.Kuridhika sana ( )

1)Muda uliochukuliwa kabla ya ambulensi kufika kituo chako kukusafirisha hadi kitengo cha rufaa ulikuwa wa kuridhisha

1.Kutoridhika sana ( )

2.Kutoridhika kiasi ( )

3.Kutoridhika wala Kuridhika ( )

4.Kuridhika ( )

5.Kuridhika sana ( )

2) Ukifikiria kuhusu shughuli ya kuzaa kwako hivi majuzi,je unajisikiaje kuridhika na ubora wa huduma ulizopokea?

1.Kutoridhika sana ( )

2.Kutoridhika kiasi ( )

3. Kutoridhika wala Kuridhika ( )

4.Kuridhika ( )

5.Kuridhika sana ( )

3) Huduma ulizopewa kabla ya rufaa zilikuwa za kuridhisha

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

4) Ulishughulikiwa kwa hadhi na heshima wakati wa mchakato wa rufaa.

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3 Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

5) Matibabu yaliyotolewa kabla na /au wakati wa kuhamishwahadi hospitali ya rufaa yalikuwa ya kuridhisha

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

6) Uamuzi wa Mhudumu wa Afya aliyekuhudhuria ulikuwa wa kuridhisha

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3 Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

7) Wahudumu wa Afya walisaidia katika kutoa taarifa zinazohusiana na rufaa

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

8) Wewe na Familia yako mlihusika katika mchakato wa kufanya maamuzi ya rufaa

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3Kutoridhika wala kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

9) Wahudumu wa Afya walikuwa wa msaada na wa kirafiki kwako wakati wa mchakato wa rufaa

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3Kutoridhika wala kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

10) Kulikuwa na mawasiliano mazuri katika mchakato wa kukukabidhi kwa Mhudumu wa afya anayekupokea

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3 Kutoridhika wala Kuridhika ( )

4Satisified ( )

5Kuridhika sana ( )

11) Muingiliano na wahudumu wa afya ulikuwa wa kuridhisha

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3. Kutoridhika wala Kuridhika ( )

4. Kuridhika ( )

5Kuridhika sana ( )

12) Wahudumu wa Afya walikuhudumia kwa heshima, taadhim na pia kutoa msaada wa kihisia

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3 Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

13) Msaidizi wako aliheshimiwa

1Kutoridhika sana ( )

2Kutoridhika kiasi ( )

3 Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

14) Ukifikiria kuhusu huduma uliyopewa kutoka kwa kituo cha hospitali cha nyumbani, kupitia mchakato wa rufaa, na kuzingatia kila kitu, kwa ujumla, uliridhishwa kwa kiasi gani na utunzaji uliopokea?

1Kutoridhika sana ( )

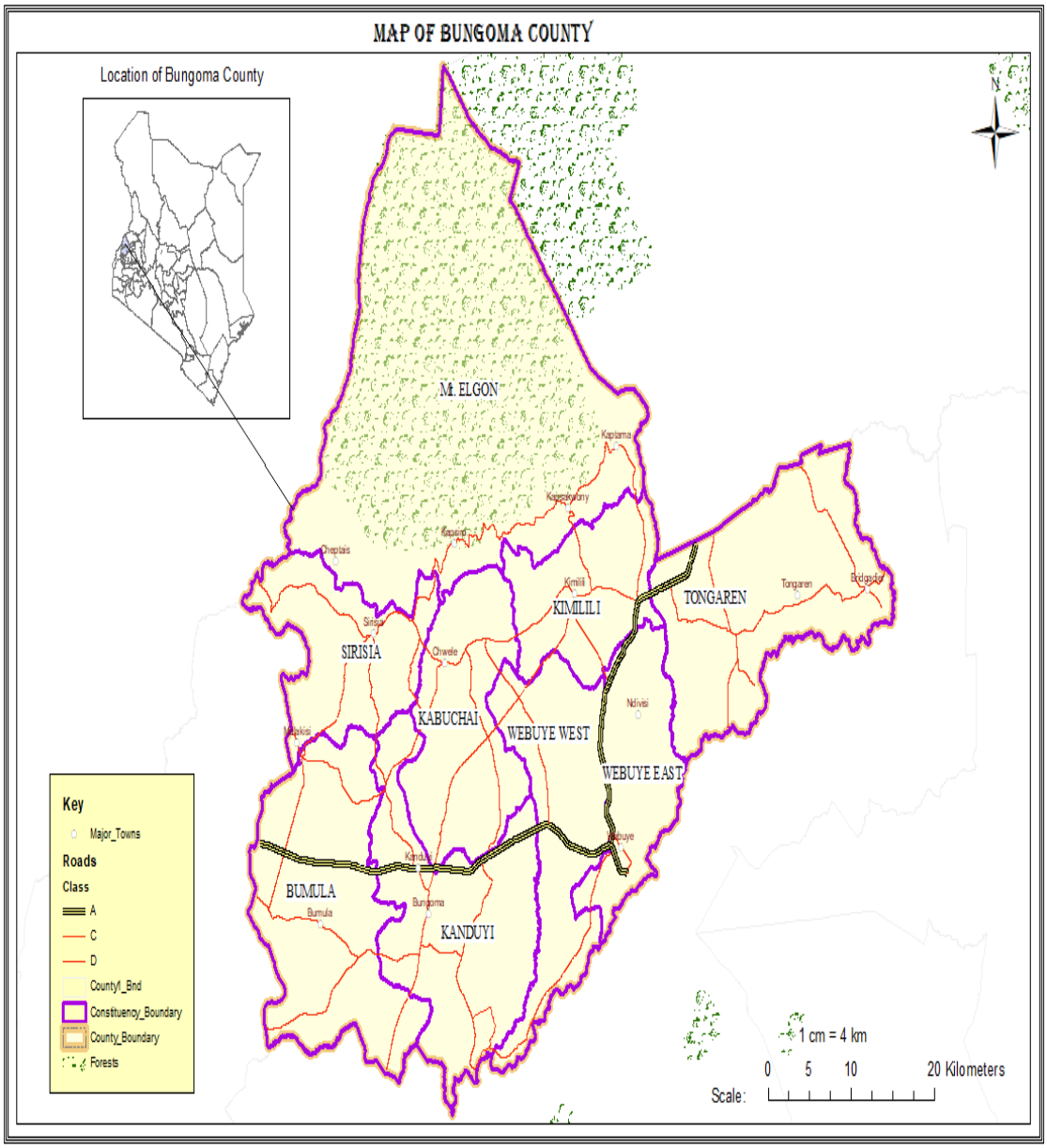
2Kutoridhika kiasi ( )

3 Kutoridhika wala Kuridhika ( )

4Kuridhika ( )

5Kuridhika sana ( )

Appendix V: Map of Study Area



Appendix V1: Institutional Research and Ethics Committee Approval

MTRH/MU-INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

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

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

Reference: IREC/204/2022
Approval Number: 0004193

14th July, 2022

Jacquelyne Nekesa Wamalwa,
Moi University,
School of Nursing,
P.O. Box 4606-30100,
ELDORET-KENYA.

Dear Ms. Wamalwa,

ASSESSMENT OF THE REFERRAL PROCESS FOR THE EMERGECNY OBSTETRIC CARE IN BASIC FACILITIES IN BUNGOMA COUNTY, KENYA

This is to inform you that ***MTRH/MU-IREC*** has reviewed and approved the above referenced research proposal. Your application approval number is ***FAN: 0004193***. The approval period is 14th July, ***2022- 13thJuly, 2023.***
This approval is subject to compliance with the following requirements;

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

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

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
14 JUL 2022
APPROVED
P. O. Box 4606-30100 ELDORET

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

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

Appendix VI1: University Research Letter

MOI UNIVERSITY
ISO 9001:2015 Certified Institution
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING & MIDWIFERY
DEPARTMENT OF MIDWIFERY & GENDER
Box 4606-30100, ELDORET

4th August 2022

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

REF: JACQUELYNE NEKESA WAMALWA REG. NO: MS/NUR/5303/21

This is to confirm that the above named is a postgraduate student of Moi university. She is registered in the department of Midwifery & Gender, School of Nursing pursuing Master of Science in Midwifery.

The purpose of this letter is to request your good office to support her during the research process for her study titled: *Assessment of the referral process for the emergency obstetric care in Basic facilities in Bungoma county , Kenya*. The study will involve data collection, analysis and dissemination of the findings.

If you require any clarification, don't hesitate to reach the undersigned on 0722583478 or benmilimo@gmail.com.

Thank you.

Benson Milimo

Moi University
College of Health Sciences
School of Nursing
Department of Midwifery & Gender
P. O. Box 4606 - 30100,
ELDORET.

Ag. HOD, MIDWIFERY & GENDER

Appendix V1II: Bungoma County Research Authorization Letter

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BUNGOMA
MINISTRY OF HEALTH
OFFICE OF THE COUNTY DIRECTOR HEALTH

Telephone: 0725393939
E-mail: heallth@bungoma.go.ke
When replaying please quote

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. BOX 18-50200
BUNGOMA

OUR REF: CG/BGM/CDH/RESRC/VOL.1 **DATE:** 26th July, 2022.

Jacquelyne Nekesa Wamalwa
Moi University
School of Nursing and Midwifery
Eldoret.

RE: RESEARCH AUTHORIZATION.

Following your request for authority to carry out research on **"Assesment of Referral Process for Emergency Obstetric Care in Basic Facilities in Bungoma County"**, I am pleased to inform you that you have been authorized to undertake the research for the period ending 13th July, 2023.

Kindly note that you shall deposit **a copy** of the final research report to the County Director of Health. The soft copy of the same should be submitted through the online Research Information System.

Thank you.

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P.O. BOX 18-50200
BUNGOMA

Dr. Johnston Akatu
County Director of Health
BUNGOMA.

Appendix IX: NACOSTI Letter

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **792325**

Date of Issue: **24/August/2022**

RESEARCH LICENSE

This is to Certify that Ms.. JACQUELYNE NEKESA NEKESA of Moi University, has been licensed to conduct research in Bungoma on the topic: ASSESSMENT OF THE REFERRAL PROCESS FOR THE EMERGENCY OBSTETRIC CARE IN BASIC FACILITIES IN BUNGOMA COUNTY for the period ending : 24/August/2023.

License No: **NACOSTI/P/22/19666**

792325

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix X: Plagiarism Awareness Certificate

SR183

ISO 9001:2019 Certified Institution

EDU 999 THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

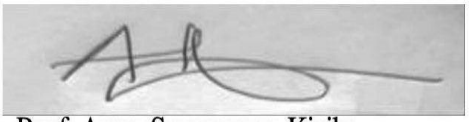
This certificate is awarded to

JACQUELYNE NEKESA WAMALWA

MS/NUR/5303/21

In recognition for passing the University's plagiarism Awareness test for the thesis titled: **ASSESSMENT OF THE REFERRAL PROCESS FOR THE EMERGENCY OBSTETRIC CARE IN BASIC FACILITIES IN BUNGOMA COUNTY, KENYA** with a similarity index of 8% and striving to maintain academic integrity

Awarded by:



Prof. Anne Syomwene Kisilu

CERM-ESA Project Leader Date: 29/05/2023