PREDICTORS OF MATERNAL HEALTH SERVICES UPTAKE AMONG WOMEN AGED 15 TO 49 YEARS IN MOYALE SUBCOUNTY REFERRAL HOSPITAL, MARSABIT COUNTY, KENYA

GALGALO GALMA GOLICHA

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE IN EPIDEMIOLOGY AND DISEASE CONTROL OF MOUNT KENYA UNIVERSITY

MAY, 2025

DECLARATION AND APPROVAL

Declaration

This thesis/project is my original work and has never been presented for any academic award in any institution.

Name: Galgalo Galma Golicha

Reg. No. MPH/2018/31043

Signature.  Date. 20 /5/2025

Approval

This thesis/project is being submitted for examination with our approval as University supervisors

Name: Dr. Violet Maritim (PHD).

Institutional Affiliation: Mount Kenya University.

Signature:  Date. 03/6/2025

Name: Dr. Joseph Juma (PHD).

Institutional Affiliation: Mount Kenya University.

Signature:  Date. 10/6/2025

DEDICATION

This thesis is dedicated to my family and to the Almighty God for the fullest blessings.

ACKNOWLEDGEMENT

Acknowledgement to Mount Kenya University for offering me the opportunity to carry out this research. Secondly, to express gratitude to my lecturers for helping me with this thesis and for being there for me as I conducted the study. Finally, is to thank all my instructors who instilled knowledge in me which has enabled me to successfully finish this investigation. Furthermore, I want to mention that my family and friends have been there for me with endless support and encouragement.

ABSTRACT

Maternal mortality is still a key problem that concerns Kenyan public. As the World Bank found in 2020, there were 355 maternal deaths for every 100,000 live births, 31 infant motility for each thousand live births in 2023. The country's Vision 2030 intends to bring down the maternal "mortality rate" (MMR) to 113 for every 100,000 live births to ensure reduction of maternal deaths by two-thirds. In Northern Kenya, the maternal death rate is about 860 and the MMR rate is 1127 in every hundred thousand live births, which means the numbers are even higher in Marsabit County. Due to restricted high-quality medical care, far-away health facilities, little education, effects of religion, low wages, and age-old cultural traditions, women tend to choose to give birth in their own homes (Procurement Details, n.d.). For this reason, there are low rates of women using maternal healthcare centers in Moyale Sub-County. Investigation aimed to discover the sdeterminants of using maternal health centers from Moyale Sub-County referral hospital in Marsabit County by those who are aged 15 to 49. Study aimed to examine at how mothers' awareness, cultural and economic conditions, and reproductive situations affect their use of maternal services. To explore changes in women's behaviour, the theory of the Trans-theoretical models was used for women providing them with pre- and postnatal care at Moyale Sub-County Referral Hospital. Study involved analytical, cross-sectional study design utilizing collected data. With the Cochran formula, a sample of 384 women was set up, and 354 women gave their responses to the survey questions. We included two focus groups and structured meetings with mothers as ways to collect information. The research team chose subjects by using systematic random sampling. With "SPSS version 25", quantitative data analysed and outcome expressed as percentages and frequency distributions. The research used a chi-square multiple regression analysis to explore whether there is a causal link among the variables. It was found that 96% of the people who answered the survey knew about the maternal healthcare services, whereas 4% did not. Factors from the community and culture greatly affected uptake, as women in age bracket 26-35 and 36-45 were most probable to receive maternity healthcare (OR=1.419, P=0.003; OR=1.288, P=0.017). Among study subjects, Women mainly in charge homesteads were higly likely to prefer Maternal Health Question in contrast to led by husbands (OR=1.584, P=0.002). consumption of MHS often depended on socio-economic factors since access to such services was reduced as the fees increased (OR=0.556, P=0.007). Education played a major role as well, showing that, in comparison to those who were uneducated, those possessing higher education were most exposed to get maternal attention (OR=1.98, P=0.001). Mothers who had given birth 4-6 or more times were most often users of maternal healthcare services (OR=1.087, P=0.013). Officials suggested launching complete awareness programs about pregnancy spacing and mother's health, so the public can be more involved in proper prenatal care in Moyale Sub-County referral hospital.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

ANC	Ante Natal Care
DHMT	District Health Management Team
HTC	HIV Testing and Counselling
KDHS	Kenya Demographic Health Survey
KNBS	Kenya National Bureau of Statistics
KSPA	Kenya Service Provision Assessment
MCG	Marsabit County Government.
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MMR	Maternal Mortality Ratio
MNCH	Maternal, Newborn, and Child Health
MOH	Ministry of Health
MTCT	Mother-to-Child Transmission of HIV
NACOSTI	National Commission for Science Technology & Innovation
NAL	Northern Arid Lands
NCPD	National Council for Population and Development
NHSSP	National Health Sector Strategic Plan
PNC	Post Natal Care
RHCS	Reproductive Health Care Services
UNDP	United Nations Development Program
WHO	World Health Organization
ZDHS	Zimbabwe Demographic Health Survey

DEFINITION OF KEY TERMS

Antenatal Care	refers to the care and support offered to to women who are expecting during their pregnancy and the time leading up to delivery.
Socio- Economic Factors	refer to the conditions and characteristics of an economy that influence the decision-making and behavior of individuals, businesses, and governments.
Maternal Healthcare	refers to the coordinated delivery of medical care to preserve, regain, or enhance the well-being of people or communities.
Healthcare	Is used to describe the services provided to women at every Stage of their pregnancy, childbirth, and recovery.
Postnatal Care	Also known as postpartum care, this term depicts the Therapeutic and medical attention is accorded to the expectant mother and infant after birth.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The attention that a mother receives for the duration of her pregnancy, when she gives birth, and after this period is called maternal medical care by the World Health Organisation (WHO) in 2022. The need of medical attention for mothers is for preserving health of both the expecting mother and her baby (Douglas Adu-Fokuo,1994). Examples of services in this group are postpartum therapy, help with labor and childbirth, and prenatal health care, (D. Williams, 2025)

Mezmur (2019) says that the aims of maternal healthcare include supporting the mother and fetus, finding and addressing any illnesses of pregnant women, and handling complications when they arise. To safeguard women's health when they are pregnant and giving birth, it offers medical, educational, and psychological assistance. There will be fewer deaths of mothers, improves in maternal health, and better well-being for mothers and babies if everyone has access to good maternal healthcare (Alenoghena, Isah, & Isara, 2021). Any maternal health service should involve prenatal care, the work of skilled labor, and help afterward. The main focus is to check the mothers' health, detect issues early, and offer the care that guarantees the best outcome for the baby (Hou and Ma, 2018).

To make sure that expectant mothers and their babies are healthy, maternal medical services are very important (Yaya and Ghose, 2019). Such services involve various treatments, learning, and emotional actions aimed at meeting the unique health requirements of pregnant women in their pregnancy, birth, & after the baby is born. Medical care should involve checking during pregnancy, involvement in delivery, and help during the time after (Link et al., 2024). The objectives are to take care of expectant mothers' health, spot and handle issues that may arise, and ensure that the babies get an excellent start (Wang et al.,2021). In all areas

of health, dangers from pregnancy and childbirth are very concerning and caused the deaths of nearly 295,000 women that year (O'Rourke & Williamson, 2017). The majority, which is over half of the world's totals, is from Sub-Saharan Africa with more than 196,000 cases. Mothers need to give birth in a facility with the right medical care and hygiene, so risky conditions that might end in serious harm or death of expectant mother and unborn child are prevented.

No one can deny how significant maternal health care is. Feltner, (2018) noted that access to better MDC during pregnancy helps lower the mother's chances of having health problems as well as dying. Through prenatal checkups, health care providers can identify problems before they become severe, helping expecting women stay healthy and avoiding major delivery-related issues. Having an expert take part in delivery is important, so any unexpected complications can be handled properly and delivery is safer. After giving birth, postnatal care looks after any health problems and assists the mother in recovering further.

At the same time, few mothers being able to access maternal health services can cause serious issues for both the mothers and their babies. Maina and Torerei (2019) pointed out that not receiving good prenatal care might allow risks to develop that are only found during delivery. Sometimes, this leads to more deaths among pregnant women and more risk to the newborns. Such care can affect mothers' chances of returning to full health and make their health issues continue (Coleman et al., 2020). Babies whose mothers did not get the proper care during pregnancy have an increased chance of experiencing health issues when they grow up and may find it difficult in their first years. In many cases, poor use of medical care during pregnancy proves that giving careful, accessible care to expectant mothers is vital for their health as well as that of their babies.

A severe type of depression called postpartum depression becomes a bigger risk for new

mothers who do not receive care after giving birth. According to research, depression is known as a serious mind disorder marked by depressive feelings, sleep problems, low confidence in oneself, tiredness, and lack of interest in the environment (Pinero, 2020). If a person experiences postnatal depression after birth, also called postpartum depression, it can be a tough time for her, since with no care given to this disorder, it may become very distressing and interfere with a mother's capacity to care for her baby, for her & her regular schedule. Marcel (2021) says that postpartum depression was experienced by 10 to 25 percent of women between 2000 and 2002.

Since medical experts require users to pay extra fees, many Kenyans do not take advantage of medical services as much as they should (Grépin & Habyarimana, 2019). Since most people do not enjoy health insurance, poor individuals tend to delay medical care when they become sick. Authors Masaba and Mmusi point out (2020) that the way mothers use health care differs between people living in cities and rural areas as well as between different parts of the country. There are people who choose not to get medical help, while those who visit doctors usually have to pay large bills that can be very harmful. As a result, most people turn to strategies that unfortunately harm their ability to manage their finances (Masaba & Mmusi,2020).

1.2 Statement of the Problem

The 2023 WHO Analytical Fact Sheet on Maternal Deaths states that Kenya is among African countries dealing with high maternal deaths. Based on the 2022 Kenya Demographic and Health Survey, the number of infant mortality cases reaches 355 per 100,000 successful births. Therefore, a year sees the loss of thousands of mothers due to complications from delivery and pregnancy. Kenya Vision 2030 tries to reduce the MMR to 113 live births in every 100,000 deliveries. Because of this, there is a two-thirds decrease in mothers dying

during childbirth. As stated by (UNDP/Amuga), more mothers die in Marsabit County each year than in other regions in Kenya— at 1127 per 100,000 in Marsabit County alone versus 860 recorded in the North. This reveals Kenya is having problems in providing healthcare to expecting mothers and their babies.

With respect to Kenya Demographic and Health Survey (KDHS) 2002, it can be seen that maternal health services are being used by a larger number of women in Kenya (KDHS, 2022). The large majority (98%) of women with a recent birth or stillbirth were visited by qualified health care providers during antenatal care, and 66% went to four ANC visits according to WHO requirements (KDHS, 2022). Still, only 29% received health care during the first three months of their pregnancies. 89% of women were accompanied by skilled attendants during childbirth, and 88% gave birth in health facilities, still, there are clear differences between regions Counties like Mandera and Turkana had home birth rates of 50% and 47%, respectively (KDHS, 2022). Seventeen percent of births in Kenya during the year 2022 involved cesarean sections, mostly done for women who have a higher education, more money, or live in cities(KDHS, 2022). Of women surveyed, 39% got postnatal care (PNC) within two days after birth, and this was affected by their age, having the power to decide on medical care, owning a phone, and delivering in public health facilities.

Based on KDHS 2022, "In Marsabit County, the maternal mortality ratio (MMR) is 1,127 out of every 100,000 babies born alive, and this is about 3.1 times greater than the national average for Kenya at 355 per 100,000 babies born alive."

Not much study has taken place in Moyale Sub-County to investigate the reasons encouraging adult women to use the medical care system. This investigation will pay special attention to a person's level of awareness, their social and economic situations, and reproductive conditions. The effort to reduce differences in current studies by finding factors

related to how mothers get medical attention when they are still reproductive in Moyale Sub-County, Kenya.

1.3 Purpose of the study

The study sought to understand major reasons involved in the utilization of maternal-health services by women falling in the age group 15 - 49 who visited Moyale Sub-County Referral Hospital in MCG, Kenya. More precisely, research analyzed how social-economic, understanding of MNH programs, customary, and reproductive factors either make mothers use or not use needed maternal-health services such as ANC, quality care during childbirth, and PNC. This study examined these predictors to give useful information for health policy choices that would lead to better maternal healthcare services for all. In addition, this research wished to support measures leading to reduced maternal death and sickness in Marsabit County and add to the national and global efforts to boost health for mothers and children, especially for those groups that are not well served.

1.4 Objectives of the study

1.4.1 General Objective

The main study objective was to identify predictors of maternal health services uptake in Moyale Subcounty Referral Hospital, Marsabit County, Kenya, by women aged 15 to 49.

1.4.2 Specific Objectives

1) To assess the uptake of maternal health services among women aged 15 - 49 years in Moyale Subcounty Referral Hospital, Marsabit County, Kenya.

2) To assess the level of awareness of maternal health care services among women aged 15 - 49 years in Moyale Sub-County referral hospital, Kenya.

3) To determine the socio-cultural factors that influence maternal health care services uptake among women aged 15-49 years in Moyale Sub-County referral hospital,

Kenya.

4) To determine the socio-economic factors influencing maternal health care services uptake among women aged 15-49 years in Moyale Sub-County referral hospital, Kenya.

5) To determine the reproductive factors influencing maternal health care services uptake among women aged 15-49 years in Moyale Sub-County referral hospital, Kenya.

1.5 Research Question

1) What is the uptake level of maternal health services among women aged 15 - 49 years in Moyale Subcounty Referral Hospital, Marsabit County, Kenya?

2) What is the level of awareness of maternal health care services among women aged 15 - 49 years in Moyale Sub-County referral hospital, Kenya?

3) What are the socio-cultural factors influencing maternal health care services uptake among women aged 15- 49 years in Moyale Sub-County referral hospital, Kenya?

4) What are the socio-economic factors influencing maternal health care services uptake among women aged 15 - 49 years in Moyale Sub-County referral hospital, Kenya?

5) What are the reproductive factors influencing maternal health care services uptake among women aged 15 - 49 years in Moyale Sub-County referral hospital, Kenya?

1.6. Justification of the Study

In Kenya, there is still a major concern about maternal health, mainly among groups who live in marginalised areas. The latest 2022 KDHS report suggests availability of remarkable progress nationwide uptake of maternal health services. As a pastoral county that is difficult

to reach, Marsabit County still performs poorly below the country's average. It is shown in the KDHS 2022 that in Marsabit, just over two-thirds (67%) of women were present at four or more antenatal visits, and close to six out of ten women (59.3%) welcomed newborns in hospitals or health centres. Only a share of 41% of women in the county gets postnatal care (PNC) in a duration of 2 days of their delivery, and that much below 39% national average, which is inadequate.

This situation calls for detailed studies at the local level to identify reasons why some people in each region seek maternal health services (Yoseph Samago, 2025). Most of those served by the Moyale Sub-County Referral Hospital are pastoralists who may not get the full benefit of MHS due problems of distance, culture and finances. Elements awareness that influence women to use maternal health services helped these teams to plan better, understandable, and lasting improvements for women's health. Besides, the research was consistent with global commitments, especially SDG 3, which addresses the need to lower dangerous childbirth for mothers and give all people access to healthcare related to reproduction. That's why this research was meant to collect evidence that informs stronger policies and health systems, together with fair delivery of maternal health care in "Marsabit County".

1.7. Significance of the Study

1.7.1 Government of Kenya

The main recipients of this investigation are the National Government and expectant mothers, as the investigation takes place in a representative setting where the previously determined indicators are likely to be particularly prevalent. To contribute to favourable results, the research attempts to shed light on the variables influencing and possible substitutes for health care. Health outcomes like the primary facors leading to maternal mortality, and gaps enhancing health care quality . Study objective was to ascertain economic, social, and cultural elements influence adoption of complementary maternal medical services in public hospitals.

1.7.2 Moyale Sub-County Referral Hospital

The study finding's will be important for Moyale Sub-County's healthcare providers. The investigation's findings will be useful in identifying the variables influencing the "Moyale Sub County Referral Hospital's" adoption of medical care for mothers. The results will show changes in the use of maternal medical care by "Moyale Sub-County referral hospital." Problems with maternity care service uptake will be addressed by the Moyale Sub-County referral hospital. This will help in developing a policy for medical care during pregnancy.

1.7.3 Community Members

Expectant women within research delimitation are expected to greatly benefit from the investigation's findings. By focusing on social factors, the investigation project aims to clarify the possible influences that community, as well as interpersonal ties, could be tied to uptake of MHS. Understanding economic factors can make it easier to comprehend the means and financial barriers that affect people's ability to access medical care.

Furthermore, the analysis of cultural factors aims to determine how customs and beliefs affect the use of medical treatment by mothers. The results of this investigation can help shape focused policies and programs that are designed to address these particular issues, which will eventually increase the number of pregnant women in Moyale Sub-County who use healthcare services for mothers overall. This can then result in better health outcomes for moms and their babies, decreased risks during pregnancy, and increased mother's well-being.

1.7.4 Donors and Other Stakeholders

The investigation's findings will be crucial for both domestic and foreign investors, who might collaborate with the government's Ministry of Health to offer the sector more support. Study sought to highlight elements policymakers and investors should prioritise when working to enhance the availability of free maternity healthcare.

1.7.5 Researchers and Academicians

The survey's findings will be important to academics. The inquiry will contribute to filling in knowledge gaps regarding the utilisation of services for maternal medical treatment. The findings will help researchers understand the elements connected to the adoption of “health services” for mothers. Findings will also demonstrate how the Moyale Sub-County referral hospital's adoption of maternal wellness services has evolved. The results of this investigation will draw attention to the obstacles to maternal healthcare adoption. As a result, the current study can be used as a foundation for additional investigations on the adoption of medical services for mothers by scholars and investigators.

1.8 Limitation of the research

Firstly, the study was facility-based and only included women who visited the referral hospital, potentially excluding those who did not seek care at health facilities. This could lead to selection bias and restrict research findings' generalizability to the entire population, particularly in a region where home deliveries and low facility utilisation are common. Secondly, due to “cross-sectional” research design quality, no causal relationships were established between the identified predictors and maternal health service utilisation; only associations were inferred.

Additionally, the study ‘depended on self-reported data subject to recall bias and social desirability bias ’ (Van de Mortel, T. F. (2008)., especially regarding sensitive issues like the number of ANC visits or decision-making dynamics within households. Language barriers and varying literacy levels among respondents may also have affected collected data's accuracy and consistency, despite use of trained interviewers and translated questionnaires. Lastly, the unique sociocultural context and nomadic lifestyle of many residents in Moyale may present challenges in reaching a representative sample and could influence participants'

willingness or ability to provide accurate responses. Despite these limitations, the study provided valuable feedback that can advise objective actions enhancing MHS uptake of similar marginalised settings.

1.9 Delimitations of the Study

Is the boundaries established by investigator in response to the specific area of interest in the research (Mugenda, 2013). This study was delimited to women aged 15 to 49 years who sought "MHS at Moyale Sub-County Referral Hospital in Marsabit County, Kenya", (Author, 2025). Research focused specifically on this health facility due to its role as a key referral centre serving a large and diverse population in the region. By concentrating on clients who attend this hospital, the study aimed to assess maternal health service uptake within an accessible and structured healthcare setting. The study excluded women who delivered outside a hospital or utilised conventional birth attendants, thereby narrowing scope to facility-based service utilisation.

The study was further delimited to selected maternal health services, including...."Antenatal care (ANC), skilled birth attendance, and postnatal care (PNC)"(Author, 2025), that are key indicators of maternal healthcare utilization. It specifically sought to identify socio-economic, cultural, and reproductive-related predictors of service uptake and didn't extensively examine clinical outcomes or long-term maternal-child health indicators. Additionally, the collection of data was limited to a specific timeframe and population subset, which helps maintain focus and manageability, but didn't capture seasonal or temporal variations in service utilisation. The study was delimited to 384 study respondents.

1.10 Scope of the study

The research was geographically limited to "Moyale Sub-County Referral Hospital", located in Marsabit County, northern Kenya, serving as a primary referral centre for the sub-county

and neighbouring areas, particularly among a predominantly pastoralist population(geographical scope). The population involved women of reproductive age (15–49 yrs) having accessed maternal health services at "Moyale Sub-County Referral Hospital(population scope)." Was conducted within a 1-year time frame during the year, capturing data from women who sought maternal health services at the referral hospital during this period. It was "cross-sectional in design", thus data collection at a "single point in time" rather than over an extended period(time scope).

The study focused on examining the various factors influencing the utilizing's "maternal health services, namely antenatal care (ANC)", skilled birth attendance, and postnatal care (PNC). Primary themes explored included socio-economic status, cultural and reproductive-related elements, & awareness of MHS (thematic scope).

1.11 Assumptions of the study

Assumption women who participated study provided honest, accurate, and complete responses regarding their maternal health-seeking behaviours, service utilization, and the determinant informing their decisions. It was further assumed choosen sample was representative of broader population of "Reproductive-age women utilizing maternal health services within the sub-county", thereby allowing the findings to reflect general trends in the area. It was also assumed that the data collection tools used such as questionnaires and interview guides were valid, reliable, and appropriately adapted to the local cultural and linguistic context. Additionally, the study assumed that key predictors such as sociocultural factors, economic status, reproductive, and awareness of maternal health services could be effectively measured and analyzed. Lastly, it was assumed that the healthcare environment and service delivery systems at 'Moyale Sub-County Referral Hospital' remained stable at the time of data collection and that no significant external changes occurred.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter includes sturdy's conceptual framework, empirical analysis, theoretical analysis, literature review summary. It provides synopsis of past research that has examined the study's variables.

2.2 Uptake of Maternal Care Services

During the last two decades, significant strides have been made in improving maternal health. Between 2000 and 2023, maternal deaths globally declined by approximately 40%, largely due to enhanced access HS, (Alemayehu et al., 2022). But, this progress failure to be uniform uniform across regions. For instance, in West Africa, only 23.8% of women received adequate maternal health services, with countries like Togo achieving higher coverage (56.7%) compared to Nigeria (11%)(UNICEF, 2022).

Africa's maternal healthcare landscape is shaped by a complex interplay of factors, including diverse medical infrastructure, available resources, socioeconomic and cultural dynamics, political instability, and varying governmental policies(Fagbamigbe & Idemudia, 2015). "In 2020, the maternal mortality rate in the African region was estimated at 531 deaths per 100,000 live births. West Africa, in particular, records the highest maternal mortality rates globally" (Mulugeta et al., 2022). "The region suffers from inadequate healthcare infrastructure, especially in rural areas, where there is a critical shortage of healthcare facilities, medical supplies, and skilled health professionals. Consequently, the maternal mortality rate in West Africa stands at approximately 473 deaths per 100,000 live births, reflecting the urgent need for strengthened health systems and targeted interventions." (Belay et al., 2022).

"Sub-Saharan Africa bears a disproportionate burden of maternal mortality, accounting for

approximately 70% of global maternal deaths. Utilisation rates of maternal health services vary beyond the continent" (Belayneh et al., 2014). For instance, in West Africa, only about 25% of women adequately use maternal health services, indicating a substantial gap in service uptake(Rwabilimbo et al., 2020). In Côte d'Ivoire, the reach of a minimum four ANC visits is 43.4%, and skilled birth attendance at delivery stands at 59.1%(Ahmadi, 2022). "In Uganda, 62.6% of urban women had more than four ANC visits compared to 46.6% of rural women" (Atuoye et al., 2020). Less than 25% of women started ANC in the first 3 months. Approximately 50% completed over 4 ANC visits. Factors such as teenage pregnancies and poor service quality contributed to low ANC uptake(Babughirana et al., 2020). Effective ANC coverage was 38%, indicating that while many women attended ANC, the quality and comprehensiveness of services were suboptimal. While 97% of mothers attended a minimum ANC visit, while 20% started ANC visit in the first 3 month's, and just over half (54%) completed recommended 4 visits(Ikamari, 2020). "In their study, PNC coverage was notably low at 51%. Despite high rates of institutional deliveries, follow-up care for mothers and newborns remained inadequate(Lindberg et al., 2022). Only 33% of women received postnatal care within the first two days after delivery, highlighting a significant gap in the continuum of care" (Wandera et al., 2019).

There has been notable progress in MHC utilisation in Kenya. Introduction of "Free Maternity Services" (FMS) program, " 2013 significantly increased facility-based deliveries" (Njuguna et al., 2017). "A study analyzing data collected from 47 county referral hospitals reported a 26.8% increase in deliveries and a 16.2% rise in antenatal care (ANC) attendance between 2013 and 2014" (Njuguna et al., 2017). Despite these improvements, challenges persist, especially in underserved regions. In pastoralist regions like Marsabit County, service uptake remains low. Only 41.7% of mothers attended minimum 4 ANC trips, 33% gave birth

in health facilities, 43% received postnatal care (Galgalo et al., 2024). Barriers include "Long distances to health facilities, cultural practices, and limited healthcare infrastructure." (Galgalo et al., 2024)

2.3 Level of Awareness of Maternal Health Services

Awareness of MHS is a key determinant in their uptake across Africa. However, studies consistently indicate that awareness levels remain suboptimal, particularly among rural and marginalised populations. For instance, "a study in Tanzania found that only 34.4% of women were aware of their right to access maternal health services, with higher education and occupation status significantly associated with increased awareness". (Mpembeni, 2019). In East Africa, "a lack of awareness and knowledge about obstetric danger signs and maternal health services hinders access to maternal healthcare, particularly for rural and marginalised women. This lack of awareness and knowledge stems from low education levels, traditional practices, and limited access to health information",(Yihune Teshale, 2025).

Regional variations in awareness of MHS is noted, as documented in existing research. The variation in maternal mortality rates among nations reflects this disparity. "Realizing women's right to accessible medical care requires adequate knowledge of maternal health rights and the available services" (Rose & Mpembeni, 2019). However, the authors reported education levels and literacy regarding maternal health services significantly contributes to maternal mortality. "Most developed countries—such as Norway, Poland, Israel, & Iceland—with maternal mortality rates fewer than three deaths per 100,000 live births, have high literacy levels and strong awareness of maternal health services" (OECD iLibrary, 2023). In contrast, "Developing countries like Kenya, Tanzania, Uganda, and Nigeria experience higher maternal mortality rates, partly due to lower levels of awareness and education about maternal health services" (WHO, 2023). Marsabit County is among

marginalized regions in Kenya. It has a high illiteracy rate—with 68% of residents lacking formal education, 26% with only primary education, and just 6% having attained secondary education. This high level of illiteracy significantly contributes to the country's elevated maternal mortality rate (Muyaka, 2018).

A study in western Kenya assessed awareness of the Linda Mama initiative, a government program providing free maternity services. Findings indicated that while healthcare managers and providers were well-informed, awareness among antenatal attendees was low. In Homabay County, 3 out of 14 antenatal respondents were aware of the initiative, compared to 11 out of 14 postnatal mothers (Ochieng, 2022).

"Women in many Sub-Saharan African countries encounter difficulties in in accessing healthcare as a result of economic hardships. Governments in this region often struggle to make healthcare universally accessible because of high poverty rates, sluggish economic growth, and limited national resources" (Kassa et al., 2021). Furthermore, majority countries in Sub-Saharan Africa have reduced healthcare funding through structural adjustment programs and other cost-cutting measures, which have further strained maternal healthcare systems(Alibhai et al., 2022).

Maternal healthcare aims to ensure that all expectant and nursing mothers maintain good health, experience safe deliveries, and have healthy babies. It spans from the moment of conception to the post-birth period, with prenatal and perinatal care designed to prevent, detect, and treat complications promptly (Republic of Kenya, 2018). Free maternal health care services, when effectively implemented, enhance the achievement of these goals.

A study conducted by Nasra (2021) "assessed shared decision-making and maternal healthcare utilisation between women falling in the reproductive age in Moyale Sub-County. Findings revealed low use of MHS. The key barrier identified was a lack of getting in contact

to maternal health records and services. The MMR in Moyale Sub-County stands at 1,127 deaths in every 100,000 live births—approximately 3.1 times higher compared to national average of 362 deaths in every 100,000 live births".

In 2020, Odhiambo, Nyerere, Benn carried out a research in Moyale to examine rising anaemia cases related to pregnant women. "Data from February 2017 to November 2019 were collected quarterly from the Kenya District Health Information System" (Odhiambo & Sartorius, 2020). The researchers applied a "spatio-temporal conditional autoregressive" (CAR) approac using a Bayesian negative binomial approach to map anemia cases across sub-counties. This model accounted for temporal and spatial variations by incorporating autoregressive processes and seasonal effects. The study concluded that with Kenya's growing population of women, there is need utilize routinely collected data to identify overlooked health patterns.

2.4 Social and Cultural Factors Influencing Maternal Health Services

"A growing body of research highlights the wide range of cultural and social factors that influence the uptake of maternal health services. These factors are deeply embedded in societal norms and include ethnicity, religion, gender dynamics, freedom in household resolutions, knowledge and education, early marriage (before the age of 18), female genital mutilation (FGM), domestic violence, and limited access to contraception" (Marebele, 2020). In many rural regions of Africa, "Traditional Birth Attendants" (TBAs) play a central function in maternal care. Studies indicate that 60% to 90% of expectant women in informal areas utilise TBA facilities (Fekadu & Regessa, 2015). Fekadu's study on the utilisation of delivery services in Ethiopia revealed that "rural mothers are significantly more likely to rely on TBAs as opposed to their urban counterparts."

Numerous investigations on the social factors affecting “women of reproductive age” in their use of MHS have been conducted globally. For instance, Vizheh and Rapport (2023) conducted a study on demographic and social variables influencing the MHC of Iranian women residing in Australia. Twenty-one Iranian women aged 18 to 49 were recruited via social media in 2022. The findings revealed that, “ deeply ingrained sociocultural beliefs and values from Iran presented significant barriers to the utilisation of reproductive health care services (RHCS) in Australia” Author, 2025. However, research also showed that exposure to Australian sociocultural norms enabled these women to act as agents of change, reframing their reproductive health perspectives, taking ownership of their reproductive choices, and adapting to the available services.

In Nepal, Baral, Lyons, Skinner, and van Teijlingen (2019) “investigated women’s positions and options about maternal health services and the social factors influencing the use of skilled birth attendants.” This review examined global “literature on maternal health in Nepal”, emphasising the country’s commitment to ‘Millennium Development Goal 5’, which aims to ‘reduce maternal mortality by 75%’. The study concluded that the availability or unavailability of social support from family, friends or community significantly affects a woman's decision to look for maternal care. Strong social networks were associated with timely and consistent health-seeking behaviors.

Elemuladu et al. (2019) did research in Nigeria examining sociodemographic characteristics affecting MHC uptake by rural women of southeastern Nigeria. The research involved 310 postpartum women who accessed ANC services at determined primary health facilities in Anambra State. “Data were collected using semi-structured questionnaires and analyzed with SPSS version 17” Google, (2025). The study revealed that most women had their initial ANC visit during the second session, and approximately 31% (94 out of 298) had fewer than

four ANC visits. A significant association was found between sociodemographic variables and ANC service utilization. Despite high service usage, the study reported a 10% fetal loss rate, underscoring the need for improvements in early and adequate ANC attendance.

In Swaziland, Tsawe, (2021) utilized secondary information from "2020–2021 Demographic and Health Survey" assess social qualities affecting the using of MHC. Exploratory descriptive research employed univariate, "bivariate, and multivariate" analyses. "Logistic regression revealed significant differences in uptake: antenatal care (97.3%), delivery care (74.0%), and postnatal care (20.5%). Childhood immunization had a high uptake of over 80%. Key factors influencing service utilization included age, parity, media exposure, education level, wealth status, and residence" (O'Rourke & Williamson, 2017). The findings emphasized the unique contributions of these variables to "maternal and child healthcare usage."

Chi et al. (2019) conducted a qualitative investigation into socioeconomic factors influencing MHS utilization in after-conflict Northern Uganda and Burundi." Data were collected through in-depth interviews and focus group discussions" Galagallo, (2025). 115 participants, including local health providers, women, and select NGO staff. Using a deductive and inductive analytical framework, the research revealed that women's getting to maternal, sexual, and reproductive health services (MSRHS) constrained of multifaceted barriers across "individual, social, cultural, political, and health system domains." The study highlighted the necessity of addressing both financial and non-financial obstacles to build a resilient and equitable healthcare system.

In Kenya, Mochache, Nyagah, and Gichangi (2020) investigated "the influence of social and cultural norms on maternal health service uptake in Kwale County." Between April and November 2020, the researchers conducted 22 in-depth surveys and 15 focus group

discussions comprising Digo community members. Using thematic analysis, the study found that “religious beliefs, cultural norms, and gender roles” significantly shaped attitudes toward facility-based deliveries and contraceptive use. Notably, decisions regarding maternal care were often influenced by respected female figures in the community.

Leitemu and Gitonga (2019) examined factors affecting access to universal healthcare among older adults in rural Marsabit County, Kenya, focusing on beneficiaries of the National Hospital Insurance Fund. Although the focus was broader, findings provided insights into healthcare access challenges relevant to maternal services in rural contexts. Mangesha et al. (2017) conducted qualitative research to understand cultural influences on maternal health service use among refugee and immigrant women in Australia. Twenty-one interviews with healthcare providers were analyzed thematically, using the ecological and socioeconomic model. The findings highlighted that cultural practices such as home births attended by traditional birth attendants influenced women's preferences for childbirth settings. Cultural rituals and perceptions of hospital care significantly impacted decisions to seek professional medical services.

In Ethiopia, Zeleke (2021) explored cultural and social influences on institutional delivery in the Gedeo zone, Dilla Zuriya Woreda. A mixed-methods approach revealed that 28% of women opted for institutional delivery, while 72% chose traditional birth attendants. Reasons cited included concerns about privacy in hospitals and the influence of husbands and postpartum cultural practices prioritizing women's health at home.

John, Vudni, and Guchuhi (2022) investigated how cultural practices affect MHC access in Pokot East, Baringo County, Kenya. Using a descriptive survey design grounded in the theory of access and decision-making models, the study engaged 146 participants via purposive sampling. Data were analyzed with NVivo and presented narratively. Findings

showed that" cultural norms frequently hindered women from accessing maternal health services." NVivo , (2024)

2.5 Social-Economic Factors Influencing Maternal Health Services

Literature indicates that several socioeconomic variables greatly impact access to maternal health services. Key indicators include unemployment, low educational attainment, low household income, food insecurity, and housing instability (Amari, 2022). Unemployment often leads to the loss of health insurance or financial hardship, making it difficult for pregnant women to gain vital MHS like prenatal care, obstetric treatment, postnatal care (Habte, 2022). Food insecurity and inadequate nutrition during pregnancy can adversely affect maternal and fetal health, contributing to complications like preterm birth, low birth weight, and developmental challenges. "A nutritious diet is critical for maintaining the physical and mental well-being of both the mother and the unborn child" (Laraia, 2022). Financial constraints that limit access to nutrient-rich food can exacerbate pregnancy-related risks.

Low household income also impacts maternal healthcare by restricting access to transportation and quality healthcare services. Women with limited financial resources may struggle to attend medical appointments and may rely on under-resourced health facilities, which can result in substandard care and poorer maternal health outcomes compared to those with higher incomes (Yang, 2023). "In Moyale Sub-County, located in Marsabit County, Kenya, socioeconomic challenges such as high poverty rates, widespread unemployment, and severe food insecurity—exacerbated by the region's arid climate—have been identified as major barriers to maternal health service utilisation" (Wako et al., 2019)

For instance, Bonke (2021) examined the financial factors influencing adolescent mothers' access to MHS in Berlin, Germany. Study investigated a systematic literature review, encompassing publications ending December 2021, to understand the accessibility and application of MHS among youth in “low- and middle-income countries.” Relevant data were extracted and presented thematically across three key areas. The findings expressed that women with economic empowerment, financial control were more conceivably to prioritise and utilise MHS. However, study also highlighted cultural norms restricting their financial independent and decision-making power negatively affected care access. It concluded that addressing economic barriers requires a multi-sectoral approach involving communities, non-governmental organizations, and government agencies. Recommended interventions included implementing social safety nets, increasing awareness, improving transportation infrastructure, and ensuring affordable healthcare services.

Similarly, Hou and Ma (2018) carried out research in Pakistan to examine “The financial impact of women's decision-making power on maternal healthcare utilisation”. Appliying data from the Pakistan Standards of Living Measurement research, the research analyzed how household decision-making influences access to care during pregnancy. Results indicated that financial variables, such as income and employment status, significantly impacted service use. Moreover, women in rural areas faced compounded barriers, including geographic isolation, poor transportation infrastructure, and limited healthcare facilities. Although urban areas had better access, economic constraints still posed significant challenges.

In Zimbabwe, Mupwanyiwa et al. (2020) used inputs from the 2020 “Zimbabwe Demographic and Health Survey (ZDHS)” identifying’s economic identifiers of MHC utilisation. Study employed “Descriptive statistics and logistic regression to analyse the link

between socioeconomic status and healthcare-seeking behaviour." Findings showed women possessing health insurance were significantly more conceivably to access prenatal, delivery, postnatal services. Lack of insurance was identified as a key obstacle to care.

Rutaremwa et al. (2019) investigated aspects influencing maternal health service uptake in Kampala, Uganda. Drawing on findings of the 'Uganda Demographic and Health Survey, that included 1,728 women aged 15–49 that had given birth in the previous year'. Using a multinomial logistic regression model informed by 'Andersen's Behavioral Model of Health Service Use', the study revealed high 'out-of-pocket' costs for maternal care including antenatal, delivery, and postnatal services discouraged women from seeking essential care.

In Kenya, Kitui, Lewis, and Davey (2018) conducted a comprehensive survey to assess economic factors affecting the place of delivery. The study involved 3,822 women and utilised interviewer-administered questionnaires, alongside geospatial data, to assess proximity to healthcare facilities. 'Multiple logistic regression analysis was used to decide forecasters of institutional output.' Key factors influencing facility-based deliveries included fewer children, urban residence, higher socioeconomic status, higher educational attainment, and frequent use of antenatal services. Additionally, regional disparities, ethnicity, and type of healthcare facility accessed were found to be significant. The study emphasized the importance of physical accessibility, citing transportation, distance, and cost as major obstacles to institutional deliveries among Kenyan women.

2.6 Reproductive Factors Influencing Maternal Health Services

The literature affirms that reproductive factors have critical function of shaping 'maternal healthcare utilization and outcome's. These reproductive system factors include maternal age, parity (number of pregnancies), reproductive health history, contraceptive use, infertility, interpregnancy intervals, pre-existing medical conditions, and access to

preconception care (Kilowua, 2019). Among these, the maternal age at conception significantly influences health outcomes. “Adolescent pregnancies are particularly associated with increased risks of complications such as low birth weight, preterm delivery, and maternal mortality. Young mothers often face barriers such as limited autonomy, inadequate resources, and social stigma, which may hinder their ability to access prenatal services and timely medical care” (Sahoo, 2021).

Equally important is the spacing between pregnancies. Adequate interpregnancy intervals are essential for optimal fetal development and maternal recovery. “Proper birth spacing allows a woman’s body to recuperate from the physiological demands of pregnancy and childbirth, thereby reducing chances of adverse outcomes in subsequent pregnancies” (Bauserman, 2020). Furthermore, maternal health can be adversely affected by pre-existing non-communicable conditions such as diabetes, obesity, and autoimmune disorders. “These conditions, if unmanaged, can increase the risk of complications during pregnancy and childbirth. Therefore, effective management of such conditions before conception and throughout pregnancy is critical to enhance both maternal and neonatal results” (Firoz, 2022).

Reproductive factors have a vital function in shaping utilization of MHCS by expectant mothers. These include a combination of biological, behavioral, and interpersonal elements that may either facilitate or hinder a woman's engagement with pregnancy-related healthcare services (Georges et al., 2019). comprehending reproductive determinants is vital in formulating effective strategies enhancing maternal well-being and healthcare access.

Kurniati, Chen, and Efendi (2018) investigated “The influence of sexual and reproductive factors on maternal healthcare utilization in Indonesia. Using data from the Indonesian Health Information System collected between February 2017 and November 2018.’ The researchers

applied a spatiotemporal conditional autoregressive (CAR) model based on a Bayesian hierarchical negative binomial framework to analyze the incidence of maternal anemia. Their findings indicated that adolescent mothers faced distinct difficulties in obtaining maternal healthcare services, besides limited autonomy, educational barriers, and societal stigma, all of which adversely affected timely and comprehensive care.

In Egypt, Morgan et al. (2017) evaluated role of gender dynamics of reproductive characteristics on maternal health service uptake, applying information from the 2017 Egypt Demographic and Health Survey (EDHS). Study employed a logic model and descriptive statistics to evaluate women's receive to healthcare during pregnancy. Results highlighted the significant effects of cultural and social norms on maternal healthcare-seeking behavior. Authors emphasized importance of designing culturally sensitive interventions that respect local beliefs and encourage positive health-seeking practices.

In Ethiopia's Mana District, Teshome et al. (2020) explored how reproductive factors influenced maternal healthcare utilization. The study assessed 510 'women of reproductive age who had previously' been pregnant and received antenatal care (ANC) services between September 2020 and October 2021. Data were collected using "Pre-tested, semi-structured interview schedule and analyzed with SPSS version 24 with results revealing that short interpregnancy intervals negatively impacted maternal and fetal health." Women who practiced appropriate birth spacing experienced fewer complications and better recovery, highlighting 'Tthe importance of addressing interpregnancy intervals in maternal health programs" Teshome et al. (2020) .

Lawrence (2020) conducted a research in Western Kenya applying data from the 2014 Kenya Demographic and Health Survey, focusing on 1,397 women who had given birth within the previous five years. Guided by Andersen Behavioral Model, the study found that 'Reproductive history—particularly the number of previous pregnancies—was a significant determinant of maternal healthcare utilization. Primiparous women, or first-time mothers, often exhibited different needs and concerns compared to multiparous women, influencing their patterns of healthcare use, especially regarding antenatal services' Lawrence (2020.

In Marsabit County, Kenya, Ikamari (2020) examined reproductive determinants of maternal healthcare adoption through a purposive sampling of male and female community members, including 'pregnant and postpartum women.' Applying thematic content analysis, the survey revealed women with history of difficult pregnancies were most likely to look for maternal healthcare services. Additionally, women who had experienced fertility issues or used assisted reproductive technologies required more tailored support. These findings underscore benefits considering women's reproductive histories designing responsive and inclusive maternal healthcare interventions.

2.7 Summary of Literature review and research gap identification

The uptake of medical services for mothers has not been the subject of conclusive research in the past. Most of the reviewed investigations were steered in different nations. Ali, Debnath, and Anwar's (2021) study focused on differences in the use of healthcare for mothers in urban India. Sekine and Carter (2019) examined how Nepal's use of healthcare for mothers is affected by child marriage. Kamal et al. (2016) looked at how mother's healthcare equity was used differently in Bangladesh's rural and urban areas. Elzarov (2020) looked into strategies for lowering mother Darfuri mortality. Other studies, however,

concentrated on particular elements influencing pregnant women's utilization of medical care. Adu et al. (2018) looked into the ways that individual and societal factors influenced maternal health conditions in Ghana. The disparities in socioeconomic status in Ethiopia's maternity healthcare services consumption were examined, Mezmurel (2017). The scope constraints of these studies have resulted in a knowledge gap.

2.8 Theoretical framework

Based on Aparicio et al. (2016), "A theoretical literature review is a vital analysis and synthesis of current theoretical frameworks, and concepts that are pertinent to the subject of the study. A theoretical literature review, in contrast to a traditional one, focuses on theoretical viewpoints and frameworks with particular attention to current research investigations, techniques, and findings." This study was guided by the Tran theoretical model.

2.8.1 Tran theoretical model

The theory emerged as a result of their research on smoking cessation, aiming to understand the process individuals go through when making behavioral changes. Prochaska and DiClemente published their model in 1983, refining it over the years to encompass a broader range of behaviors beyond smoking cessation. The formulation of the Trans Theoretical Model was prompted by the need to address the limitations of traditional behavior change theories that assumed individuals move linearly through stages (Hashem Zadeh et al.,2019). Prochaska and DiClemente (1980) recognized that.... "behavioral change is a dynamic process involving various stages, and the TTM was designed to capture the complexity and stsges progression."

"Trans Theoretical Model (TTM), also known as the Stages of Change model, is a theoretical framework that describes how behavior changes developed by James Prochaska and Carlo

DiClemente in the late 1970s, and has since been widely used in the study of various health-related behaviors, like healthcare utilization" Prochaska, J. O., & Prochaska, J. M. (2019). When examining the adoption of a mother's medical care, the Transtheoretical Model can provide insight into the stages individuals go through when making medical choices.

The Trans theoretical Model consists of five stages:

Pre-contemplation: People are not thinking about changing their behavior at this point. A woman in the phase of pre-contemplation may not understand the value of prenatal treatment or may not consider it necessary in terms of maternal medical care.

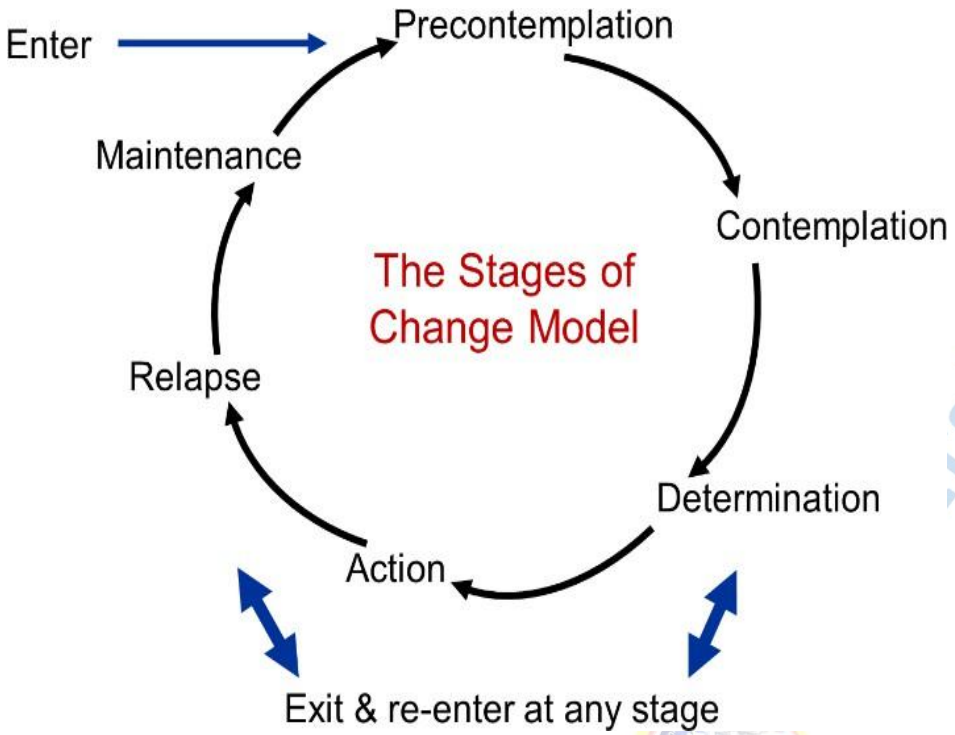
Contemplation: People in this stage have acknowledged the need for change and are thinking about acting on it, but they haven't committed. While considering her options, a pregnant woman in the stage of contemplation may know how important it is for mothers to receive medical care, but she is still weighing the benefits and drawbacks.

Preparation: In this stage, individuals are actively preparing for a behavior change. A pregnant woman in the preparation stage may be researching healthcare options, finding a healthcare provider, or making plans for prenatal care.

Action: This stage involves individuals actively engaging in the new behavior. 'In the context of maternal healthcare', this would be when a woman starts attending prenatal appointments, following recommended guidelines, and taking necessary steps to ensure a healthy pregnancy.

Maintenance: After effectively implementing the new behavior, people move on to the maintenance phase, where they try to keep the behavior modification going for the duration of the change. This could entail following postpartum care guidelines and regularly attending prenatal checkups in the event of maternal medical care. Applying Trans theoretical Model to maternal healthcare services uptake involves understanding where individuals are in the

stages of change and tailoring interventions accordingly. For example, targeted educational



campaigns, community outreach, and support services can be formulated to address specific needs at each stage in the behaviour change process. Understanding the factors influencing the decision-making process can contribute to more effective strategies for promoting maternal healthcare services uptake. Additionally, healthcare providers can use the model to identify potential barriers to uptake and tailor their communication and support to the individual's stage of change.

Figure 2.1:Trans Theoretical Model (TTM) of behavior Change

2.9. Conceptual Framework

It gives an investigator's comprehension of the relationships between the investigation's variables a visual representation (Shields & Whetsell, 2017). The associations between independent and modifying variables resulting to outcome variable are suggested by the theoretical framework used in the research. The ‘utilisation of maternal’ medical services is the dependent variable. “Reproductive, sociocultural, socioeconomic, and knowledge levels

make up the independent variables". The modifying variable affects the level of independent variables on the variables that are dependent and interacts with the 'dependent and independent variables.' The moderating variables studied are Government policy, interpersonal characteristics, and politics.

2.9.1 Level of Awareness on Maternal Health Services

Independent variables considered to achieve this objective are knowledge of available services, altitude of maternal mothers on services available, knowledge of the risks of the pregnancy, media exposure on maternal health, knowledge of the numbers of clinics maternal mothers should attend, knowledge of the type of nutrition food maternal mothers should take, knowledge on the condition of the unborn baby. A typical indicator for this objective is the level of health education and health policies.

2.9.2 Social cultural factors on maternal health uptake Services

The independent variables considered to achieve this objective are cultural belief where traditional birth attendants (TBA) are more trusted than medical practitioners, religion, traditional norms and customs such as FGM and child marriage, superstition, myths, and misconceptions such as fear of hospitals and benefits of traditional medicine, household decision making, physical and emotional work burden that hinder mothers from accessing health facility, marital status, distances to health facilities. The moderating variables are community health engagement training gender equality and women empowerment.

2.9.3 Socio-economic factors on maternal health uptake Service

The following independent variables are taken into account to achieve this goal: inadequate education, long travel times to medical facilities, high costs associated with medical care, joblessness, low pay, and unstable employment. Insufficient education also contributes to

poor access to medical care. Medical policies that address gender equality, social protection, as well as wellness determinants are the moderating variables. A typical indicator for this objective is health education, health policies, and poverty level.

2.9.3 Reproductive factor on maternal health uptake Service

This study aims to ascertain the effects of various aspects of reproduction on mothers' utilisation of healthcare. The independent variables under investigation include the mother's age, birth intervals, access to birth control and prenatal care, inequalities among rural and marginalised communities, insufficient availability of prenatal care, and previous experiences of pregnancy complications. The moderating variables consist of strengthening reproductive health education and awareness programmes, along with relevant health policies.

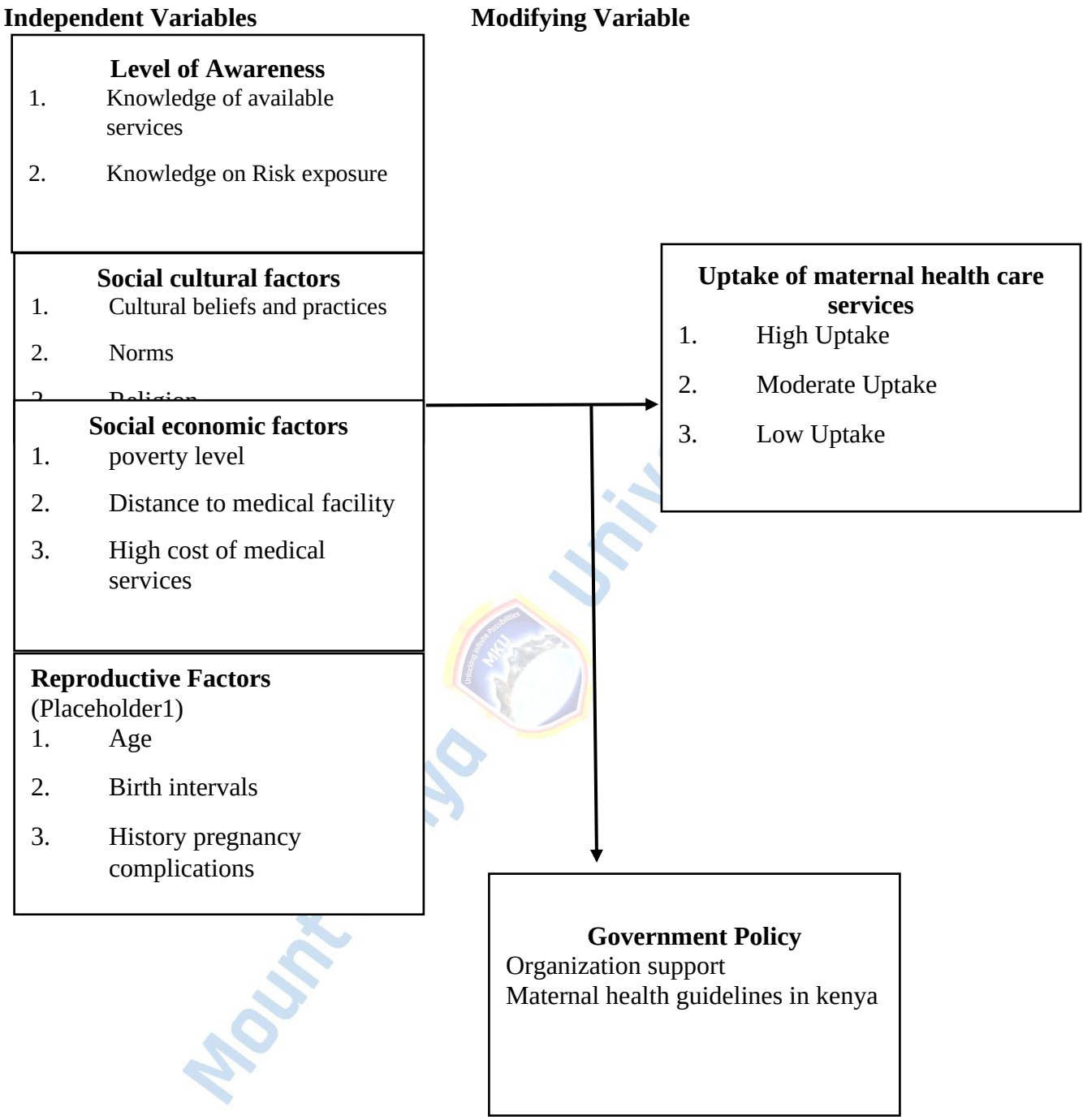


Figure 2. 2 : Conceptual framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section describes approach that was taken, taking into account the target population. The investigation's design, study methodology, investigation location, target population, number of samples calculation, method of sampling, gathering data tools, ‘data analysis, and ethical considerations are all covered in this chapter’.

3.2 Research design

Research adopted an “Analytical cross-sectional design, which was well-suited for examining the associations between multiple independent variables including socio-economic, reproductive, socio-cultural, awareness-related factors, and dependent variable, namely the uptake of maternal health services Wang, X., & Cheng, Z. (2020). Design enabled ‘collection and analysis of data at a single point in time’, allowing researcher determine prevalence maternal health service utilization and identify statistically significant predictors ‘among women aged 15 to 49 years attending Moyale Sub-County Referral Hospital.’

To enrich understanding of these relationships and provide a more holistic perspective, the research ‘incorporated a mixed-methods approach where Quantitative data’ were gathered to quantify patterns, test hypotheses, and establish statistical associations, while qualitative data were collected to explore deeper insights into individuals. This combination of methods allowed for “Data triangulation, enhancing the validity, credibility, and depth of the findings by cross-verifying results from different sources and perspectives” Galagalo, (2025).

3.3 Study Approach

Adopted a mixed-methods approach, “Integrating both quantitative and qualitative research methodologies to provide a comprehensive understanding of the predictors of maternal health services uptake amidist women aged 15 to 49 years at Moyale Sub-County Referral Hospital,

Marsabit County, Kenya" Galgalo (2025).

3.4 Study Location

In Kenya's Marsabit County, the investigation was carried out at the Moyale Sub-County Hospital. In 2019, the 'Kenya National Bureau of Statistics' stated that sub-county has 108,949 residents. "Moyale Sub-County is about 1200 kilometers northeast of Nairobi along the Nairobi- Addis Ababa highway, in the top eastern desert regions of Kenya spaning an area of 9,600 square kilometers, bounded by the Republic of Ethiopia to the north and Wajir sub-counties to the east" Google, (2025). Pastoralists alongside agro-pastoralists make up the majority of the population as a whole, with the Borana having been the main ethnic group. The Sakuye, the Gabbra, the Burji, and the Garre are some other ethnic backgrounds. The most common religion is Islam, which is followed by Christianity and other religions. One of the sub-county's problems is the inadequate road system.

3.5 Target Population

Mugenda (2013) states that the population is made up of all the investigations and the researcher's relevant components. The investigation focuses on women who visit the hospital for both prenatal and postnatal care. The research investigation also focuses on the hospital's pregnant wing nurses and doctors. The Moyale Sub County Referral Hospital served as the investigation's source of participants. The maternity wing of Moyale Sub County Referral Hospital employs eight nurses (Moyale Sub County Hospital, 2022).

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusive Criteria

1 "Women aged 15 to 49 years who were of reproductive age and had accessed or were seeking maternal health services (antenatal care, delivery, or postnatal care)' at 'Moyale Sub-County Referral Hospital during the study period'.

2 Women who were residents of Moyale Sub-County for at least six months, ensuring familiarity with the local health service environment and socio-cultural context.

3 Respondents who were mentally and physically stable, and capable of understanding and responding to the questions.

4 'Women who voluntarily consented to participate in the study' after being informed of the objectives, procedures, and their freedom, having freedom to withdraw at wish.

3.6.2 Exclusive Criteria

1 Women who were critically ill or medically unstable during data collection and therefore unable to involve meaningfully in the research.

2 Visitors or non-residents of Moyale Sub-County, as their experiences might not reflect the local context targeted by the study.

3 Respondents who declined to give informed consent, or who withdrew their consent at any point before or during data collection.

3.7 Sampling Procedure

According to Zhao (2021), "The method of sampling refers to strategies or tactics used by an investigator to identify a particular number of participants for a study". This study employed both systematic sampling and 'simple random sampling' techniques, selecting 'participants' for the quantitative component. Systematic sampling was used to recruit 'Women aged 15 - 49 years' who sought maternal health services at Moyale Sub-County Referral Hospital. The sampling frame of eligible clients was generated from the hospital attendance records, and the kth value (sampling interval) 'was calculated based on the expected number of respondents' and the target sample size. In this study, every third (3rd) eligible respondent was selected to participate. The first participant was chosen randomly, and thereafter, every

third individual on the list was systematically included to ensure attainment of the required sample size. For fairness in selecting the first respondent and in cases where a list of multiple eligible individuals was available at the same time (e.g., in waiting areas), simple random sampling was applied using a table of random numbers (table of rotary). This method ensured that each eligible individual had an equal chance of selection, thereby reducing selection bias.

3.8 Sample Size Determination

"A subset of the population is called a sample" (Kendra, 2018). Cochran's formula will be used in the investigation to determine the number of samples of the women. Cochran is used to estimate sample sizes in situations where the population size is small or unknown, and population proportion estimates are available. We will use Cochran (1977) to determine the number of participants for the women.

$$n_0 = \frac{Z^2 pq}{e^2}$$

The values are represented by; No the required size of the sample

Z- Z-score conforming to the desired level of confidence (1.96)

P- Projected populace proportion featuring characteristic of importance (0.5 for maximum variability)

q= 1-p

E- Desired margin of error (0.05)

Taking the value of p to be 0.5, at the confidential level, p=0.5

At 95% confidence level

Error margin is considered to be +/- 5%

Z=1.96

$(1.96)^2 (0.5) (1-0.5)/ (0.05)^2=384$

Women's study sample size is 384.

3.9 Data collection tools

Quantitative data were collected using a semi-structured questionnaire, which was 'administered to women aged 15 to 49 years' who sought maternal health services at Moyale Sub-County Referral Hospital. The questionnaire captured "Socio-economic factors, reproductive-related and cultural factors as well as awareness of maternal health services influencing the consumption of maternal health services" Galgallo, (2025). Semi-structured format allowed for the collection of both standardized responses and limited open-ended input for additional context.

Alternatively, qualitative data was captured via 'Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs)'. Key informants included healthcare providers,community health volunteers, and local opinion leaders who possessed in-depth knowledge of maternal health dynamics in the area. FGDs were conducted with groups of women from diverse backgrounds to explore shared experiences, perceptions, and socio-cultural influences on maternal health service utilization. These qualitative tools provided rich, contextual insights that complemented the quantitative findings.

3.10 Data collection procedure

For this study, process followed a structured and ethically sound approach to ensure the credibility of the information gathered and the protection of participants' rights. Before participation, all respondents were provided with a detailed explanation of the 'study's purpose, procedures, potential risks, and benefits. Informed consent was then obtained in writing, confirming that participation was voluntary and that respondents had the freedom of withdrawing at will without any repercussions.' Confidentiality and anonymity were

emphasized, and no identifying information was linked to the data. For quantitative data, a semi-structured questionnaire 'was administered to women aged 15 to 49' years who accessed maternal health services at Moyale Sub-County Referral Hospital. The questionnaire divided into well-organized sections, each designed to capture specific aspects of the study: Section A: Maternal health services uptake (ANC visits, skilled delivery, postnatal care), Section B: Awareness and knowledge of maternal health services, Section C: Socio-cultural factors influencing service utilization, Section D: Reproductive-related factors (e.g., parity, birth spacing) and Section E: Social economic-related factors. To complement the quantitative data, "Qualitative data were collected using two Focus Group Discussions (FGDs) and three Key Informant Interviews (KIIs)." Each 'FGD' consisted of 8 to 12 women, selected purposively to ensure diverse perspectives based on age, parity, and maternal health service use experience. The KIIs targeted knowledgeable individuals, including healthcare providers and community leaders, selected using purposive sampling based on their roles and expertise in maternal health. The primary investigator served as the moderator during the FGDs and KIIs to ensure consistency in facilitation. All qualitative sessions were conducted in a private and culturally appropriate setting, and audio recorders were used with participants' permission to accurately capture responses for transcription and thematic analysis.

3.11 Pilot of the Study

"Is conducted to evaluate the feasibility, clarity, and effectiveness of the data collection tools before the main study." In J. (2017). A total of thirty-eight (38) women in need of 'prenatal and postnatal care' participated took part in pilot, which carried out at Laisamis Sub-County Hospital, a facility with similar demographic and healthcare characteristics to the main study site. This number represented 10% of the anticipated sample size of 384 respondents, in line

with Connelly's (2008) recommendation that "A pilot sample should constitute at least 10% of the main study sample to adequately test the research procedures and instruments." In addition to assessing the tools, the pilot study also provided an opportunity to train and evaluate the preparedness of 'study assistants'. "They were trained on ethical considerations, the purpose of the study, the administration of tools, and culturally sensitive communication" Galgalo, (2025). This helped ensure uniformity in data collection and minimized interviewer bias. Following the pilot, feedback from respondents and observations by the research team were utilized to refine and improve the 'data collection instruments.' Ambiguous, repetitive, or unclear questions were revised for better understanding, and the sequencing of some items was adjusted for improved flow. The process not only strengthened the reliability and validity of the tools but also improved the confidence and competence of the research assistants ahead of the main data collection phase.

3.12 Validity And Reliability

3.12.1 Validity

Taherdoost (2016) defines "Validity as the degree to which a study accurately measures what it is intended to measure, ensuring that the findings truly reflect the concept under investigation." In this research, validity was tackled via both 'construct validity and content validity' to enhance the credibility and accuracy of the data collection instruments. 'Construct validity was' ensured by aligning questionnaire and interview guides with the study's objectives and theoretical framework, making sure that all items measured the intended constructs related to maternal health service uptake. The items were carefully developed based on existing literature, standard indicators, and previous studies to ensure they captured the relevant concepts. Content validity was achieved by subjecting the data collection tools to thorough review and evaluation by qualified experts. A reproductive health specialist and

the study supervisors critically assessed the tools to confirm that all key dimensions of maternal health service utilization were adequately covered. Their feedback was incorporated to refine the instruments, ensuring they were comprehensive, culturally appropriate, and contextually relevant.

3.12.2 Reliability

Refers to "The consistency and stability of a measurement instrument, in other words, the extent to which the instrument produces similar results under consistent conditions" (Mohajan, 2017). A reliable tool ensures that the data collected are dependable and reproducible over time. In this study, reliability was established through a pilot test involving 10% of the total sample size (approximately 38 respondents), who were not part of the key research. "This pre-test was conducted to assess the internal consistency and clarity of the data collection tools" Galgalo, (2025). Based on the pilot results, necessary adjustments were made to enhance the quality and coherence of the questionnaire items. To quantify the internal uniformity of the instrument's, Cronbach's alpha coefficient was calculated. Alpha value obtained in this study was 0.87, which indicates a high level of reliability. According to existing literature, "A Cronbach's alpha value of 0.70 (70%) or above is considered acceptable for social science research, demonstrating that the instrument used in this study was both consistent and dependable for detrmining intended variables related to maternal health service uptake" Tavakol, M., & Dennick, R. (2011).

3.13 Data Analysis Tools

3.13.1 Quantitative Data Analysis

Quantitative data analysis followed a structured and rigorous procedure maintaining the accuracy and dependability of findings. Initially, data collected was cleaned and organised utilising Microsoft Excel to remove errors, duplicates, and incomplete entries. The cleaned

dataset was then ‘imported into SPSS Version 27’ for comprehensive statistical analysis. “Descriptive analysis was first conducted to summarise the characteristics of the study population, with results presented in the form of frequencies and percentages” Galogalo, (2025). Determining the association between independent variables and maternal health service uptake used chi-square tests for independence were used during bivariate analysis. The level of ‘statistical significance was set at a p-value of ≤ 0.05.’ “To account for potential confounding variables, all variables that showed statistically significant associations in the bivariate analysis were subjected to binary logistic regression to allow identification of independent predictors of maternal health service uptake. Findings of the analyses were presented using well-organised tables to enhance clarity and interpretability” (Galgalo, 2025).

3.13.2 Qualitative Data Analysis

Qualitative data collected in this study was analysed using narrative analysis to identify, interpret, and report patterns and key themes emerging from participants’ responses. NVivo Version 11 software was employed to facilitate systematic coding, organization, and retrieval of data, enhancing the rigor and transparency of the analysis process. Qualitative data was presented using narratives.

3.14 Ethical Considerations

Study was conducted in strict adherence to ethical research standards to guarantee protection of participants' rights, safety, and confidentiality. Preliminary ethical approval was sought and received from the ‘Mount Kenya University Ethical Review Committee’. Subsequently, study received research clearance from the ‘National Commission for Science, Technology, and Innovation’ (NACOSTI). Further approval was granted by ‘Marsabit County Government Department of Health and the County Commissioner’s office’. Participation in

the study was entirely voluntary. Informed consent was obtained from all respondents after offering them a all explanation of study's aim, procedures, possible risks, and benefits. Anonymity and confidentiality were highly prioritized no personally identifiable information was collected, and responses were coded to protect participants' identities. All data collected were securely stored in password-protected files, accessible only to authorized research personnel. Additionally, the findings from the study were shared with relevant county and institutional authorities to inform policy and guide appropriate health interventions. This ethical approach ensured that the study upheld the dignity and privacy of all participants while contributing meaningfully to maternal health service improvements 'Moyale Sub-'County, Marsabit County'.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

Investigation's findings, analysis, and display are covered in this section of the investigation. The investigation's interpretation is also presented in this chapter, which is accompanied by a discussion of the data that was obtained. The research investigation focused on determining variables affecting mothers' medical services utilisation in Kenya's Moyale Sub-County referral hospital between the ages of 15 and 49. The precise goals through which their effect on the dependent variable was attained guided the data collection and analysis processes.

4.2 Response Rate

384 questionnaires in total were distributed to pregnant and postpartum patients attending the hospital. Of these, 354 were properly completed and returned, yielding a completion rate of 92%. According to Orodho (2012), a response rate of 70% or above is considered ideal for drawing reliable research conclusions.

Thus, the study achieved an adequate response rate, enhancing the credibility and findings robustness.

Table 4.1:Response Rate of Mothers in Moyale Sub County Hospital

Parameters	**Frequency Levels**	**% Percentage**
Respondents	354	92
Non-Respondents	30	8
TOTAL	384	100

Source: Primary data

4.3 Demographic characteristics of respondents.

Major variables that were applied to the investigation questions in accordance with the guidelines provided in the corresponding questionnaires given to different those who responded are outlined. These parameters included the participant's age, educational attainment, relationship status, and previous number of deliveries. Every one of these parameters had a crucial value that supplemented the study results.

Table 4.2: Demographic responses of mothers, 'Moyale sub county Hospital'.

		Frequency level	Percentage level(%)
Age	15-19 years	64	18
	26-35 years	106	30
	36-45 years	149	42
	45 years above	35	10
Education level	None(illiterate)	7	2
	Primary	120	34
	Secondary	156	44
	Colleges	57	16
	University	14	4
Marital status	Single	14	4
	Married	276	78
	Divorced	35	10
	Separated	29	8
Number of Deliverance In the past	0-3 years	128	36
	4-6 years	177	50
	More than 6	49	14

Source: Primary data

Investigation's results showed that, in comparison to the other age groups, women over 45 who visit hospital facilities for both prenatal and postnatal care make up the smallest proportion (10%). Forty-two percent of those who responded were 'in the age range of 36 to 45 years old'. Women between 15 and 25 made up 18% of all the participants, while those between the ages of 26 and 35 made up 30% of all those who responded.

With regard to education, the majority of those who responded (44%), had completed 'secondary school as the highest possible level of education.' 34% of the total participants were women who visited the hospital for both prenatal and postnatal treatments and had completed basic 'primary school as their highest level of education.' Furthermore, 16% of the people who responded were women who had visited the hospital for both prenatal and postnatal care and had completed college as their 'highest level of education'. Additionally, investigation found only 4% of those surveyed had a university education, and 2% of respondents said they had never attended school.

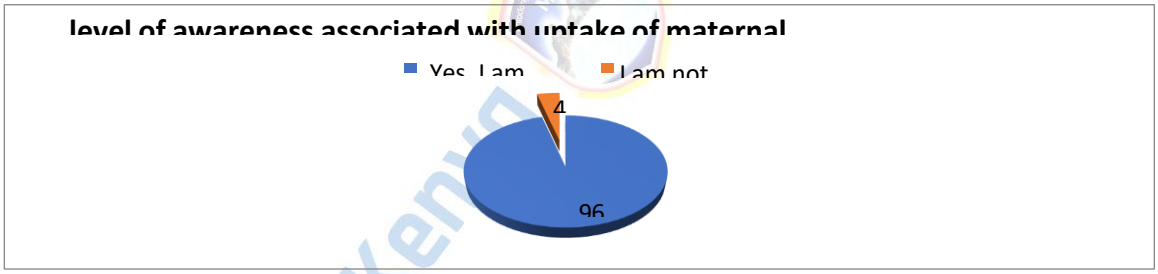
According to the investigation, 78% of the people who responded indicated that the vast majority of the women who visited the Moyale Sub County referral hospital for both prenatal and postnatal care were married. 4% of those polled were mothers who were single, 10% were divorced individuals whereas 8% of the participants had gone through separation.

The verdicts from the investigation established that 36% of the women who visited the hospital for both prenatal and postnatal care in Moyale Sub County referral have a past delivery of between 0 and 3 children. Those who have had between 4 and 6 children were 50% of the respondents, and were the majority in this case. The mothers who have had more than 6 children in the past was determined to be 49, represented by 14% of the entire respondents.

4.4 Level of awareness associated with uptake of maternal health services

In Moyale Sub-County Referral Hospital, Kenya, an investigation was conducted to determine whether women between the ages of 15 and 49 who were interested in healthcare for mothers had any correlation with their understanding rate. Research indicated that while 96% respondents were aware of the maternal medical facilities available at the 'Moyale Sub County referral hospital', 4% of the women there were between the ages of 15 and 49 said they were unaware of them. The results showed that "More reproductive women in the sub-county were aware of the available services related to maternal health beforehand' Galgalo, (2025).

Figure 4.1: level of awareness associated with uptake of maternal Health Services



Source: Primary data

4.5 Socio-cultural factors associated with the Uptake of Maternal health services

The survey sought establishing Socio-cultural variables related to uptake of MHCS by women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya. Study findings highlighted "Predictors of Sociocultural factors, like; age, marital status, religion, decision-makers and husband knowledge, were analysed to see how they influence the uptake of maternal services. Chi square test' was conducted to check for associations, followed by logistic regression."

Table 4.3:Social-Cultural factors on Maternal Health Care Uptake

				Maternal services uptake		
Characteristics	category	N	%	Chi square	Odds ratio	p-value
Age	15-25	64	18.1	**Df= 3, p=0.003**	****	
	26-35	106	29.9		1.419	**0.003**
	36-45	149	42.1		1.288	**0.017**
	>45	35	9.9		0.860	0.285
Marital status	Single	14	4	Df=3, p=0.456	****	
	Married	276	78		1.128	0.457
	Separated	29	8.2		1.221	0.367
	Divorced	35	9.8		1.051	0.793
Religion	Christian	70	19.8	**Df=2, p=0.004**	****	
	Muslim	279	78.8		0.917	**0.004**
	Others	5	1.4		1.21	**0.019**
Decisio	Mainly	54	18.2	**Df=3,**	****	

n maker	husband			**p= 0.01**		
uptake of services	Mainly wife	179	43.6		1.584	**0.002**
	Joint	65	22		1.350	**0.012**
	Others(relative)	56	16.2		0.951	
Husbands' knowledge on services	Yes	197	73	**Df=1, p=0.023**	1.377	**0.024**
	No	73	27		*****	

Source: Primary data

The evaluation of age as a predictor expressed a key correlation with utilisation of maternal services, as evidenced by the 0.003 chi-square p-value. With odds ratios of 1.419 and 1.288, respectively', women aged 26–35 and 36–45 were highly inclined 'to use maternal services than those aged 15–25' (reference category). 'P values of 0.003 and 0.017 indicated the statistical significance of these relationships. Compared to women of the ages of 15 and 25, those over 45 were less inclined to use the mother's services; however, this difference was not statistically noteworthy (p = 0.285)'.

The chi-square p-value of 0.456 (p > 0.05) indicates that there was no statistically significant relationship between the assessment of marriage status 'as a predictor and the uptake of maternal care services. The non-significant odds ratios and p-values show that none of the marital relationship categories—married, parted ways, or divorced—were substantially more inclined to use maternal care than single women' (the reference category).

The chi-square p-value of 0.004 ($p < 0.05$) indicates a significant 'relationship between the assessment of faith as a predictor and the utilisation of maternal medical services'. The considerable p-values of 0.004 and 0.019 show 'that the probability of' using maternal care significantly increased in 'Muslim women' the majority (reference category) and women of other religions.

The chi-square p-value of 0.01 suggests 'significant relationship between adoption of maternal health services and decision-makers as predictors'. With odds ratio of 1.584 ($p = 0.002$), women who made the majority of the decisions had more probability of using maternal care than husbands made the majority of the decisions (reference category). Additionally, using maternal healthcare was significantly more likely when joint decision-making was involved (OR = 1.350, $p = 0.012$).

"I would say that when a woman is the one making most of the decisions in her home, she's more likely to seek maternal healthcare without waiting for her husband's approval. It gives her confidence and control, which really helps in accessing services on time……."(Respondents 2, FGD 2).

"The results demonstrated a significant correlation between the predictors of the husband's understanding of maternal care and the uptake of those services. With a statistically noteworthy p-value of 0.024, women whose husbands were aware of maternal care were 1.377 times more inclined to make use of these services than women whose husbands were not aware of them" (reference category).

These findings were concurrent with the qualitative data in which one among the key informants noted that;

"*When husbands are informed about maternal care services, women are more likely to utilize them. This highlights the crucial role of male support and awareness in encouraging women*

to seek necessary maternal healthcare, ultimately improving maternal health outcomes….."(*Community health volunteers*).

4.6 Socio-economic factors associated with uptake of Maternal Health services.

Socio-economic factors were analyzed to see how they 'affect the uptake of maternal services.' Researcher 'Chi-square' conducted test checking for relations followed by logistic regression. The information on MHC uptake is tablulated below according to several factors, including educational attainment, work status, income, and awareness of maternal services alongside issues like distance to medical center and cost of the services provided to mothers. To demonstrate the statistical significance and strength of relationships between these characteristics and the use of mother's services, the table provides percentages, odds ratios, p-values, and results from chi-square tests.

The results revealed significant 'correlation between' education level and the use of MCS. Compared to those with no formal education (reference category), those with 'higher levels of education' (primary, secondary, and tertiary) were more likely to utilize maternal services. Women with tertiary education were almost double succeptible (OR = 1.98) to consume these services, indicating chances of using MHC raised with higher educational attainment. These findings were concurrent with the qualitative data where one of the discussants in the focused group discussion noted that;

"*Educated women are more informed about the importance of maternal healthcare. They understand health messages, ask questions, and follow medical advice. Compared to uneducated women, they are also more confident visiting hospitals, making decisions, and*

seeking help early. Education empowers mothers to prioritize and access maternal health services……" (Respondents 3, FGD 2).

"The chi-square p-value of 0.752 ($p > 0.05$) indicates no statistically adequate correlation between employment status to use of maternal healthcare services. Comparing women without employment (reference category), neither self-employed nor formally employed women were notably more likely to use maternal care" Galgalo, (2025).

These results were contrary to the qualitative data where one of the discussants in the focused group discussion noted that;

"*Employed women are more likely to use maternal health services because they generally have better financial stability, access to healthcare benefits, and higher autonomy in making healthcare decisions. Employment also provides better access to transportation and the ability to take time off for medical appointments, which encourages consistent maternal care*……" (Respondents 1, FGD 1).

"Although the 'Chi-square test' suggested a notable correlations between income to maternal healthcare utilization ($p = 0.007$), the individual odds ratios did not demonstrate a statistically significant effect. The high p-values for the income categories (>10,000 or 5,001–10,000) indicated that high income women rates were less likely to use maternal healthcare services as opposed to those earning less than 5,000" (reference category).

There was a 'strong positive association' between knowledge of maternal health services and service utilization. "A highly significant p-value ($p < 0.001$) showed that women who were knowledgeable about maternal healthcare were 3.47 times more likely to utilize these services than those who were not" (reference category).

"The chi-square p-value of 0.002 indicated a significant relationship between the interval to a health facility and the application of maternal services. However, odds ratio of 0.40 ($p =$

0.967) suggested that women who reported distance as a challenge were less likely to use maternal care than those who did not report this issue" (reference category). Despite the chi-square significance, the high p-value for the odds ratio implies that the effect was not statistically meaningful.

Finally, the results showed a high correlations between perceived cost of MS and their utilization. Women who considered MHS to be expensive were less likely to use them, with an odds ratio of 0.556 and high p-value ($p = 0.007$). This suggests that cost is a major barrier to accessing maternal healthcare.

Findings were concurrent with the qualitative data where one of the key informants noted that;

"*The high cost of maternal health services discourages many women from seeking care, especially in low-income settings. When services are perceived as expensive, women may delay or forgo antenatal visits, skilled delivery, or postnatal care. Affordable or subsidized services are essential to increase utilization and improve maternal and newborn outcomes……..*"*(health care providers*).

Table 4.4:Social -Economic factors on Maternal Health Care Uptake

				Maternal services uptake		
Characteristics	category	N	%	Chi square	Odds ratio	p-value
Education level	None	7	2	**Df=3, p= 0.004**	****	
	Primary	120	34		1.512	**0.045**
	Secondary	156	44		1.766	**0.003**
	Tertiary	71	20		1.98	**<0.001**
Work status	None	148	41.8	Df=2, p=0.752	****	
	Employed	120	33.9		1.134	0.231
	Self employed	86	24.3		1.110	0.531
Income	>10000	134	37.9	**Df=2, p= 0.007**	1.88	0.045
	5001-10000	132	37.3		1.24	0.02
	<5000	88	24.9		****	
Knowledge on maternal services	Yes	248	70.1	**Df=1, p= <0.001**	3.47	**<0.001**
	No	106	29.9		****	

Distance to health facility	No problem	280	79.1	**Df=1, p=0.002**	****	
	Problem	74	20.9		0.40	0.967
Cost of maternal health services	Affordable	148	41.8	**Df=1, p= 0.004**	****	
	Expensive	206	58.2		0.556	**0.007**

Source: Primary data

4.7 Reproductive factors of Mothers on Maternal Health Care uptake.

"Reproductive factors were analysed to assess their impact on uptake of maternal healthcare services" Frejd, P. (2013). A Chi-square test was first applied to determine relashionship between reproductive variables and service utilization, followed by logistic regression to quantify strength of these relationships. The number of deliveries 'demonstrated a statistically significant association with maternal service uptake', with a Chi-square p-value of 0.013 ($p < 0.05$). 'Logistic regression' results further revealed that women who had four or more deliveries, particularly those with more than six, were highly likely to MHS in relation to the reference category.

These findings were concurrent with the qualitative data where one 'key informant' noted that;

"*Let me say women with more deliveries often become more aware of pregnancy-related risks and the importance of skilled care. Their previous experiences motivate them to seek timely maternal health services to ensure better outcomes for themselves and their babies,*

*especially if they encountered complications in earlier pregn*ancies…." *(Health care provider)*

Additionally, the application of maternal healthcare services revealed a significant relationship to a history of pregnancy-related complications. A statistically significant p-value of 0.014 indicated that "Women with a history of complications during pregnancy were 1.786 times more likely to utilize maternal services than those without such a history" *(community health volunteer)*.

These findings were concurrent with the qualitative data where one key informant noted that;

"*Women with a history of complications during pregnancy are more likely to seek maternal health services due to increased awareness of potential risks. Prior negative experiences often heighten their caution, prompting them to prioritize antenatal visits, skilled delivery, and postnatal care to safeguard both maternal and fetal health……*"*(community health volunteer)*

Another key informant noted that

"*Experiencing complications in previous pregnancies often motivates women to seek maternal health services more actively. Such experiences raise concern for their health and that of their baby, encouraging them to attend antenatal clinics, seek skilled birth attendance, and follow through with postnatal care to prevent recurrence of complications……*"(local opinion leader)

"Conversely, contraceptive use failed to exhibit a significant association with maternal health service utilization. The Chi-square p-value of 0.567 ($p > 0.05$) suggests no statistically significant relationship. Similarly, the non-significant odds ratio and p-value from the logistic regression analysis indicate that women who used contraceptives were not significantly most

probable to access maternal healthcare as opposed to those who did not" (reference category).

Table 4.5:Reproductive Factors on Maternal Health Care Uptake

				Maternal services uptake		
Characteristics	category	N	%	Chi square	Odds ratio	P value
Age	15-25	64	18.1	**Df= 3, p=0.003**	****	
	26-35	106	29.9		1.419	**0.003**
	36-45	149	42.1		1.288	**0.017**
	>45	35	9.9		0.860	0.285
Number of deliveries	0-3	128	36.2	**Df=2, p= 0.013**	****	
	4-6	177	50		1.087	**0.013**
	>6	49	13.8		0.980	**0.018**
History of pregnancy complications	Yes	68	20	**Df=1, p=0.014**	1.786	**0.014**
	No	272	80		****	
Family planning	Yes	187	55	Df=1, p=0.567	1.083	0.567
	No	153	45		****	

Source: Primary data

4.7 Discussions

4.7.1 Level of awareness associated with uptake of maternal healthcare services

Findings reveal that 96% of the sample knew about hospital's maternity medical care. This implies that a sizable fraction of the sub-county's reproductive-age women are aware of the maternal medical facilities available beforehand. The services in question include gynecologic, nutritional, labor and delivery, prenatal and postpartum, guidance and counseling, vaccinations (immunization), and family planning services. Similar results were obtained in other parts of the nation. “Although only 45% of women in Mt. Elgon Sub-County, Kenya used the maternal medical facilities that were available to them, 96% of women were aware of them” (Ferechi, 2023). According to an investigation conducted in Rongai by Kulei et al., “60.8% of participants were aware of the hospital's mother's medical services. Although there is a high level of awareness about these services, there is still little use of them” (Yar Zever, 2013).

4.7.3 Socio- Cultural factor associated with uptake of maternal health services

Based on investigation findings, women in low-income nations are less prone to receive maternity care due to sociocultural factors. Decisions about hospital-based delivery and the contraceptives use are influenced by convictions about religion, cultural norms, and gender stereotypes (Mochache et al., 2020; Idris et al., 2022). Matriarchal figures are important decision-makers in certain communities (Mochache et al., 2020). “User-related, provider-related, and user-provider engagement factors are among the obstacles to the use of maternal health services”, (Moleki, 2014). Women's decisions regarding their medical care are also influenced by their marital status, educational level, age, and traditional belief systems (Dapaah & Nachinaab, 2019). To improve maternal adverse health effects, addressing these

barriers calls for all-encompassing efforts that take into account a variety of social and cultural backgrounds (Idris et al., 2022).

Age has been evaluated as a factor influencing maternal wellness utilization in various studies. Maternal medical care utilization varies significantly depending on age and other socioeconomic factors, according to investigations conducted in several nations with low to middle incomes. According to our research, “Middle-aged women (25–34 years old) are more likely than younger women (15–24 years old) or older- women (35–49 years old) to use skilled birth attendance and antenatal care” (P. Singh & Lucky Singh, 2013; Mabda Novalia Istifa et al., 2021). According to P. Singh & Lucky Singh, 2013; S. Yaya et al., 2018, “These findings emphasize the need for age-sensitive policies and programs that address social and cultural factors disparities to improve maternal medical services access and use, especially for younger and older mothers and those from backgrounds of disadvantage. Women's autonomy with regard to medical decision-making has also been linked to higher maternal healthcare use” (Hasibul Hasan Shanto et al., 2023). Additionally, we discovered that “Women's use of maternal medical care is strongly influenced by the knowledge and participation of their husbands in this area. Analogous research conducted in Bangladesh and India indicates that men's optimistic gender attitudes and knowledge of pregnancy complications are linked to higher rates of institutional deliveries, antenatal care utilization, and women's autonomy over medical choices” (Chattopadhyay, 2012; Jungari & Paswan, 2019; Sinha, 2014). “The use of medical services for mothers is positively correlated with the husbands' social and cultural factors status and educational attainment” (Jungari & Paswan, 2019).

“Moreover, there is a strong correlation between husbands accompanying their spouses to medical appointments and the probability of women receiving professional care during their pregnancies, deliveries, and postpartum periods” (Rahman et al., 2018). “Interventions should emphasize educating and engaging men in maternal medical issues, urging them to attend during prenatal care visits, and promoting their favorable role during the pregnancy and delivery process in order to improve medical conditions for mothers and newborns” (Chattopadhyay, 2012; Rahman et al., 2018).

The present study also emphasizes how sociocultural barriers have a key implications on maternal medical care use and “How they affect women's behaviors when seeking medical attention during pregnancy and childbirth” (Ganle *et al.*, 2015; Ganle, 2014). “Partner support, previous healthcare experiences, and communication with other women and health workers also affect care-seeking decisions” (Lubbock & Stephenson, 2008). Interventions addressing these barriers have shown positive effects on the uptake of skilled maternity care, although evidence is limited for birth and postpartum care (Coast *et al.*, 2016). The studies emphasize that ‘Cultural factors interact with broader social, economic, and geographical factors to influence access to maternal healthcare services” (Coast *et al.*, 2016). “To improve maternal health outcomes, interventions must target multiple levels: individual, household, and community” (Lubbock & Stephenson, 2008). Creating a supportive environment and fostering respectful dialogue with communities are crucial for increasing the aplication of skilled maternity care services (Coast *et al.*, 2016).

4.7.3 Socio-economic factors associated with uptake of maternal health services

Service uptake for mothers was significantly correlated with socio-economic determinants like income level, education level, understanding of services available to mothers, vicinity to well-being facility, and cost of medical care. According to the odds ratio, “Women who have completed secondary and tertiary education are more likely to use services related to motherhood. Similar patterns have been reported by studies” (Banke-Thomas et al., 2017). The use of health services for mothers is significantly dictated by women’s ststus of education. This may be clarified through the fact that “women who have completed more education tend to be more aware of and knowledgeable about maternal health” (Banke-Thomas et al., 2017).

They thus recognize the role that prenatal, perinatal, and postnatal care play in reducing death rate of mothers and newborns. Moreover, education puts them in an improved position to take advantage of maternal medical services since it increases their employment prospects and capacity for making educated decisions (Samuel et al., 2021). “The use of maternal health care additionally determined to be significantly predicted by earnings level” (Samuel et al., 2021). Studies that came to similar conclusions also support this. Women with higher incomes can afford to pay for medical care, but those with lower incomes have more difficulty getting access to it. They also have a higher probability of residing close to the healthcare facilities. Lastly, it makes it simple for them to get past non-medical obstacles like societal norms, cultural beliefs, and assumptions that might discourage using services for mothers (Ousman et al., 2019).

“The uptake of services related to maternal health is significantly influenced by the level of knowledge that mothers possess about these services. According to the data, women who are aware of maternal services have a far greater chance of using them than women who are not.

This result is in line with a number of research investigations in the field of maternal wellness that have repeatedly shown that knowledge and service uptake are positively correlated" (Ousman et al., 2019).

Comprehending the significance of the mother's knowledge encompasses multiple pivotal elements. First and foremost, knowing what services are offered is crucial. Maternity care providers are aware of the range of amenities that are accessible to them, including prenatal care, skilled delivery attendance, postpartum care, and infant vaccinations. This knowledge lessens the doubt and anxiety that could prevent them from getting medical attention. Second, "Informed women are aware of merits of using maternal medical care can have for their health. They are aware that routine prenatal visits can keep an eye on the mother's and the child's health, spot and treat any issues early, and offer vital health advice on cleanliness, nutrition, and newborn care" (Shetty & Hans, 2015).

Furthermore, knowledge and understanding regarding maternal wellness services can increase one's trust in the medical establishment. Fears and misunderstandings regarding medical treatments during the pregnancy and delivery process can be reduced when women are aware of the benefits and processes and are more inclined to trust medical professionals and the services provided. Furthermore, information enables women formulate well-thought decisions on their own and their children's health. They are more inclined to seek prompt medical attention and identify warning symptoms during pregnancy and childbirth, which can dramatically lower the overall mortality and morbidity rates for mothers and newborns.

The distance to the medical center had a key effect on the uptake maternal care. Data suggests women who experience difficulty getting to the well-being facility are less inclined to use maternity services than women who do not. Research has indicated that key obstacles to

obtaining maternal wellness care is one's physical proximity to medical centers. Long distances traveled can add to the time and expense of traveling, which makes it more challenging for ‘women particularly those living in rural areas to’ seek postpartum care, give birth in a medical facility, and attend routine prenatal checkups. For example, women who lived over five kilometers away from a medical center revealed a far increasedr chance delivery there than women who lived closer, according to a survey carried out in rural Tanzania. Research conducted in Ethiopia also revealed access to trained birth attendants was significantly hampered by long distances and transportation issues. Due to these obstacles, “Timely medical care may not be received, which may have a negative impact on the health of expectant mothers and newborns. Thus, it is imperative to address issues related to distance, such as developing more locally based health facilities along with improving transportation infrastructure, in order to increase the use of services for mothers and babies” (Alemayehu et al., 2020). There exists a key connection with uptake of MHC and their cost. Compared to women who find healthcare services for their mothers affordable, those who find them costly are less probable to use them. This suggests that one significant deterrent to using services for mothers is cost.

Exorbitant expenses may discourage women, particularly those from low-income families, from obtaining essential prenatal, delivery, and postpartum care. Empirical evidence substantiates the notion that financial obstacles constitute a primary cause of insufficient medical care for mothers utilization. For example, an investigation conducted in Kenya discovered that “One of the biggest barriers to receiving professional birth presence and prenatal care was high out-of-pocket costs for maternity care” (Lidoroh, n.d.). “In the same context, studies carried out in Bangladesh concluded that due to corresponding expenses,

women from households with lower incomes were less likely to seek out maternal medical care" (Begum & Hamid, 2023). These results highlight how crucial it is to lower financial obstacles to improved access and uptake of crucial services for mothers and babies. Examples of these financial barriers include insurance plans, subsidies, and free or low-cost policies for medical care.

4.7.4 Reproductive factors associated with uptake of maternal health services

According to the investigation, female reproductive characteristics have a big effect on using healthcare among women. Age, how many pregnancies there are, and past experiences of pregnancy complications are strongly connected with whether a woman takes advantage of maternal services. Out of those involved in the study, those who had previously faced problems during pregnancy visited maternal health facilities more often. It implies that people often go to maternity healthcare because of previous complications. Pregnancies that were tough in the past may cause some women to pay more attention to the risks and require more medical advice throughout pregnancy and labor (Ousman et al., 2019).

It was observed in investigations that "Women who have gone through serious problems during pregnancy, including severe bleeding after birth, take more action to visit prenatal and 220 postnatal healthcare experts" (Kyei-Nimakoh et al., 2017). It was discovered Nigerian women with history of pregnancy complications tend to use antenatal clinics and choose birth attendance by experts more often (Babalola & Fatusi, 2009). Offering extra help and information to women who have had pregnancy issues is important, since improving their knowledge could be beneficial for their health and the baby's.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

"The section offer synopsis of the research findings, conclusions, and recommendations, along with ideas for additional research"(O'Rourke & Williamson, 2017) . First, a summary and conclusion of the main results were provided, along with some suggestions for enhancing the adoption of maternal medical 'services at the Moyale sub-county referral hospital.'

5.2.Summary

in relation to the study's findings, women who possess awareness plus knowledge are better equipped to make decisions about their medical services, such as where to give birth and how important antenatal and postnatal care are.

Regarding reproductive health 'factors influencing the utilization of maternal health services, Age' ($\chi^2 = 4.633$, df = 3, p = 0.003), Number of deliveries ($\chi^2 = 2.543$, df = 2, p = 0.013), History of pregnancy complications ($\chi^2 = 4{,}224$, df = 1, p = 0.014) were statistically associated with acceptance of maternal health services hence they imported for binary logistic regression. Family planning ($\chi^2 = 0.242$, df = 1, p = 0.567) was not statistically associated with the acceptance of maternal health services.

About social economic features influencing 'utilization of maternal health services; Education level' ($\chi^2 = 7.331$, df = 3, p = 0.004), Income ($\chi^2 = 3.252$, df = 2, p = 0.007), Knowledge of maternal services ($\chi^2 = 8.334$, df = 1, $p < 0.001$), Distance to health facility ($\chi^2 = 4.643$, df = 1, p = 0.002), Cost of maternal health services ($\chi^2 = 3.473$, df = 1, p = 0.004) statistically associated with the uptake of maternal health services hence they were imported for binary logistic regression. Work status ($\chi^2 = 0.033$, df = 2, p = 0.752) was not statistically linked to MHS uptake.

Regarding Social cultural 'factors influencing utilization of maternal health services; Age' ($\chi^2 = 4.633$, df = 3, p = 0.003), Religion ($\chi^2 = 2.572$, df = 2, p = 0.004), Decision maker ($\chi^2 = 1.643$, df = 3, p = 0.01), Husbands' knowledge on services ($\chi^2 = 1.845$, df = 1, p = 0.023). Marital status ($\chi^2 = 0.312$, df = 3, p = 0.456) was not statistically linked to MHS uptake.

5.3 Conclusion

Regarding level of awareness linked with the uptake of maternal health services, research findings reveled 96% of respondents were aware of the maternal medical facilities available at 'Moyale Sub County referral hospital.'

Concerning socio-cultural factors influencing the uptake of Maternal health services; With odds ratios of 1.419 and 1.288, respectively, women aged 26–35 and 36–45 inclined to use MS compared to those aged 15–25, chances of using maternal care is significantly higher among Muslim women that belong to majority (reference category) and women of other religions, women who made the majority of the decisions had increased probability of using maternal care in contrast to the husbands made many decisions while those whose husbands knew of maternal care constituted 1.377 times more inclined to make use of these services than women whose husbands were not aware of them.

Concerning Socio-economic factors influencing the uptake of maternal health services, Women with tertiary education were nearly twice as likely (OR = 1.98) to use these services, women who were knowledgeable about maternal healthcare were 3.47 times more likely to utilize these services than those who were not while women who considered maternal healthcare services to be expensive were less likely to use them.

Regarding reproductive factors of Mothers influencing maternal health care uptake; "Women with four or more deliveries, particularly those with more than six, were significantly more

likely to utilize maternal health services compared to the reference category, women with a history of complications during pregnancy were 1.786 times more likely to utilize maternal services than those without such a history" Galogalo, (2025).

5.4 Recommendations

5.4.1 Recommendations from the study

The following suggestions must be followed to ensure that "Women in the Moyale Sub County Hospital between the ages of 15 and 49 have appropriate access to and use of maternal medical services" Author, (2025).

1. The National Health Ministry in collaboration with Marsabit County Health Services Department should create awareness on the benefits of uptake of 'maternal health services' to mothers, especially children.
2. The Government, community-based organizations, non-governmental organizations, and other stakeholders should address socio-cultural barriers such as religious beliefs, societal norms, gender stereotypes, and cultural preferences in our community through community-based education programs.
3. The County Government of Marsabit need to establish more maternal 'health facilities' in underserved or remote localities to compensate distance and commute time for pregnant women or deploy mobile health clinics to reach remote or hard-to-access areas.
4. To address issues of economic barriers, the county government of Marsabit should promote financial empowerment among women in Moyale Sub-County, Initiatives such as establishing partnerships with microfinance institutions to provide small loans to women for starting or expanding businesses.

5. The study recommends that women in Moyale Sub-County should make use of family planning methods to increase birth intervals between their children. “It was realized in the study that Muslim women oppose the use of family planning and contraceptives” Galogalo (2025)**.**

5.4.1 Recommendations for Further Research

Further investigation is required to ‘Ascertain the socio-demographic variables that influence uptake of maternal medical care among women of Kenya's Moyale Sub-County referral hospital between the ages of 15 and 49 in terms of their utilisation of maternal medical services” Galogalo, 2025). Furthermore, additional investigation is advised to determine how sociocultural, economic, and reproductive factors affect women receiving referral hospital care in Kenyan counties other than Marsabit County. Future research is advised to take into account additional variables, including those related to the medical system, geographic accessibility, social support, understanding, and knowledge, among others.

References

Abutabenjeh, S., & Jaradat, R. (2018). Clarification of Research Design, Research Methods, and Research Methodology: A Guide for Public Administration Researchers and Practitioners Teaching Public Administration, 36(3), 237– 258.

Adu, J., Owusu, M. F., Martin-Yeboah, E., Ahenkan, A., & Gyamfi, S. (2021). Maternal Health Care in Ghana: Challenges Facing the Uptake of Services in the Shai Osudoku District. Women's Reproductive Health, 1–17. https://doi.org/10.1080/23293691.2021.2016187

Adu, J., Tenkorang, E., Banchani, E., Allison, J., & Mulay, S. (2018). The effects of individual and community-level factors on maternal health outcomes in Ghana. PLoS ONE, 13(11). https://doi.org/10.1371/journal.pone.0207942

Adtalem Global Education. (2025, June 4). https://www.adtalem.com/

Adu-Fokuo, D. (n.d.). *Improving Maternal Health Care Accessibility and Utilization in Remote and Island Communities: An Explorative Study in Ghana*.

Ahmadi, A. A. (2022). Prevalence and determinants of anemia among pregnant women receiving antenatal care at District Hospital in Qarbagh District , Ghazani Province , Afghanistan. *Research Square*, 1–18.

Alemayehu, M., Yakob, B., & Khuzwayo, N. (2022). Barriers and enablers to emergency obstetric and newborn care services use in Wolaita Zone, Southern Ethiopia: A qualitative case study. *BMC Public Health*, *22*(1). https://doi.org/10.1186/S12889-022-14504-Y

Alibhai, K. M., Ziegler, B. R., Meddings, L., Batung, E., & Luginaah, I. (2022). Factors impacting antenatal care utilization: A systematic review of 37 fragile and conflict-

affected situations. *Conflict and Health 2022 16:1*, *16*(1), 1–16. https://doi.org/10.1186/S13031-022-00459-9

Atuoye, K. N., Barnes, E., Lee, M., & Zhang, L. Z. (2020). Maternal health services utilisation among primigravidas in Uganda: What did the MDGs deliver? *Globalization and Health*, *16*(1), 1–14. https://doi.org/10.1186/S12992-020-00570-7/FIGURES/3

Babughirana, G., Gerards, S., Mokori, A., Nangosha, E., Kremers, S., & Gubbels, J. (2020). Maternal and newborn healthcare practices: Assessment of the uptake of lifesaving services in Hoima District, Uganda. *BMC Pregnancy and Childbirth*, *20*(1), 1–10. https://doi.org/10.1186/S12884-020-03385-X/FIGURES/1

Belay, D. G., Asratie, M. H., Gashaw, M., Tsega, N. T., Endalew, M., & Aragaw, F. M. (2022). Community and individual level determinants and spatial distribution of deworming among preschool age children in Ethiopia: Spatial and multi-level analysis. *BMC Public Health*, *22*(1), 1–13. https://doi.org/10.1186/S12889-022-13249-Y/TABLES/4

Belayneh, T., Adefris, M., & Andargie, G. (2014). Previous early antenatal service utilization improves timely booking: Cross-sectional study at university of Gondar Hospital, northwest Ethiopia. *Journal of Pregnancy*, *2014*. https://doi.org/10.1155/2014/132494

Fagbamigbe, A. F., & Idemudia, E. S. (2015). Barriers to antenatal care use in Nigeria: Evidences from non-users and implications for maternal health programming. *BMC Pregnancy and Childbirth*, *15*(1). https://doi.org/10.1186/S12884-015-0527-Y

Galgalo, D. A., Mokaya, P., Chauhan, S., Kiptulon, E. K., Wami, G. A., Várnagy, Á., &

Prémusz, V. (2024). Utilization of maternal health care services among pastoralist communities in Marsabit County, Kenya: A cross-sectional survey. *Reproductive Health* , *21*(1), 1–12. https://doi.org/10.1186/S12978-024-01865-3/TABLES/3

Ikamari, L. (2020). Uptake of maternal services and associated factors in the western region of Kenya. *The Pan African Medical Journal*, *37*, 1–15. https://doi.org/10.11604/PAMJ.2020.37.192.22406

Kassa, B. G., Ayele, A. D., Belay, H. G., Tefera, A. G., Tiruneh, G. A., Ayenew, N. T., Mihiretie, G. N., Tenaw, L. A., Semahegn, A. M., & Worku, M. D. (2021). Postpartum intrauterine contraceptive device use and its associated factors in Ethiopia: Systematic review and meta-analysis. *Reproductive Health*, *18*(1), 1–12. https://doi.org/10.1186/S12978-021-01273-X/FIGURES/5

KDHS. (2022). *Kenya Demographic and Health Survey 2022*.

Lindberg, C., Nareeba, T., Kajungu, D., & Hirose, A. (2022). The Extent of Universal Health Coverage for Maternal Health Services in Eastern Uganda: A Cross Sectional Study. *Maternal and Child Health Journal*, *26*(3), 632–641. https://doi.org/10.1007/S10995-021-03357-3/TABLES/5

Link, N. W., Novisky, M. A., & Fahmy, C. (2024). *Handbook on Contemporary Issues in Health, Crime, and Punishment*. Taylor & Francis.

Mother and Child Health: Delivering the Services—Cicely D. Williams, Naomi Baumslag, Derrick Brian Jelliffe—Google Books. (n.d.). Retrieved June 10, 2025, from https://books.google.co.ke/books?hl=en&lr=&id=BUUNz4w5NpUC&oi=fnd&pg=PR9&dq=+The+goal+of+medical+care+for+mothers+is++to+protect+the+health+of+the+expecting+mother+and+child.&ots=ocMmoffDLC&sig=1w77v68bOKdoKm

46LGRWPYJsQu4&redir_esc=y#v=onepage&q=The%20goal%20of%20medical%20care%20for%20mothers%20is%20%20to%20protect%20the%20health%20of%20the%20expecting%20mother%20and%20child.&f=false

Mpembeni, R. N. M., Kakoko, D. C. V., Aasen, H. S., & Helland, I. (2019). Realizing women´s right to maternal health: A study of awareness of rights and utilization of maternal health services among reproductive age women in two rural districts in Tanzania. *PLoS ONE*, *14*(5). https://doi.org/10.1371/JOURNAL.PONE.0216027,

Mulugeta, S. S., Fenta, S. M., Fentaw, K. D., & Biresaw, H. B. (2022). Factors associated with non-use of modern contraceptives among sexually active women in Ethiopia: A multi-level mixed effect analysis of 2016 Ethiopian Demographic and Health Survey. *Archives of Public Health*, *80*(1), 1–11. https://doi.org/10.1186/S13690-022-00922-2/TABLES/2

Njuguna, J., Kamau, N., & Muruka, C. (2017). Impact of free delivery policy on utilization of maternal health services in county referral hospitals in Kenya. *BMC Health Services Research*, *17*(1), 1–6. https://doi.org/10.1186/S12913-017-2376-Z/TABLES/2

Ochieng, B. M., Kaseje, M., Kaseje, D. C. O., Oria, K., & Magadi, M. (2022). Perspectives of stakeholders of the free maternity services for mothers in western Kenya: Lessons for universal health coverage. *BMC Health Services Research*, *22*(1), 1–12. https://doi.org/10.1186/S12913-022-07632-Z/TABLES/1

Odhiambo, J. N., & Sartorius, B. (2020). Mapping of anaemia prevalence among pregnant women in Kenya (2016–2019). *BMC Pregnancy and Childbirth*, *20*(1), 1–11. https://doi.org/10.1186/S12884-020-03380-2/FIGURES/4

O'Rourke, K. H., & Williamson, J. G. (2017). *The Spread of Modern Industry to the Periphery Since 1871*. Oxford University Press.

Procurement Details. (n.d.). [Text/HTML]. World Bank. Retrieved June 10, 2025, from https://projects.worldbank.org/en/projects-operations/procurement-detail/OP00241556

Puthussery, S., Tseng, P.-C., Sharma, E., Harden, A., Griffiths, M., Bamfo, J., & Li, L. (2022). Disparities in the timing of antenatal care initiation and associated factors in an ethnically dense maternal cohort with high levels of area deprivation. *BMC Pregnancy and Childbirth*, *22*(1), 713. https://doi.org/10.1186/s12884-022-04984-6

Rwabilimbo, A. G., Ahmed, K. Y., Page, A., & Ogbo, F. A. (2020). Trends and factors associated with the utilisation of antenatal care services during the Millennium Development Goals era in Tanzania. *Tropical Medicine and Health*, *48*(1), 1–16. https://doi.org/10.1186/S41182-020-00226-7/TABLES/5

UNICEF. (2022). *Antenatal care*. https://data.unicef.org/topic/maternal-health/antenatal-care/#:~:text=Antenatal visits present opportunities for,different models of antenatal care.

Wandera, S. O., Kwagala, B., Nankinga, O., Ndugga, P., Kabagenyi, A., Adamou, B., & Kachero, B. (2019). Facilitators, best practices and barriers to integrating family planning data in Uganda's health management information system. *BMC Health Services Research*, *19*(1), 1–13. https://doi.org/10.1186/S12913-019-4151-9/PEER-REVIEW

Yihune Teshale, M., Bante, A., Gedefaw Belete, A., Crutzen, R., Spigt, M., & Stutterheim, S. E. (2025). Barriers and facilitators to maternal healthcare in East Africa: A

systematic review and qualitative synthesis of perspectives from women, their families, healthcare providers, and key stakeholders. *BMC Pregnancy and Childbirth*, *25*(1), 111. https://doi.org/10.1186/S12884-025-07225-8

Yoseph Samago, A. (2025). *Maternal health service utilization among women of reproductive age in southern Ethiopia: Levels, determinants and effects of a context-specific health education intervention* (p. 1) [Http://purl.org/dc/dcmitype/Text, Universidad Pública de Navarra]. https://dialnet.unirioja.es/servlet/tesis?codigo=369840

Ahmed, I., Ali, S. M., Amenga-Etego, S., Ariff, S., Bahl, R., Baqui, A. H., … Zaidi, A. (2018). Population-based rates, timing, and causes of maternal deaths, stillbirths, and neonatal deaths in South Asia and sub-Saharan Africa: a multi-country prospective cohort study. The Lancet Global Health, 6(12), e1297–e1308. https://doi.org/10.1016/S2214-109X(18)30385-1

Ajayi, A. I., & Akpan, W. (2020). Maternal health care services utilisation in the context of "Abiye" (safe motherhood) programme in Ondo State, Nigeria. BMC Public Health, 20(1). https://doi.org/10.1186/s12889-020-08512-z

Ali, B., Debnath, P., & Anwar, T. (2021). Inequalities in utilisation of maternal health services in urban India: Evidences from national family health survey-4. Clinical Epidemiology and Global Health, 10. https://doi.org/10.1016/j.cegh.2020.11.005

Alemayehu, M., Yakob, B., & Khuzwayo, N. (2022). Barriers and enablers to emergency obstetric and newborn care services use in Wolaita Zone, Southern Ethiopia: a qualitative case study. *BMC Public Health*, *22*(1). https://doi.org/10.1186/S12889-022-14504-Y

Al-Yateem, Nabeel. (2012). The effect of interview recording on quality of data obtained: A methodological reflection. Nurse researcher. 19. 31-5. 10.7748/nr2012.07.19.4.31.c9222.

Aparicio, M., Bacao, F., & Oliveira, T. (2016). An e-learning theoretical framework. An e-learning theoretical framework, (1), 292-307.

Atuoye, K. N., Barnes, E., Lee, M., & Zhang, L. Z. (2020). Maternal health services utilisation among primigravidas in Uganda: What did the MDGs deliver? *Globalization and Health*, *16*(1), 1–14. https://doi.org/10.1186/S12992-020-00570-7/FIGURES/3

Babughirana, G., Gerards, S., Mokori, A., Nangosha, E., Kremers, S., & Gubbels, J. (2020). Maternal and newborn healthcare practices: assessment of the uptake of lifesaving services in Hoima District, Uganda. *BMC Pregnancy and Childbirth*, *20*(1), 1–10. https://doi.org/10.1186/S12884-020-03385-X/FIGURES/1

Baral, Y. R., Lyons, K., Skinner, J., & Van Teijlingen, E. R. (2010). Determinants of skilled birth attendants for delivery in Nepal. Kathmandu University Medical Journal. Kathmandu University. https://doi.org/10.3126/kumj.v8i3.6223

Basu, J. K., Chauke, L., & Magoro, T. (2021). Maternal mortality from COVID 19 among South African pregnant women. Journal of Maternal-Fetal and Neonatal Medicine. https://doi.org/10.1080/14767058.2021.1902501

Belay, D. G., Asratie, M. H., Gashaw, M., Tsega, N. T., Endalew, M., & Aragaw, F. M. (2022). Community and individual level determinants and spatial distribution of deworming among preschool age children in Ethiopia: spatial and multi-level analysis. *BMC Public Health*, *22*(1), 1–13. https://doi.org/10.1186/S12889-022-13249-Y/TABLES/4

Belayneh, T., Adefris, M., & Andargie, G. (2014). Previous early antenatal service utilization

improves timely booking: Cross-sectional study at university of Gondar Hospital, northwest Ethiopia. *Journal of Pregnancy*, *2014*. https://doi.org/10.1155/2014/132494

Braidotti, R. (2019). A theoretical framework for the critical posthumanities. Theory, culture & society, 36(6), 31-61.

Chan, W., & Luo, P. (2021). The Implications of Population Changes on Generalization and Study Design. Journal of Research on Educational Effectiveness, 14(2), 471–500. https://doi.org/10.1080/19345747.2021.1875529

Chansa, C., Mukanu, M. M., Chama-Chiliba, C. (2020). Looking at the bigger picture: Effect of performance-based contracting of district health services on equity of access to maternal health services in Zambia. Health Policy and Planning, 35(1), 36–46. https://doi.org/10.1093/heapol/czz130

Chi, P. C., Bulage, P., Urdal, H., & Sundby, J. (2019). A qualitative study explores maternal health service uptake determinants in post-conflict Burundi and Northern Uganda. BMC pregnancy and childbirth, 15(1), 1-14.

Cochran, WG (1977): Sampling Techniques, 2nd Ed., New York: John Wiley and Sons, Inc.

Coleman, J., Black, V., Thorson, A. E., & Eriksen, J. (2020). Evaluating the effect of maternal mHealth text messages on uptake of maternal and child health care services in South Africa: a multicenter cohort intervention study. Reproductive Health, 17(1). https://doi.org/10.1186/s12978-020-01017-3

Connelly, L. M. (2008, December). Pilot studies. Medsurg Nursing: Official Journal of the Academy of Medical-Surgical Nurses. https://doi.org/10.1145/3081016.3081020

Daka, D. W., Woldie, M., Ergiba, M. S., Sori, B. K., Bayisa, D. A., Amente, A. B., & Bobo, F.

T. (2020). Inequities in the uptake of reproductive and maternal health services in the biggest regional state of Ethiopia: Too far from “leaving no one behind.” Clinic Economics and Outcomes Research, 12, 595–607. https://doi.org/10.2147/CEOR.S269955

Elzarov, Z. (2020). Healing the Wounds of War: Reducing Maternal Mortality in Darfur. Advances in Politics and Economics, 3(3), p24. https://doi.org/10.22158/ape.v3n3p24

Emelumadu, O. F., Ukegbu, A. U., Ezeama, N. N., Kanu, O. O., Ifeadike, C. O., & Onyeonoro,

U. U. (2018). Socio-demographic determinants of maternal health-care service utilization among rural women in Anambra state, South East Nigeria. Annals of medical and health sciences research, 4(3), 374-382.

Eziawdres, D., Worku, W., & Taye, M. (2021). Maternal Satisfaction with Delivery Services and its Associated Factors Among Mothers Who Gave Birth at Public Health Centers in Yeka Sub City, Addis Ababa, Ethiopia. Health Services Insights, 14. https://doi.org/10.1177/11786329211050722

Fagbamigbe, A. F., & Idemudia, E. S. (2015). Barriers to antenatal care use in Nigeria: Evidences from non-users and implications for maternal health programming. *BMC Pregnancy and Childbirth*, *15*(1). https://doi.org/10.1186/S12884-015-0527-Y

Fantaye, A. W., Okonofua, F., Ntoimo, L., & Yaya, S. (2019). A qualitative study of community elders’ perceptions about the underutilization of formal maternal care and maternal death in rural Nigeria. Reproductive Health, 16(1). https://doi.org/10.1186/s12978-019-0831-5

Galgalo, D. A., Mokaya, P., Chauhan, S., Kiptulon, E. K., Wami, G. A., Várnagy, Á., & Prémusz, V. (2024). Utilization of maternal health care services among pastoralist

communities in Marsabit County, Kenya: a cross-sectional survey. *Reproductive Health* , *21*(1), 1–12. https://doi.org/10.1186/S12978-024-01865-3/TABLES/3

Gitonga, E. (2017). Determinants of focused antenatal care uptake among women in Tharaka nithi county, Kenya. Advances in Public Health, 2017.

Grépin, K. A., Habyarimana, J., & Jack, W. (2019). Cash on delivery: Results of a randomized experiment to promote maternal health care in Kenya. Journal of Health Economics, 65, 15–30. https://doi.org/10.1016/j.jhealeco.2018.12.001

Habte, A., Gebiremeskel, F., Shewangizaw, M., Dessu, S., & Glagn, M. (2021). Uptake of complete postnatal care services and its determinants among rural women in Southern Ethiopia: Community-based cross-sectional study based on the current WHO recommendation. PLoS ONE, 16(2 February). https://doi.org/10.1371/journal.pone.0246243

Hassan, S. un-N., Memon, E., Shahab, M., & Mumtaz, S. (2020). Utilization of maternal healthcare services in women experiencing spousal violence in Pakistan: A comparative analysis of 2012-13 and 2017-18 Pakistan Demographic Health Surveys. PLoS ONE, 15(9 September). https://doi.org/10.1371/journal.pone.0239722

Hata, J., & Burke, A. (2020). A systematic review of racial and ethnic disparities in maternal health outcomes among Asians/pacific islanders. Asian Pacific Island Nursing Journal, 5(3), 139–152. https://doi.org/10.31372/20200503.1101

Jain, N. (2021, February 1). Survey versus interviews: Comparing data collection tools for exploratory research. Qualitative Report. Peace and Conflict Studies. https://doi.org/10.46743/2160-3715/2021.4492

Jones, E., Lattof, S. R., & Coast, E. (2017). Interventions to provide culturally-appropriate maternity care services: factors affecting implementation. BMC pregnancy and childbirth,

17(1), 1-10.

Ikamari, L. (2020). Uptake of maternal services and associated factors in the western region of Kenya. *The Pan African Medical Journal*, *37*, 1–15. https://doi.org/10.11604/PAMJ.2020.37.192.22406

Kamal, N., Curtis, S., Hasan, M. S., & Jamil, K. (2016). Trends in equity in use of maternal health services in urban and rural Bangladesh. International Journal for Equity in Health, 15(1). https://doi.org/10.1186/s12939-016-0311-2

KDHS. (2022). *Kenya Demographic and Health Survey 2022*. https://dhsprogram.com/pubs/pdf/PR143/PR143.pdf

Kendra C. (2018) Sample types and sampling errors in research. Retrieved from https://www.verywellmind.com/what-is-a-sample-2795877.

Kitui, J., Lewis, S., & Davey, G. (2018). Factors influencing place of delivery for women in Kenya: an analysis of the Kenya demographic and health survey, 2008/2009. BMC pregnancy and childbirth, 13, 1-10.

Kurniati, A., Chen, C. M., Efendi, F., & Berliana, S. M. (2018). Factors influencing Indonesian women's use of maternal health care services. Health care for women international, 39(1), 3-18.

Lawrence, I. (2020). Uptake of maternal services and associated factors in the western region of Kenya. The Pan African Medical Journal, 37.

Lindberg, C., Nareeba, T., Kajungu, D., & Hirose, A. (2022). The Extent of Universal Health Coverage for Maternal Health Services in Eastern Uganda: A Cross Sectional Study. *Maternal and Child Health Journal*, *26*(3), 632–641. https://doi.org/10.1007/S10995-021-03357-3/TABLES/5

Lowe, M. (2017). Social and cultural barriers to husbands' involvement in maternal health 'in rural Gambia. Pan African Medical Journal, 27.' https://doi.org/10.11604/pamj.2017.27.255.11378

Maliwichi, P., Chigona, W., & Sowon, K. (2021, October 1). Appropriation of mHealth interventions for maternal health care in Sub-Saharan Africa: Hermeneutic review. JMIR MHealth and UHealth. JMIR Publications Inc. https://doi.org/10.2196/22653

Marçal, K. E. (2021). Pathways to Adolescent Emotional and Behavioral Problems: An Examination of Maternal Depression and Harsh Parenting. Child Abuse and Neglect, 113. https://doi.org/10.1016/j.chiabu.2020.104917

Masaba, B. B., & Mmusi-Phetoe, R. M. (2020). Free Maternal Health Care Policy in Kenya; Level of Utilization and Barriers. International Journal of Africa Nursing Sciences, 13. https://doi.org/10.1016/j.ijans.2020.100234

Masaba, B. B., & Mmusi-Phetoe, R. M. (2020). Free Maternal Health Care Policy in Kenya; Level of Utilization and Barriers. International Journal of Africa Nursing Sciences, 13. https://doi.org/10.1016/j.ijans.2020.100234

Mengesha, Z. B., Perz, J., Dune, T., & Ussher, J. (2017). Refugee and migrant women's engagement with sexual and reproductive health care in Australia: A socio-ecological analysis of health care professional perspectives. PloS one, 12(7), e0181421.

Mezmur, M., Navaneetham, K., Letamo, G., & Bariagaber, H. (2017). Socioeconomic inequalities in the uptake of maternal healthcare services in Ethiopia. BMC Health Services Research, 17(1). https://doi.org/10.1186/s12913-017-2298-9

Mochache, V., Wanje, G., Nyagah, L., Lakhani, A., El-Busaidy, H., Temmerman, M., & Gichangi, P. (2020). Religious, socio-cultural norms and gender stereotypes influence uptake

and utilization of maternal health services among the Digo community in Kwale, Kenya: a qualitative study. Reproductive health, 17, 1-10.

Mohajan, H. (2017). Two Criteria for Good Measurements in Research: Validity and Reliability. Munich Personal RePEc Archive, 83458

Mpembeni, R. N. M., Kakoko, D. C. V., Aasen, H. S., & Helland, I. (2019). Realizing women´s right to maternal health: A study of awareness of rights and utilization of maternal health services among reproductive age women in two rural districts in Tanzania. *PLoS ONE*, *14*(5). https://doi.org/10.1371/JOURNAL.PONE.0216027,

Mulugeta, S. S., Fenta, S. M., Fentaw, K. D., & Biresaw, H. B. (2022). Factors associated with non-use of modern contraceptives among sexually active women in Ethiopia: a multi-level mixed effect analysis of 2016 Ethiopian Demographic and Health Survey. *Archives of Public Health*, *80*(1), 1–11. https://doi.org/10.1186/S13690-022-00922-2/TABLES/2

Nguhiu, P. K., Barasa, E. W., & Chuma, J. (2017). Determining the effective coverage of maternal and child health services in Kenya, using demographic and health survey data sets: tracking progress towards universal health coverage. Tropical Medicine and International Health, 22(4), 442–453. https://doi.org/10.1111/tmi.12841

Njuguna, J., Kamau, N., & Muruka, C. (2017). Impact of free delivery policy on utilization of maternal health services in county referral hospitals in Kenya. BMC Health Services Research,

17(1). https://doi.org/10.1186/s12913-017-2376-z

Oben, A. I. (2021). Research Instruments: A Questionnaire and An Interview Guide Used to Investigate the Implementation of Higher Education Objectives and The Attainment of

Cameroon's Vision 2035. European Journal of Education Studies, 8(7). https://doi.org/10.46827/ejes.v8i7.3808

Ochieng, B. M., Kaseje, M., Kaseje, D. C. O., Oria, K., & Magadi, M. (2022). Perspectives of stakeholders of the free maternity services for mothers in western Kenya: lessons for universal health coverage. *BMC Health Services Research*, *22*(1), 1–12. https://doi.org/10.1186/S12913-022-07632-Z/TABLES/1

Odallo, B., Opondo, E., & Onyango, M. (2018, August 27). Litigating to ensure access to quality maternal health care for women and girls in Kenya. Reproductive Health Matters. Taylor and Francis Ltd. https://doi.org/10.1080/09688080.2018.1508172

Odallo, B., Opondo, E., & Onyango, M. (2018, August 27). Litigating to ensure access to quality maternal health care for women and girls in Kenya. Reproductive Health Matters. Taylor and Francis Ltd. https://doi.org/10.1080/09688080.2018.1508172

Owiti, A., Oyugi, J., & Essink, D. (2018). Utilization of Kenya's free maternal health services among women living in Kibera slums: A cross-sectional study. Pan African Medical Journal, 30. https://doi.org/10.11604/pamj.2018.30.86.15151

Pineros-Leano, M. (2020). Association between Early Maternal Depression and Child Growth: A Group-Based Trajectory Modeling Analysis. Childhood Obesity, 16(1), 26–33. https://doi.org/10.1089/chi.2019.0121

Potnuru, B. (2020). SDG targets maternal and child health and access to doctors in India. International Journal of Healthcare Management, 13(S1), 414–421. https://doi.org/10.1080/20479700.2018.1563266

Rutaremwa, G., Wandera, S. O., Jhamba, T., Akiror, E., & Kiconco, A. (2019). Determinants of maternal health services utilization in Uganda. BMC health services research, 15, 1-8.

Sanogo, N. A., & Yaya, S. (2020). Wealth Status, Health Insurance, and Maternal Health Care Utilization in Africa: Evidence from Gabon. BioMed Research International, 2020. https://doi.org/10.1155/2020/4036830

Rwabilimbo, A. G., Ahmed, K. Y., Page, A., & Ogbo, F. A. (2020). Trends and factors associated with the utilisation of antenatal care services during the Millennium Development Goals era in Tanzania. *Tropical Medicine and Health*, *48*(1), 1–16. https://doi.org/10.1186/S41182-020-00226-7/TABLES/5

Sekine, K., & Carter, D. J. (2019, September 1). The effect of child marriage on the utilization of maternal health care in Nepal: A cross-sectional analysis of Demographic and Health Survey 2016. PLoS ONE. Public Library of Science. https://doi.org/10.1371/journal.pone.0222643

Somefun, O. D., & Ibisomi, L. (2017). Determinants of postnatal care non-utilization among women in Nigeria. BMC Research Notes, 9(1). https://doi.org/10.1186/s13104-015-1823-3

Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. Journal of Business and Psychology, 34(2), 125-137.

Stefan Debois. (2019). 10 Advantages and Disadvantages of Questionnaires. Retrieved from https://surveyanyplace.com/blog/questionnaire-pros-and-cons/

Taherdoost, H. (2016). Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research. Retrieved on 18th December 2019 https://ssrn.com/abstract=3205040

Teshome, F., Kebede, Y., Abamecha, F., & Birhanu, Z. (2020). Why do women not prepare for pregnancy? Exploring women's and health care providers' views on barriers to uptake of preconception care in Mana District, Southwest Ethiopia: a qualitative study. BMC

Pregnancy and Childbirth, 20(1), 1-13.

Tikkanen, R., Gunja, M. Z., Fitzgerald, M., & Zephyrin, L. (2020). Maternal mortality and maternity care in the United States compared to 10 other developed countries. Commonwealth Fund Issue Briefs, (December), 1–17. Retrieved from https://www.researchgate.net/publication/347257336_Maternal_Mortality_and_Maternity_Care_in_the_United_States_Compared_to_10_Other_Developed_Countries

Tiruneh, G. T., Demissie, M., Worku, A., & Berhane, Y. (2021). Community's experience and perceptions of maternal health services across the continuum of care in Ethiopia: A qualitative study. PLoS ONE, 16(8 August). https://doi.org/10.1371/journal.pone.0255404

Tsawe, M., Moto, A., Netshivhera, T., Ralesego, L., Nyathi, C., & Susuman, A. S. (2021). Factors influencing the use of maternal healthcare services and childhood immunization in Swaziland. International journal for equity in health, 14(1), 1-11.

UNICEF. (2022). *Antenatal care*. https://data.unicef.org/topic/maternal-health/antenatal-care/#:~:text=Antenatal visits present opportunities for,different models of antenatal care.

Vizheh, M., Zurynski, Y., Braithwaite, J., & Rapport, F. (2023). The impact of migration and settlement context on Iranian Women's agency in accessing and using reproductive healthcare services in Australia: A qualitative study. Health & Place, 83, 103069.

Wandera, S. O., Kwagala, B., Nankinga, O., Ndugga, P., Kabagenyi, A., Adamou, B., & Kachero, B. (2019). Facilitators, best practices and barriers to integrating family planning data in Uganda's health management information system. *BMC Health Services Research*, *19*(1), 1–13. https://doi.org/10.1186/S12913-019-4151-9/PEER-REVIEW

Yihune Teshale, M., Bante, A., Gedefaw Belete, A., Crutzen, R., Spigt, M., & Stutterheim, S. E. (2025). Barriers and facilitators to maternal healthcare in East Africa: a systematic review and qualitative synthesis of perspectives from women, their families, healthcare providers, and key stakeholders. *BMC Pregnancy and Childbirth*, *25*(1), 111. https://doi.org/10.1186/S12884-025-07225-8

Zhao, K. (2021). Sample representation in the social sciences. Synthese, 198(10), 9097–9115. https://doi.org/10.1007/s11229-020-02621-3

Zhou, Q., Yu, Q., Wang, X., Shi, P., Shen, Q., Zhang, Z., … Hao, M. (2021). Are essential women's healthcare services fully covered? A comparative analysis of policy documents in Shanghai and New York City from 1978–2017. International Journal of Environmental Research and Public Health, 18(8). https://doi.org/10.3390/ijerph18084261

APPENDICES

Appendix I: letter of introduction

In order to determine the uptake of services related to maternal healthcare, my name is and we conduct interviews with mothers here at the Moyale sub-county referral hospital. Consent and confidentiality:

I am going to ask questions some of which may be very personal Your answers are completely private. This form will not bear your name, and whatever details you provide to me will never be linked to it. We will gain a better understanding of mothers' opinions about the services they receive from this medical facility by looking at your responses to these questions. The info gathered from you will assist the healthcare team in coming up with ways to give moms better medical care. We would be grateful for your assistance in answering this survey.My boss might return to confirm this info.

Do you mind if I carry on with these interviews to choose from?

Yes…..no……

Appendix II: Questionnaire

'This study seeks to assess maternal health care services uptake in Moyale sub-county referral hospital, Kenya.' You are hereby requested to provide study responses. Tick in appropriate areas.'

'Section A: Background Information'

1. **What is your age bracket?**

   i. **Between 15-25 [ ]**

   ii. **Between 26-35 [ ]**

   iii. **Between 36 to 45 [ ]**

   iv. **above 45 [ ]**

2. **What is your education level?**

i. **Illiterate [ ]**

ii. **Primary Education level [ ]**

iii. **Secondary Education level [ ]**

iv. **Tertiary education [ ]**

v. **University education level [ ]**

3. **Tick your marital status.**

   i. **Single [ ]**

ii. **Married [ ]**

iii. **Separated [ ]**

iv. **Divorced [ ]**

4. **How many deliveries have you had?**

i. None [ ]

ii. One [ ]

iii. Two [ ]

iv. Three [ ]

v.More than three [ ]

Section B: 'Predictors of Maternal Health Care Services Uptake'

'In this section, utilize the following scale and mark (√) the corresponding score that aligns with your agreement level': Scale: 5 = S.A, 4 = A, 3 = not sure, 2 = D, and 1 = S.D.

Statement	5	4	3	2	1
My religion allows me 'to seek maternal health services in the hospital'.					
I am safe as I 'seek maternal health care services in the hospital.'					
My family supports me 'in seeking maternal health services in the hospital.'					
My family 'believes in seeking maternal healthcare services in the hospital.'					
'I have been trained on the advantages of seeking maternal healthcare services in the hospital.'					
My income is adequate to allow me to visit the hospital for maternal healthcare services.					
I can access hospitalized maternal medical care because of my job.					
The wealth of my family is enough to allow me to seek maternal healthcare in a hospital.					
'My savings allow me uptake to maternal healthcare services in the hospital.'					
'Benefits from my employment enable me to access maternal healthcare services in hospitals.'					

It's crucial to look for hospitalized maternal medical care.					
The hospital provides sufficient maternal medical care.					
Healthcare personnel in maternal healthcare in the hospital are knowledgeable.					
'My maternal Health pregnancy history allows me to use maternal health care services at the Hospital.'					

Appendix III; Interview Guide for the FGDs with the mothers.

This 'Focus Group Discussion (FGD)' is part of a study titled "Predictors of Maternal Health Services Uptake Among Women Aged 15 to 49 Years in Moyale Sub-County Referral Hospital, Marsabit County, Kenya" by Galgalo Galma Golicha, a student at Mount Kenya University. The purpose of this research is "To explore the factors influencing the use of maternal health services among women of reproductive age." 'Your participation is completely voluntary, and you may choose to withdraw at any time without penalty.' The session will last approximately 25 to 40 minutes. There are no right or wrong answers—we are interested in your experiences, perspectives, and ideas. Everything discussed will be treated confidentially, and no names or identifying information will be shared in reports or publications. Anonymity will be maintained. We also ask all participants to respect each other's privacy and keep the discussion confidential. Your input is essential in identifying ways to improve maternal health services in this region.

1) 'In your opinion what is the uptake of maternal health services among women aged 15 to 49 years in Moyale Subcounty Referral Hospital, Marsabit County, Kenya?'
2) 'In your opinion what is the level of awareness of maternal health care services among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?'
3) 'In your opinion what are the socio-cultural factors influencing maternal health care services uptake among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?'
4) 'In your opinion what are the socio-economic factors influencing maternal health care services uptake among women aged 15 to 49 years in Moyale Sub-County referral

hospital, Kenya?'

5) 'In your opinion what are the reproductive factors influencing maternal health care services uptake among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?'

Appendix IV: Interview Guide for key informants at Maternity Wing

This Key Informant Interview is part of a research study titled "Predictors of Maternal Health Services Uptake Among Women Aged 15 to 49 Years in Moyale Sub-County Referral Hospital, Marsabit County, Kenya," being conducted by Galgalo Galma Golicha, a student at Mount Kenya University. "The purpose of the study is to explore the factors that influence the utilisation of maternal health services in this region." Your input as a key informant is important due to your knowledge and experience with maternal healthcare delivery. The interview will take approximately 25 to 40 minutes, and your responses will be used strictly for academic purposes. Participation is completely voluntary, and you may choose to withdraw at any time. Anonymity and confidentiality will be maintained throughout; your name and position will not be disclosed. Your honest opinions will help improve maternal health services and inform future policy and programming efforts in Marsabit County.

1) 'In your opinion what is the uptake of maternal health services among women aged 15 to 49 years in Moyale Subcounty Referral Hospital, Marsabit County, Kenya?'
2) 'In your opinion what is the level of awareness of maternal health care services among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?'
3) 'In your opinion what are the socio-cultural factors influencing maternal health care services uptake among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?'
4) 'In your opinion what are the socio-economic factors influencing maternal health care services uptake among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?'

5) ‘In your opinion what are the reproductive factors influencing maternal health care services uptake among women aged 15 to 49 years in Moyale Sub-County referral hospital, Kenya?’

Appendix V: ERC Certificate

Mount Kenya University

REF: **MKU/ISERC/3444** Date: 07 February 2024

TO: **GALGALO GALMA GOLICHA**

REG: **MPH/2018/31043**

Dear Sir/Madam,

RE: PREDICTORS OF MATERNAL HEALTH CARE SERVICES UPTAKE AMONG WOMEN AGED 18 TO 49 YEARS IN MOYALE SUBCOUNTY REFERRAL HOSPITAL, MARSABIT COUNTY, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2488.** The approval period is **07/02/2024 - 06/02/2025.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the 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 **Mount Kenya University**

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

Yours sincerely,

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

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
Chartered and ISO 9001 : 2015 Certified Institution.
Unlocking Infinite Possibilities

Appendix VI: Introductory Letter

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MPH/2018/31043

7th February, 2024

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

Dear Sir/Madam,

RE: GALGALO GALMA GOLICHA – REGISTRATION NO. MPH/2018/31043

The purpose of this letter is to introduce the above named student who is pursuing **Master of Public Health** in the department of **Community Health, Epidemiology and Biostatistics** in the school of **Public Health.**

The title of the research is **"Predictors of Maternal Health Care Services Uptake among Women Aged 18 to 49 Years in Moyale Sub-County Referral Hospital Marsabit County Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **February, 2024 and April, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
DEPUTY DIRECTOR
FEB 2024
GRADUATE STUDIES NAIROBI CAMPUS
P.O. Box 342-01000, THIKA

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

Appendix 95:NACOSTI Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **118033**

Date of Issue: **20/February/2024**

RESEARCH LICENSE

This is to Certify that Mr.. Galgalo Galma Golicha of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Marsabit on the topic: Predictors of Maternal Health Care Services Uptake among Women Aged 18 to 49 Years in Moyale Sub-County Referral Hospital Marsabit County Kenya. for the period ending : 20/February/2025.

License No: **NACOSTI/P/24/33171**

118033

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.

See overleaf for conditions

Appendix 96:Turntin Report

submission

My Files
My Files
University

Document Details

Submission ID
trn:oid:::3618:100913824

Submission Date
Jun 15, 2025, 12:52 AM GMT+5:30

Download Date
Jun 15, 2025, 12:53 AM GMT+5:30

File Name
FINAL-FINAL GALGALO GALMA -Revised Thesis (3) (2).docx

File Size
2.0 MB

111 Pages

22,160 Words

133,194 Characters

turnitin Page 1 of 123 - Cover Page Submission ID trn:oid:::3618:100913824

7% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography
- Quoted Text

Match Groups

148 Not Cited or Quoted 7%
Matches with neither in-text citation nor quotation marks

10 Missing Quotations 0%
Matches that are still very similar to source material

0 Missing Citation 0%
Matches that have quotation marks, but no in-text citation

0 Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

4% Internet sources
3% Publications
7% Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

turnitin Page 2 of 123 - Integrity Overview Submission ID trn:oid:::3618:100913824

Appendix 98 :Map of the study area