DETERMINANTS OF FOCUSED ANTENATAL CARE SERVICES UTILIZATION AMONG PREGNANT WOMEN SEEKING SERVICES AT LUNGA LUNGA HEALTH CENTRE, NAIROBI COUNTY, KENYA

NANZALA PHYLISTER HELLEN

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DECLARATION AND APPROVAL

Declaration by Candidate

This thesis is my original work and has not been presented for a degree in any other university or any other award.

Signature: _____

Phylister Hellen Nanzala

SHS/MPH/5297 2/2022

17th June 2025

Approval by Supervisors:

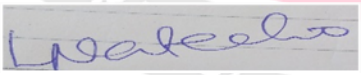
This thesis has been submitted with our approval as university supervisors.

Signature:

Dr. Micah Matiangi

Amref International University

18th June 2025



Signature:

Dr. Lucy Natecho Namusonge

Amref International University

18th June 2025

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DEDICATION

I extend my gratitude to my family for their unwavering support and encouragement every step of the way, especially my spouse, Mr. Shem Shalakha.

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ABSTRACT

Background: Focused Antenatal care (FANC) is important in standardizing maternal health. The assessment of FANC utilization involves assessing the sufficiency of the number of visits and the maternal healthcare services that expectant women receive.

Objective: This study examined the predictors of FANC services use among expectant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya. The factors included socio-economic, socio-demographic and health system.

Methods: A descriptive cross-sectional analytical study design was used. The study sample size was 272 expectant women in Lunga Lunga Health Centre. Data was collected through questionnaires by use of Google Forms and data collection sheet. Quantitative data was analysed with the help of SPSSv 25.

Results: Only 9.9% of the 272 pregnant women had adequately utilised FANC services. Binary logistic regression showed that pregnant women who had no spouses ($p<.05$, AOR = .27, CI = 0.12 - 0.60), had multiple parities ($p<.05$, AOR =.163, CI=0 .07 - 0.37), were Muslim ($p<.05$, AOR =.11 and CI = 0.01 - 0.87), not listening to radio nor watching TV ($p<.05$, AOR = .23, CI = 0.13 0.42; $p<.05$, AOR= .23, CI = 0.12 - 0.44), were employed ($p<.05$, AOR= .37, CI = 0.18 - 0.78), took 30 or more minutes to get to the health facility and receive FANC services ($p<.05$, AOR = 0.327, CI = .094 - .937; $p<.05$, AOR=.17, CI= 0.111-0.281) respectively were less probable to receive the recommended FANC visits.

Conclusion and Recommendation: The low level of FANC utilization among pregnant women at Lunga Lunga health facility was attributed to factors such as socio-demographic (marital status, parity), socio-economic (media access and employment) and health system (Distance and quality of services). Nairobi County health department to employ an adequate number of staff. The Ministry of Health to onboard FANC services into Universal Health.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
CI	Confidence Interval
CHV	Community Health Volunteers
FANC	Focused Antenatal Care
HIV	Human Immunodeficiency Virus
KDHS	Kenya Demographic and Health Survey
NACOSTI	National Commission for Science Technology and Innovation
NHIF	National Health Insurance Fund
MOH	Ministry of Health
OR	Odds Ratio
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund
VDRL	Venereal Disease Research Laboratory
WHO	World Health Organization

DEFINITION OF TERMS

Antenatal Care:	Health care services offered to expectant mothers by medical professionals.
Focused Antenatal Care:	Targeted interventions and assessments to address the most critical needs of pregnant women.
Focused Antenatal Care Utilization:	Examining how effectively and widely the FANC is being accessed by pregnant women.
Health System Factors:	Elements that make up the health system such as distance to health facilities, quality of health service and access to health services.
Parity:	The count of instances in which a woman has delivered a foetus that has attained a viable gestational age.
Socio-Demographic Factors:	Features of the population that combine social and demographic factors such as marital status, age, religion, parity, religion, etc.

CHAPTER 1: INTRODUCTION

1.1 Overview

The chapter outlines the context of the study concerning Focused Antenatal Care and its application on a global, regional, and local scale within Kenya. Additionally, it includes the statement of the problem, study questions and aims. Finally, study justification, significance, scope, and underlying assumptions are presented.

1.2 Background of the Study

The WHO introduced this new ANC model to reach out to low-income countries. This model aims to improve the quality of service by reducing delays in providing services at healthcare facilities, hence increasing clinic visits (WHO, 2018). Focused Antenatal Care (FANC) represents a tailored strategy in prenatal healthcare with less emphasis on the frequency of visits rather than the quality of care. It advocates for at least 8 thorough antenatal appointments for women experiencing uncomplicated pregnancies. Each appointment includes a thorough physical assessment, comprehensive history gathering, necessary laboratory evaluations, and the delivery of relevant health education (Oshinyemi et al., 2018). The primary objectives of FANC include proactive diagnosis of possible complications during pregnancy and devising effective management, preparation for childbirth, and promotion of healthy behaviours during pregnancy.

The model integrates preventive measures, treatment of existing conditions, and birth preparedness into each visit, ensuring a holistic approach to maternal health (Ngxongo, 2019). A key distinction between FANC and traditional antenatal care models lies in the

focus on individualized care. While traditional models often emphasize frequent routine visits, FANC prioritizes personalized assessment and targeted interventions, aiming to reduce unnecessary medical procedures and enhance the overall pregnancy experience (Mchenga et al., 2019). Focused Antenatal Care aims at reducing the required antenatal visits to 8 which in turn improves antenatal care (WHO, 2018). These services include risk identification and screening, promotion of expectant mothers' education, and prevention and management of maternal morbidity.

Focused Antenatal Care enables women to learn from skilled health providers about positive behaviour while pregnant and understanding danger signs related to pregnancy and child delivery as they receive psychological support. Expectant women access micronutrients and iron supplementation, monitoring blood pressure to prevent eclampsia and tetanus. In addition, FANC forms a basis for testing HIV, its diagnosis and treatment (UNICEF, 2020). Approximately 86% of pregnant women worldwide visit an antenatal clinic at least once during the pregnancy, whereas 62% adhere to the WHO-approved guideline of a minimum of 8 visits. Most developing countries, especially in Africa, tend to have elevated maternal deaths, and few women complete FANC at 52% and 49 %, respectively (Tikmani et al., 2019).

On the global stage in India, the implementation of FANC has been integrated within the broader framework of the Reproductive, Maternal, Newborn, Child and Adolescent Health strategy. The Government of India recommends at least four antenatal visits for low-risk pregnancies, in line with the WHO FANC model, focusing on early registration, screening, and provision of essential services such as tetanus toxoid vaccination, iron-folic acid supplementation, and screening for high-risk conditions. Programs such as the Janani

Suraksha Yojana and Pradhan Mantri Surakshit Matritva Abhiyan have significantly contributed to improving ANC coverage by providing free and quality antenatal services, particularly for women in rural and underserved areas (International Institute for Population Sciences [IIPS] & ICF, 2021).

In Bangladesh, the Ministry of Health and Family Welfare has adopted components of the WHO FANC model as part of its maternal health strategy under the National Strategy for Maternal Health (2019–2030). Emphasis is placed on a minimum of four quality ANC visits, beginning in the first trimester. ANC services in public health facilities focus on essential interventions including screening for anaemia, hypertension, and infections, along with health education and birth preparedness. Initiatives such as the Maternal Health Voucher Scheme have aimed to reduce financial barriers and incentivize ANC utilization among poor women, especially in rural and remote areas (Sultana et al., 2023). Despite such initiatives, FANC utilization remains suboptimal in Bangladesh. About 47% of pregnant women attended at least four ANC visits. Barriers such as lack of awareness, traditional beliefs, and inadequate healthcare infrastructure hinder effective utilization (National Institute of Population Research and Training [NIPORT], 2020).

A significant number of African countries have already adopted FANC to lower maternal deaths and improve the postnatal well-being of the mother and the child. Ethiopia adopted the WHO's FANC strategy in all healthcare facilities throughout the country. This strategy involves scheduling regular antenatal care visits for low-risk pregnant women at designated gestational intervals: 8–12 weeks, 24–26 weeks, 32 weeks, and 33–38 weeks. Additionally, the Health Extension Program in Ethiopia equips Health Extension Workers with the

necessary training to deliver antenatal care services, especially in rural and underserved regions. Despite these efforts, several challenges persist, thus hampering access to FANC services. For instance, research in Ethiopia noted that only 15% of expectant women were informed about FANC (Tadesse et al., 2024).

In Nigeria, the adoption and utilization of FANC have been subjects of significant concern, given the country's high maternal mortality rates. FANC emphasizes individualized, high-quality care with at least 4 appointments in an uncomplicated pregnancy (Alibhai et al., 2022). Research suggests that expectant women in Nigeria exhibit a limited awareness and comprehension of FANC. For example, a study conducted by Nwabueze et al. (2023) in Nigeria revealed a significant lack of awareness and utilization of FANC services among this demographic, with only 15% being aware of FANC and a mere 7.3% demonstrating good knowledge of its components. Educational interventions were suggested to improve this awareness. Research shows that 77% of expectant mothers in Nigeria start using FANC services during the second trimester, potentially undermining the effectiveness of the care received (Konlan et al., 2020).

In South Africa, the implementation and utilization of FANC have undergone significant developments over recent years. In April 2017, South Africa transitioned from the traditional four-visit antenatal care model to an eight-contact schedule, aligning with the World Health Organization's 2016 recommendations (Hlongwane et al., 2021). The adaptation process involved updating clinical guidelines, extensive training programs for healthcare providers, and nationwide dissemination of the new protocols (Hlongwane et al., 2021). Despite the structured framework of FANC, utilization rates among pregnant

women in South Africa exhibit variability influenced by several factors. For instance, women who have achieved higher levels of education and are gainfully employed tended to make adequate visits to health facilities for the services. In contrast, individuals at the lower end of the socioeconomic class encounter obstacles, including restricted access to healthcare services and financial limitations, which hinder their capacity to fully utilize FANC services (Nxiweni et al., 2022).

In 2003, Uganda adopted the World Health Organization's FANC framework, aiming to enhance the quality of antenatal services and maternal health outcomes (Kawungezi et al., 2015). The MoH in Uganda has organized the 4 suggested prenatal visits in the following manner: First Visit: between 10 and 20 weeks of gestation, Second Visit: from 20 to 28 weeks of gestation, Third Visit: during the period of 28 to 36 weeks of gestation, and final Visit: occurring between 36 and 38 weeks of the gestation (Kawungezi et al., 2015). The primary obstacles to the ANC use in Uganda included inadequate quality of care, socio-cultural practices that are not effectively integrated with ANC, and insufficient support from partners. Furthermore, the institutional frameworks and protocols at health facilities, particularly regarding mandatory HIV testing, material prerequisites, and transportation issues, were the deterrents for pregnant women seeking ANC services (Uldbjerg et al., 2020).

Kenya has implemented the WHO-FANC program and developed new guidelines that emphasize birth preparedness as well as the diagnosis and management of conditions that threaten life during pregnancy and immediately after childbirth (MOH, 2012). The Ministry of Health has embraced the WHO guideline of providing eight ANC visits during pregnancy to improve outcomes for mothers and newborns. The recommended schedule

for these visits is as follows: Before 16 weeks of gestation: The first appointment for a thorough evaluation, which encompasses a review of medical history, a physical examination, laboratory tests, and the initial ultrasound. 20–24 weeks: Second visit with an anomaly scan to assess fetal development and placental position. 26– 28 weeks: Third visit involving random blood sugar testing to screen for gestational diabetes. 30–32 weeks: Fourth visit to monitor ongoing health, introduce Lamaze classes, and possibly conduct additional blood tests (MoH, 2024).

Additionally, 34 weeks: Fifth visit to continue health assessments, offer optional Lamaze classes, and perform an optional third ultrasound. 36 weeks: Sixth visit to evaluate the baby's position and discuss labour and delivery plans, with an optional gynaecology consultation. 38 weeks: Seventh visit focusing on education about labour, delivery, and general welfare, often referred to as the Birth Preparedness Clinic. 40 weeks: Eighth visit to review signs of labour and when to contact the hospital or midwife (MoH, 2024). However, despite these initiatives aimed at reducing mortality rates, fewer than fifty per cent of expectant women in Kenya make the minimum of approved 8 ANC visits (Gitonga, 2017).

FANC utilization in Kenya is suboptimal and varies as influenced by individual, organizational, and policy-related factors. For instance, a study conducted in Murang'a County revealed that 37.3% of expectant women never used FANC health services. The key determinants affecting utilization included educational level, occupation, income, travel time to healthcare facilities, and waiting times at these facilities (Mutai and Otieno, 2021). Research conducted in Kilifi County similarly revealed a lack of awareness and low utilization of FANC services among women. A study undertaken in Kilifi County similarly

revealed a lack of adequate knowledge and poor use of FANC services among expectant women. Factors such as limited knowledge about FANC, cultural beliefs, and accessibility issues were significant barriers to adequate antenatal care (Chorongo et al., 2016).

Nairobi County has embraced the FANC model in its public health facilities, especially in county hospitals such as Mbagathi, Mama Lucy Kibaki, and Pumwani Maternity Hospital. Health workers provide targeted services such as screening for anaemia, hypertension, and infections, and offering counselling on birth preparedness to improve maternal outcomes. A cross-sectional study involving 397 postnatal women revealed that 54.7% possessed a high level of knowledge regarding FANC, while 63.7% displayed positive attitudes towards its use (Nduba et al. 2022). The study indicated that a greater knowledge of FANC among women was significantly correlated ($p = 0.017$) with a reduction in maternal complications, implying that informed use of FANC components directly enhances maternal health. This underscores Nairobi's advancement in integrating evidence-based ANC protocols into standard maternity care.

Despite the widespread availability of antenatal services, the full utilization of FANC in Nairobi continues to be inconsistent. Studies indicate that 96.4% of pregnant women in Nairobi attend at least one ANC visit; however, only 46.7% manage to complete the recommended minimum of four visits (Wanjohi et al., 2020). Utilization levels are significantly affected by socio-demographic factors, including education level, employment status, marital status, and parity. For example, women who have completed secondary education or higher, as well as those who are formally employed, are more likely to fulfil the requirement of four FANC visits (Mugambi et al., 2022). Additionally, structural barriers such as lengthy waiting times, overcrowding in public hospitals, and inadequate service

quality especially in informal settlements such as Mukuru slums which is a major catchment for Lunga Lunga Health Centre create further challenges. Therefore, there existed a gap in the determinants of FANC service utilization among pregnant women visiting Lunga Lunga Health Facility.

1.3 Statement of the Problem

In Kenya, despite measures put in place by the Kenyan government like Linda Mama, pregnant women seeking FANC services at Lunga Lunga Health Centre still stand at around 50% (KDHS,2022). The uptake of FANC services is still low with most pregnant women making late visits to the health care facilities thus registering less than the recommended 8 FANC visits. Even though more than 95% of expectant mothers have received at least one ANC service, only 66% complete the 8 FANC services. The percentage who had 8 visits only increases with mothers' education, from 49% among those who are illiterate to 83% for expectant women with at least a secondary education, unfortunately, those with more than secondary education are a handful (KDHS,2022). Even though studies on determinants of FANC utilization exist in Nairobi Kenya, few studies have been undertaken at Lunga Lunga Health Facility that serves Mukuru slums within Nairobi county (Wanjohi et al., 2020; Mugambi et al., 2022). The study thus sought to identify the socio-demographic, socio-economic and health system factors influencing the use of FANC services in Lunga Lunga Health Centre. Moreover, the study provides insights into the design of strategies and a new framework to be used to increase the uptake of FANC services.

1.4 Research Questions

1. What is the level of focused Antenatal Care services utilization among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya?
2. What are the demographic factors contributing to the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya?
3. What are the socio-economic factors contributing to the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya?
4. What are the health system factors contributing to the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya?

1.5 Objectives

1.5.1 Broad Objective

To identify factors determining the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.

1.5.2 Specific Objectives

1. To assess the level of FANC service utilization among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.

2. To find out socio-demographic factors contributing to FANC services utilization

among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.

3. To determine the socio-economic factors contributing to the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.
4. To determine the moderating influence of health system factors on the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.

1.6 Justification

The level of maternal mortality is highest in SSA, caused by poor utilization of FANC services. In developing countries, the number of women utilizing FANC services is low (Tikmani et al., 2019). FANC aims at reducing delays when providing services; through FANC, maternal safety is attained, Moreover, the cost of care is highly reduced for developing states, hence reducing risks in pregnancies. SSA has observed the world's greatest incidence of early pregnancies among young mothers. Such pregnancies pose increased danger to both the mother and the infant due to the limited use of antenatal care services to counter these effects (Mekonnen et al., 2019).

The shift from 4 minimum FANC visits to 8 minimum FANC visits implies that expectant women ought to double their visits to various health facilities for FANC services under the new policy. Such a policy shift means that most pregnant women may not adequately utilize the FANC services. There was therefore the necessity to undertake another study in the context of revised FANC policy to establish whether FANC utilization increases or

falls and the possible factors that explain the new utilization rates of FANC services. Additionally, the change in ANC models from FANC's 4 visits to WHO's 8 visits post-2018) implies the measurement of the dependent variable (FANC utilization). The study definition and measurement of FANC services utilization changes from a minimum of 4 visits to a minimum of 8 visits.

Lunga Lunga Health Centre serves both the middle-class and low-class population, but its bigger population are the lower class from areas of Sinai, Mukuru Kwa Reuben, Kingstone Stone and Mukuru Kwa Njenga. Insecurity issues among these areas where pregnant women who visit the facility live cause some of the women to be fearful and not access their health care services like FANC. Most pregnant women seeking services at Lunga Lunga Health Centre are also of low socio-economic status; they have inadequate income and low levels of education, thus hindering the uptake of FANC services.

Accordingly, Lunga Lunga Health Centre as a facility has resource challenges, e.g. stock outs of lab test reagents, drugs, iron and folic supplements, and lack of ultrasound machines, thus affecting FANC utilization of pregnant women. Long queues and long waiting times during clinic visits also contribute to FANC service utilization. This study enabled the coming up with objective interventions to improve the utilization of FANC among pregnant women attending Lunga Lunga Health Centre for FANC services to achieve healthy pregnancy outcomes.

1.7 Significance of the Study

Further, findings are critical to the county government of Nairobi in charge of the devolved health matters specifically in the domain of maternal health. The findings are insightful to

health administration matters at the county government of Nairobi by identifying factors informing FANC services used among expectant women. The county should be able to come up with maternal health programs geared towards eliminating factors that are militating against the utilization of FANC services in various health facilities under the Nairobi County government.

The study findings inform local and national maternal health policy in Kenya. Specifically, the study findings would be useful documents to the county government of Nairobi in its health department in coming up with a county maternity health policy that encourages utilization of FANC services among pregnant women. Further, at the national government level, the Ministry of Health should find the findings insightful especially concerning ANC policy revision which encourages the employment of more health officials and the construction and equipping of health facilities to enhance utilization of FANC services countrywide.

The study report would also be insightful to the Ministry of Health in the national government of Kenya. The national government would find this study informative as regards the influence of health system factors on the utilization of FANC services towards the reduction of maternal complications-related deaths. The MOH collaboration with the National government may get to understand how aspects of the health system such as service quality, access to health services and distance to health facilities affect FANC utilization. Such Knowledge should be useful towards plans and policies towards increasing the number of health facilities, and equipping the health facilities with necessary equipment, staff and supplies.

The study finding is critical for the management of Lunga Lunga health facility as regards the predictors of FANC services utilization among pregnant women. The study results as regards health system variables affecting FANC services use in Lunga Lunga health facility are important to the management of the hospital as the factors are within the discretion of the management of the hospital towards enhancement of the utilization of FANC series.

1.8 Scope

The study examined the factors affecting FANC services utilization. The study concentrated on three groups of predictors including socio-demographic, health system and socio-economic factors. The target population were pregnant women visiting Lunga Lunga health facility for various FANC services. Data was collected from December 2024 to January 2025. A cross-sectional study design using an explanatory approach was adopted where quantitative data was sourced based on survey questionnaires and data collection sheets. The analysis of the data was conducted using both descriptive and inferential statistical methods, along with binary logistics regression chiefly being adopted to examine the predictive powers of various factors on FANC utilization.

1.9 Assumptions

The study postulated that pregnant women availed reliable information on the utilization of FANC health services. Further, the study assumed that the health records from which FANC utilization aspects were extracted were accurately entered and captured.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In focused antenatal care, health information is given to expectant mothers during FANC visits that help in bringing about healthy pregnancy outcomes. FANC prioritizes the quality of care during pregnancy over the frequency of appointments. This chapter considers literature that is related to this study obtained from previous studies in search engines and databases such as Google Scholar and Pub Med. The literature review helped to identify knowledge gaps that needed to be resolved via research.

2.2 Theoretical Framework

This research utilized Anderson's expanded model of healthcare utilization as a framework to comprehend the ways in which individuals interact with and make use of healthcare services. This model focuses on how individuals seek health and why they seek it. Initially formulated by Ronald M. Andersen in the 1960s, this model has undergone enhancements to incorporate various additional factors that affect healthcare consumption such as enabling, need factors and predisposing factors (Andersen & Davidson, 2007). Predisposing needs focus on socio-demographic characteristics, these are like individual characteristics before pregnancy. These are individual characteristics that influence a person's likelihood of seeking health care. Examples are Age, low levels of education, poor income/unemployment, inadequate knowledge of maternal health, and location.

Enabling needs are conditions that make FANC services available to pregnant women and resources that facilitate utilization. These determine the availability and accessibility of

health care resources needed to utilise FANC services. Perceived needs arise from previous experiences like parity and premature births and behavioural factors like smoking, etc. Perceived need explains how individuals view their health status and whether they believe they need medical attention provided under FANC. Over time, Andersen's model has been expanded to include additional factors such as health system factors, external environmental factors, personal health behaviour and outcomes (Andersen, 2008). In the context of this study, health system factors included distance to health facilities, quality of health services and access to services.

2.3 Review of Related and Empirical Literature

2.3.1 Utilization of FANC Services

According to the WHO (2018), using the new ANC model FANC to reach out to low-income countries comprised a minimum of four visits. Surveys conducted in sub-Saharan Africa revealed that expectant mothers typically access antenatal care (ANC) services only after the first trimester, specifically before 16 weeks, between 16 to 28 weeks, between 28 to 32 weeks, and at 36 weeks. Consequently, many women fail to meet the recommended number of focused antenatal care (FANC) visits, with some starting their appointments later than the guidelines suggest. (Gitonga, 2017). UNICEF reports that about 86% of expectant mothers receive at least one antenatal care (ANC) service from trained healthcare providers. However, approximately 65% adhere to it. In the Sahara region, approximately 52% of expectant women utilize maternal services. Hence elevated mortality rates (UNICEF, 2019).

Research conducted in Gurkha, Nepal, revealed that 45% of these women encountered

complications throughout the stages of antenatal care, childbirth, and post-delivery. When facing maternal issues, 55% of them chose alternatives like seeking help from family members or traditional healers rather than going to a recommended medical facility (Awasthi et al., .2018). Comparable research in the Bara district revealed that 41.6% of expectant women did not receive any ANC services, while only 28% managed to complete all 8 recommended antenatal visits. Additionally, the study indicated that approximately 55% of the participants did not receive vaccinations, and 48.3% were not supplemented with folic acid. A research study carried out in antenatal care clinics in Senegal revealed that merely 32% of expectant mothers obtained comprehensive results for the recommended laboratory tests, which encompass blood group and Rhesus factor identification (Van't Hoog et al., 2020).

Research conducted in Ghana and Tanzania indicated that the uptake of antenatal care (ANC) is notably low among young women (Hackett et al., 2019). Additionally, a study in Tanzania found that only 35.6% of pregnant women reported having taken iron-folic acid supplements at least once during the week prior to the data collection (Munyogwa, 2024). In a research investigation carried out within Murang'a County, Kenya, it was observed that the rate of maternal death was disturbingly elevated. Despite implementing various interventions, such as focused antenatal care (FANC), the maternal mortality rate continued to be elevated. Skilled health workers attended to about 54% of deliveries. The reduced utilization of FANC has led to an escalated mortality rate in Murang'a County. Only 27% of expectant women complete the suggested 4 minimum visits, with the county's first FANC visit attendance rate being substantially lower than the national average of 62% (Murang'a County Plan, 2018).

Comparatively, Tharaka Nithi County in Kenya also had a low utilization rate of FANC services, with only 52% of expectant mothers utilizing these services. Among the young women in Tharaka Nithi County, those below 20 years of age had a FANC utilization rate of 31%, compared to middle-aged women at 63%. Women with high education levels indicated a higher uptake rate of 78% compared to women with low education levels. Additionally, a partner's presence during pregnancy contributed to an increased utilization of FANC services, at a rate of 56% compared to those without partners (Gitonga,2017) Overall, the study highlights the need for improved FANC utilization rates, especially among expectant mothers with limited educational backgrounds, limited earnings and those without partners during pregnancy. Efforts should be focused on raising and informing the public on the need for FANC and addressing the factors inhibiting its uptake, such as access to healthcare services and financial constraints.

Socio-demographic factors play a significant role in influencing the utilization of FANC services. These factors can either facilitate or hinder a woman's access to and uptake of these crucial maternal health services. Factors like religion, age, and parity greatly affect the utilization of FANC services.

2.3.2 Sociodemographic Factors and Utilization of FANC Services

Socio-demographic factors play a significant role in influencing the utilization of FANC services. These factors can either facilitate or hinder a woman's access to and uptake of these crucial maternal health services. Factors like religion, age, parity and marital status greatly affect the utilization of FANC services.

Marital Status. In many societal contexts, marriage is traditionally associated with stability, social support, and shared responsibility, which can positively influence FANC utilization. Married women may benefit from spousal support, both financial and emotional, enabling them to attend appointments, cover associated costs, and adhere to health recommendations (Ahmed et al., 2017). A supportive partner can provide encouragement, assist with transportation, and even accompany the pregnant woman to health facilities, thereby reducing practical barriers. Furthermore, in communities where pregnancy outside of marriage carries a social stigma, married women might feel more comfortable and accepted within healthcare settings, leading to higher rates of FANC attendance. This aligns with findings from studies in various African countries, including Ethiopia and Nigeria, which have reported higher FANC uptake among married women compared to their unmarried counterparts (Tiruneh et al., 2018; Abegunde et al., 2021). The rationale often attributed is the increased social legitimacy and household resources available to married women.

However, the influence of marital status is not uniformly positive and can, in fact, present significant barriers for certain groups. Unmarried pregnant women, particularly adolescents, often face considerable stigma, discrimination, and lack of support from family and community. This can lead to delays in seeking antenatal care or complete avoidance of FANC services altogether, fearing judgment from healthcare providers or exposure to their status (Khan et al., 2016). The psychological stress and social isolation experienced by unmarried mothers can severely impact their health-seeking behaviours. Moreover, they may lack the financial independence or family support necessary to access FANC, especially if they are disowned or ostracized. In some cases, healthcare systems

themselves may inadvertently perpetuate this stigma, leading to less empathetic care for unmarried women.

Conversely, some research suggests that in contexts where FANC services are provided free of charge or with minimal fees, unmarried women, particularly those with a degree of autonomy, might exhibit comparable or even higher rates of FANC utilization. This could be due to a greater sense of personal responsibility for their health and the health of their unborn child, especially if they are not constrained by traditional marital dynamics or spousal permission (Adinew et al., 2017). For instance, a study in Bangladesh found that while married women generally had higher FANC utilization, the gap was narrower when services were easily accessible and affordable, indicating that financial and accessibility barriers might override the influence of marital status in some settings. Furthermore, in cases of complex or abusive marital relationships, being married might paradoxically hinder FANC utilization if partners restrict access to care or control financial resources.

The type of marital union can also play a role. Polygamous marriages, for example, might present unique challenges. Women in polygamous unions might receive less attention or resources from their husbands compared to those in monogamous relationships, potentially affecting their ability to utilize FANC services (Hagos et al., 2014). Competition for resources among co-wives and fragmented family support structures could indirectly impact a woman's health-seeking behaviours.

Parity. A comprehensive review of the literature in sub-Saharan Africa indicated that women with high parity or those belonging to larger households were less inclined to attend at least one ANC visit. Additionally, the review highlighted that low parity or being a first-time mother served as a significant predictor for the early initiation of ANC services

(Okedo-Alex et al., 2019). Furthermore, A study investigating the utilization of ANC services in Zambia revealed that women with higher parity tended to use ANC services less frequently. The findings indicated that multiparous women may feel a diminished necessity for ANC based on their prior experiences with pregnancy (Chama-Chiliba & Koch, 2015).

A study done by Gitonga (2017) in Kenya indicated that women who had more pregnancies before e.g 3 or more did not utilize FANC services they felt they were better informed, a similar study done in Indonesia indicated that first-time pregnancy women attended four ANC visits than those who had pregnancies before (Efendi et al., 2017). A contradicting study done in Tanzania indicates that FANC utilization tends to be lower among first-time expectant young women (Hackett et al., 2019). A research study carried out in Ghana revealed a significant correlation between higher parity and reduced utilization of focused antenatal care (FANC). The findings indicated that women who had experienced more previous births were less inclined to attend the advised number of antenatal care (ANC) appointments (Konlan et al., 2022).

Women without previous complications tend not to utilize FANC services accordingly compared to women who had previously had pregnancy complications like stillbirths and miscarriages who utilize FANC services to the maximum. Those without complications perceived otherwise (Gulema et al., 2017). A study in Ethiopia revealed that women who had experienced stillbirths were considerably more inclined to utilize FANC services than those without such experiences. The findings indicated that mothers with a history of stillbirth had significantly greater odds of participating in FANC services (Ayalew & Nigatu, 2018). Similarly, research conducted in Zambia indicates that women who have

experienced pregnancy-related complications in the past are more inclined to pursue sufficient antenatal care. This finding implies that prior negative pregnancy experiences may encourage women to take a more active role in utilizing antenatal services during future pregnancies (Girotra et al., 2023).

Religion. Religion plays an important role in FANC services; for example, Muslims prefer to go to facilities that are established by the Muslim religion, and some cultures perceive women who attend clinics for FANC services as weak (Chorongo et al., 2016). In South Asia, Kachoria et al. (2022) indicated that Muslim women, specifically, encounter challenges in obtaining ANC, when compared to women from other religious backgrounds. This suggests that one's religious affiliation could significantly influence health-seeking behaviours and the accessibility of healthcare services. A study conducted in Ghana by Haruna et al. (2019) examined the impact of religious practices and beliefs on health care during pregnancy and labour. The findings revealed that spirituality is a significant predictor of the care provided to expectant women in Ghana, as many women integrate religious artefacts and rituals into their prenatal and labour experiences. This emphasizes the necessity of taking into account religious and cultural contexts when designing maternal health interventions**.**

Research in Nigeria by Al-Mujtaba et al. (2016) analysed whether religious factors explain the use of maternal health services. The results revealed that religious beliefs and affiliations influence women's choices regarding antenatal care services, with certain religious teachings either promoting or deterring ANC utilization among expectant women. In Ethiopia, some religions are not aware of reproductive health issues Fenta et al. 2021) this is through a study on Ethiopia Demographic Health Survey data for 2016. Culture leads

to low maternal freedom, which affects the utilization of FANC services. Many expectant women in sub-Saharan Africa don't take the lead in decisions about healthcare utilization, some have to wait for permission from spouses or family members before they seek health services like FANC (Olanrewaju et al., 2022).

A thorough examination focusing on conflict-affected areas revealed that cultural and health beliefs significantly influence the adoption of antenatal care. The analysis of 22 studies indicated that cultural norms significantly affected the utilization of ANC, whereas six studies underscored the influence of health beliefs. This suggests that cultural contexts are essential for comprehending and enhancing ANC services (Alibhai et al., 2022). A study undertaken in Nepal by Pant et al. (2025) emphasized that traditional childbirth practices and cultural views on safety have a considerable impact on maternal health behaviours. Numerous women regard expectancy and childbirth as natural occurrences that do not necessitate medical assistance, resulting in reduced use of antenatal care services. This viewpoint is profoundly embedded in cultural norms and influences health-seeking behaviours.

A study carried out in South Sudan revealed that cultural beliefs, societal norms, religious practices, and the influence of husbands adversely affected the utilization of ANC. The results indicate that it is crucial to incorporate socio-cultural factors into maternal and child health initiatives to enhance healthy pregnancies and improve birth outcomes in the area (Mzimbiri et al., 2024). Research conducted in Tanzania revealed that collaborative decision-making between spouses had a considerable impact on the frequency of ANC visits, particularly those involving four or more appointments. Additionally, the study highlighted a correlation between women's educational attainment and the planned nature

of pregnancies with the utilization of FANC, highlighting the significant impact of socio-cultural factors on health-seeking behaviours (Ngowi et al., 2023).

Age. A comprehensive review conducted in sub-Saharan Africa indicated that advanced maternal age correlates with increased ANC services. Eight studies specifically indicated that older women were more likely to participate in at least four antenatal care (ANC) visits compared to their younger counterparts. Conversely, multiple studies found that younger maternal age was linked to an earlier start of ANC, as younger women often began their care in the first trimester (Okedo-Alex et al., 2019). Another systematic review focusing on qualitative studies conducted in conflict-affected regions similarly identified maternal age as a significant factor affecting both the timing and frequency of ANC utilization. The findings indicated that younger women frequently encountered obstacles in accessing ANC services, whereas older women demonstrated a higher likelihood of utilizing these services (Alibhai et al., 2022).

Ngowi et al. (2023) examined the elements influencing the use of FANC in Tanzania and found that maternal age plays a crucial role in attendance at antenatal care (ANC) services. The results revealed that older women were more likely to utilize ANC services; however, the study did not offer specific insights into age-related patterns. A study conducted by Gitonga (2017) in Tharaka Nithi County indicated that young women below the age of 20 had the lowest FANC utilization rate, with approximately 31% of them accessing these services. In contrast, approximately 63% of women aged 30 to 34 exhibited a higher rate of utilization (Gitonga, 2017).

2.3.3 Socioeconomic Factors and Utilization of FANC Services

These mostly focus on socio-economic factors like unemployment, low levels of Education, low levels of income, access to media etc which play a major role in FANC utilization.

Employment/Income. Women who are employed and have some income tend to seek FANC services compared to those with none (Mutai et al., 2021). According to Efendi et al. (2017), young expecting mothers are influenced by socioeconomic factors influencing FANC utilization. Women from well-off households seek FANC services promptly compared to counterparts from contrary backgrounds (Konlan et al., 2020). The authors recommended maternal health education in community households and even workplaces. Most young women are in school, but they are not economically empowered; thus, they cannot financially stand for themselves. A study in the Netherlands by Van der Meij (2021) reported that the uptake of non-invasive prenatal testing, which includes blood group genotyping, was more than two times lower in socioeconomically disadvantaged neighbourhoods (20.3%) compared to other areas (47.6%).

This disparity suggests that socioeconomic factors predict the utilization of prenatal testing services. A study examining the predictors of ANC visits among working women in Indonesia has revealed that economic status strongly explains the completion of these visits (Denny et al., 2022). Conversely, a systematic review carried out in Sub-Saharan Africa revealed that women with employment were more inclined to participate in at least one ANC visit compared to their unemployed counterparts (Okedo-Alex et al., 2019). Additionally, Luntsi et al. (2022) observed that, despite the World Health Organization's

recommendation for at least one ultrasound examination during eight antenatal care visits, a significant number of pregnant women in low- and middle-income countries do not adhere to this guideline.

Women's Education. Research done by Mutai et al. (2021) in Murang'a indicates low literacy levels impacted seeking FANC services. As per the authors, educated mothers have been impacted by using FANC utilization through increased health education, which has led to improved understanding of information, hence increased utilization of health education messages, and, consequently, enhanced the ability to interact and communicate effectively with healthcare providers. Research indicated that women possessing advanced educational qualifications were more likely to make optimal use of antenatal care services than those without formal education (Raru, 2022). Additionally, Wulandari et al. (2022) discovered in Indonesia that husbands with higher levels of education were more inclined to accompany their wives to health facilities for focused antenatal care (FANC) visits.

Amaikhu and Mulinge (2017) did a study in the county of Malindi about teenagers and found knowledge gaps in maternal and reproductive health. Educated participants who understood maternal and reproductive health responded well to FANC services, unlike those who were not informed. Another study was done in Indonesia, and the findings showed that awareness of maternal health positively influenced FANC services (Efendi et al., 2017). Taking into account that young pregnant women are prone to encountering social stigma as a result of early pregnancies, which then contributes to boycotting their clinical visits (Dairo & Antalogun, 2018).

Media Access. Media access plays a key role in FANC service utilization. Women who have gadgets like phones and TVs are enlightened on FANC services and their importance and utilize them compared to women without, this is according to a study by Efendi et al. (2017). A study revealed that while 76.7% of expectant women possessed mobile phones and 71.2% expressed a willingness to receive health interventions via SMS, this access did not necessarily result in improved attendance at antenatal care (ANC) services (Endehabtu et al., 2018). A study conducted in India found a direct correlation between extensive exposure to various forms of mass media, such as newspapers, radio, and television, and the likelihood of attending at least eight antenatal care (ANC) visits. Notably, women with considerable television exposure were 1.84 times more likely to fulfil the recommended number of ANC visits compared to those without such exposure (Dhawan et al., 2020).

Similarly, A study conducted in Bangladesh by Ahmed (2024) revealed a significant correlation between media exposure and the frequency of antenatal care (ANC) visits. The results indicated that women with access to media were more likely to utilize ANC services adequately, highlighting the crucial role of media in raising awareness about maternal health. In Uganda, research indicated that women who had access to media were more inclined to utilize antenatal care (ANC) services than those who did not have such access. This highlights the critical role of media in spreading health information and promoting the use of maternal healthcare services. Additionally, a community-focused mass media initiative in Malawi markedly enhanced the use of antenatal care (ANC) services. This initiative resulted in a 162% rise in ANC service utilization, highlighting the efficacy of mass media strategies in advancing maternal health outcomes (Zamawe et al., 2016).

2.3.4 Health System Factors and Utilization of FANC Services

Health system factors are crucial in determining the accessibility, quality, and ultimately, the utilization of Focused Antenatal Care (FANC) services. Even when women are aware of the importance of FANC, systemic issues can present significant barriers.

Quality of Care. Young pregnant women receive a judgmental attitude from health workers, which negatively influences their efforts to attend FANC services, inadequate services and resources, e.g. lab tests, and purchasing of drugs, yet they are supposed to be free and lack ultrasound machines. Due to an inadequate number of staff members, women are frequently sent back home without receiving the necessary services, this is because of the high workloads, long queues leading to long waiting times, etc. All these affect the utilization of FANC services (Wilunda et al., 2016). A systematic review identified socioeconomic and health system factors as more critical determinants, with less emphasis on healthcare staff attitudes (Alibhai et al., 2022). A study in Bangladesh did not specifically identify privacy concerns as a major barrier to ANC utilization (Khan et al., 2024).

Distance. Distance affects FANC utilization and inadequate transportation, particularly in developing countries, which makes the situation even worse. This has made expectant women look for alternatives (Alex, 2020). Matiang'i et al. (2021) observed that only 21% of expectant women underwent routine ultrasound screening before reaching 24 weeks of gestation, while the majority of participants (45%) travelled an average distance of 3 to 5 kilometres to utilize the POCUS service. Alex (2020) noted that distance affects FANC utilization and that inadequate transportation, particularly in developing countries, makes the situation even worse. This has made expectant women look for alternatives. Their safety

(Bakibinga et al., 2022). Habitation affects FANC services utilization. Expectant women living in towns or cities tend to seek FANC services early and more as compared to women residing in rural localities as explained by challenges like long distance to hospitals in mostly rural areas, these lead to poor utilization of FANC services (Konlan et al., 2020)

Challenges urban women face seeking maternal health include transportation costs when facilities are far, some facilities located near slums encounter difficulties due to inadequate skilled staff and unnecessary equipment during the offering of FANC services, unstable shelter in informal settlements which have inadequate protection from natural elements like rain, extreme heat, or cold, pregnant women may prioritize staying close to home to protect their families and belongings even if it means avoiding seeking healthcare services like FANC. Women in informal settlements also face insecurities; they fear going to health facilities to seek ANC services because the informal settlements are often characterized by high crime rates, including physical and sexual violence.

2.4 Identification of Knowledge Gap

The literature review from previous studies looked at factors that result in the utilization of FANC services among expectant women but did not exclusively centre on expectant women in Lunga Lunga Health Center, Makadara Sub County, Nairobi, Kenya. Most studies also in SSA concentrated on FANC utilization of expectant women in rural areas and assumed that FANC utilization of expectant women in the informal settlements faces a lot of challenges that affect FANC uptake, conducting this research is necessary to assess the extent of FANC usage among expectant women and understanding the factors contributing to FANC services utilization.

2.5 Conceptual Framework

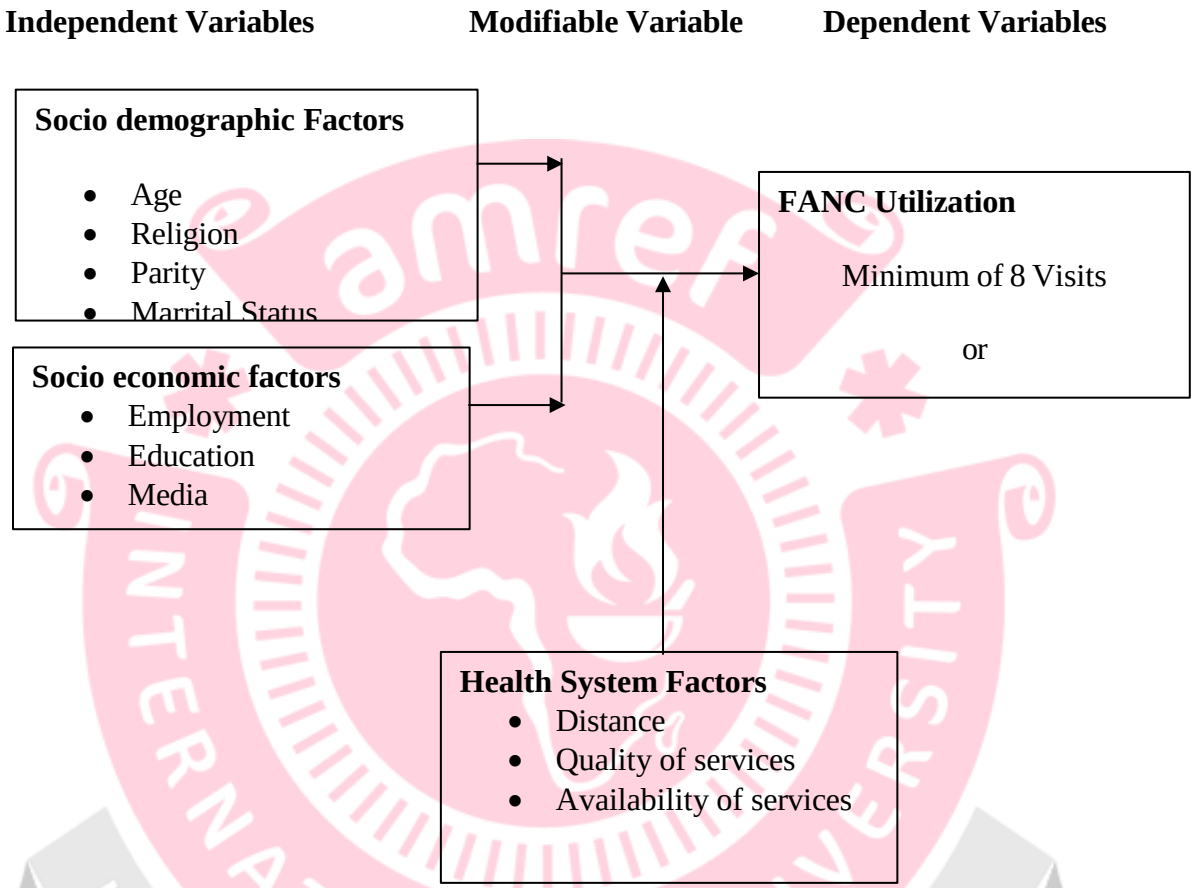

Figure 1: Conceptual Framework

2.5.1 Dependent Variable

The outcome variable is FANC services utilization among pregnant women. The dependent variable was measured through FANC visits and services received. The recommended FANC visits ought to be four with more visits being preferred. The services offered in each visit depend on the stage of pregnancy and the need for the services.

2.5.2 Independent Variables

The independent variables were determinants of FANC Services utilization among expectant women seeking services. The study concentrated on socioeconomic factors (education, access to media, employment) and socio-demographic factors (Parity, age, religion, Marrital Status).

2.5.3 Modifiable Factors

The modifiable factors were health system factors contributing FANC Services utilization among expectant women seeking services. The study concentrated on three health system factors including distance, quality of care and availability of services.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The chapter elaborates an overview of the methods that will be employed in carrying out the study, as well as any constraints and limitations that may arise during the study. The chapter presents the designs of the study, study area, population, sampling, data collection, data analysis, ethical consideration and community engagement plan.

3.2 Research Design

The study adopted an analytical approach that involves breaking down complex data or concepts into smaller parts to understand patterns, relationships, and underlying principles. The analytical approach is often used to evaluate existing information and draw conclusions based on evidence and logical reasoning rather than just collecting new data (Saunders et al. 2019). Further, the study collected cross-sectional quantitative data to examine the factors predicting FANC services use among expectant women accessing services at the Lunga Lunga health centre in Nairobi County, Kenya.

3.3 Study Area

Lunga Lunga Health Centre is located in the Viwandani ward in Makadara sub-county, Nairobi, Kenya. It is in the industrial area and mainly supports patients, among them are pregnant women from informal settlements, especially, Sinai, Mukuru kwa Reuben, Kingstone area, Mukuru kwa Njenga among others. The study was carried out at the ANC clinic at Lunga Lunga Health Centre. According to KDHS 2022, the facility's catchment population is 27,498. Women of childbearing age, 15-25 years, stand at 5802. Currently,

the estimated number of pregnant women stands at 935, and those attending Lunga Lunga Health Centre monthly are approximately 200-230. The hospital remains one of the busiest in the Makadara sub-county in terms of maternal care.

Figure 2:Map of Lunga Lunga Health Centre Catchment

3.4 Target Population

Expectant women seeking FANC services at Lunga Lunga Health Centre, Makadara sub county formed the study population. The estimated number of expectant women visiting Lunga Lunga health centre stands at 935 thus forming the target population. The hospital remains one of the busiest in the Makadara sub-county in terms of maternal care.

3.4.1 Inclusion Criteria

1. Expectant women seeking FANC services at Lunga Lunga health centre.
2. Expectant women in their third trimester of pregnancy visit Lunga Health Centre

for FANC services.

3.4.2 Exclusion Criteria

Pregnant women with pregnancy complications seek their FANC services at Lunga Lunga Health Centre.

3.5 Sample and Sampling Procedure

3.5.1 Sample Size

The sample size was achieved through Cochran's formula. The formula was used because of inadequate information on the true proportion of pregnant women utilizing FANC services and to ensure the sample size generated is sufficient regardless of the actual proportion in the population. $n=Z^2$ P q/ e^2 Where: n=Sample size e= the desired level of precision (i.e the margin of error). Z =the 95% confidence level is represented by the standard normal deviation, which is often set at 1.96. P=The estimated proportion of the population q=1-p n= [1.96] [1.96] (0.5) (0.5)/[0.05][0.05] n=385. Small sample correction; where N =935(Estimated number of pregnant women) $n=n_0$ /1+(n_0-1)/N =385/1+(385-1)/935 n=272

3.5.2 Sampling Technique

Sampling Technique refers to the method used to select a subset from a larger population for research purposes. The goal of using a sampling technique is to obtain a representative sample that accurately reflects the characteristics of the broader population, ensuring that the research findings are valid and can be generalized (Creswell, 2014). The study adopted

systematic random sampling to select the sampling size from the population. Systematic random sampling is a probability sampling technique where elements are selected from an ordered population at regular intervals determined by a fixed sampling interval. This interval, known as the kth value, is calculated by dividing the population size by the desired sample size (Taherdoost, 2016). This method is particularly efficient when dealing with a large population that is logically organized, such as lists or registers, as it simplifies the selection process and reduces time and effort (Acharya et al., 2013).

3.5.3 Sampling Procedure

A systematic random sampling method with the use of ANC registers was used in this study. A research assistant who would have signed the data and confidentiality form assisted in retrieving the pregnant women's data from ANC registers and randomly assigned number codes. The ANC registers were reviewed to identify pregnant women utilizing FANC services. While using the sampling technique, the sampling interval was arrived at via the division of the target population (expectant women using FANC services 'N') by the minimum adjusted sample size (n). To ensure randomness, a number was randomly selected between 1 and sampling interval K to get a starting point. We began with the randomly chosen starting point and selected every "K" nth individual from the ANC register for the survey.

This was undertaken till the targeted sample size was achieved. Relevant data information collected from the selected pregnant women's records from the ANC register included details about their FANC utilization, such as number of visits, tests conducted, medication prescribed, demographic information etc. They were also followed up through CHVs and

invited to participate in a survey. In cases of challenges such as non-respondents or refusal to participate, to minimize bias, sampling registers were checked again and there was the selection of the next "K"th eligible individual. Furthermore, before the replacement of a participant efforts were made to encourage the participant who declined to reconsider their decision and briefly explain the importance and purpose of the study and address any concerns they have.

3.5.4 Study Subject Recruitment

Screening of pregnant women seeking FANC services at the facility followed the set inclusion and exclusion criteria. This included medical history, gestational age and willingness to participate. Explanation of the study objectives, procedures, and potential benefits to eligible participants, stressing the need for FANC in ensuring maternal and foetal health. Written informed consent was obtained from eligible and interested participants before enrolment. The researcher recruited pregnant women seeking FANC services who were in their third trimester.

3.6. Data Collection Instruments

Questionnaires served as the means of collecting quantitative data. The major reason for choosing questionnaires is because of their convenience. The questionnaire was developed in a structured format in line with previous studies examining determinants of FANC utilization such as (Konlan et al., 2022). The questionnaire had various sections to capture data on socio-demographic, socio-economic and health system factors of FANC utilization (See Appendix IV). The specific factors included in each factor category were identified from empirical studies. The survey questionnaire was digitalised using Google Forms

whose links were accessed via Tablet. The research assistant sourced data from pregnant women while keying in the responses on the opened Google Forms.

Further, data collection sheet was adopted to extract data on FANC utilization from the hospital maternal records. The data collection sheet was prepared in line with the Ministry of Health policy guidelines on FANC administration. The data collection sheet considered various FANC services that pregnant women ought to receive in the recommended visits to the health facility. The services included Comprehensive History, Physical and Obstetric Examination, Laboratory investigations, Drug Administration and immunization and Education & counselling. The secondary data from hospital maternal records was corroborated with survey data sourced via questionnaire.

3.7 Validity and Reliability

The questionnaire and data collection sheets were pretested among 28 pregnant women at Lunga Lunga health facility to examine the reliability and validity of the data collection tools. The pregnant women who participated in the pre-study were excluded from the final study. The responses during the pre-study were used to evaluate the appropriateness of the data collection tools in collecting needed data to achieve study objectives. Errors identified in the process were adjusted and corrected before the final tools were developed for the actual study. The study also sought the opinion of the public health experts, including the supervisors, in examining the validity of the survey questionnaire and the data collection sheet.

3.8 Data Collection Procedures

Data collectors were recruited and trained on how to collect data. Questionnaires were

thoroughly examined to ensure good responses to the variables that were to be measured. The closed-ended questionnaires used to conduct the study were administered by the research assistants in a face-to-face method. The data was collected by use of Google Forms and a Tablet. The research assistant accessed pregnant women chosen to participate in the study on the day of their visit to the Health Facility. Finally, the collected data were checked to ensure all information was captured as per the research questions.

3.9 Data Analysis and Presentation

3.9.1 Data Processing

The researcher created Google forms provided by Google. The link to the Google forms was shared with research assistants via tablets provided by the principal researcher. The responses from the study participants were keyed into the Google form and immediately received by the principal researcher in the Google space. The data on the Google server was downloaded in Microsoft Excel format for further exploration using Statistical Package for Social Sciences version 25. The data collected via Google Forms and stored in Google Space were editable by the principal investigator and were further deleted once the Microsoft Excel version had been downloaded and securely baked up.

3.9.2 Data Analysis

Quantitative data underwent initial analysis using descriptive statistical methods, which included calculating frequencies and percentages. The statistical analysis of quantitative data was performed using SPSS v 25, and the presentation of the results was through tabular formats, illustrating frequencies and percentages. Binary logistic regression was adopted to examine whether the factors identified predicted FANC services use. The factor

predicted FANC use adequacy if the p-value < 0.05 level of significance. The findings were presented using Tables and graphs and associated narrations. The hard copies of the data collection materials such as informed consent and discussion transcripts were destroyed through shredding once the thesis had been defended and accepted by the university and the student had been cleared for graduation.

3.9.3 Independent and Dependent Variables

Table 1 presents the operationalization of study variables, including explanatory, modifiable and outcome variables. The dependent variable (FANC services utilization) was operationalized using a binary scale in terms of the number of FANC visits to the health facility where 1 is at least eight visits and 0 is below eight visits. The measurement enabled the researcher to examine whether the minimum number of FANC visits had been achieved or not in line with Mwenebanda et al. (2024). Socio-demographic factors considered in this study included age, marital status, religion and parity. As regards age, the variable was operationalized in age groups from 15 and above. The minimum age for pregnant women in the study was age was 15 considering that biologically, women can become pregnant once they begin ovulating, which typically starts during puberty is around 12 to 15 years (American College of Obstetricians and Gynecologists [ACOG], 2015).

The variable age was categorical that is between 15 -18, 19-22, 23-25 and above 25 years. Marital Status was operationalized using a categorical scale that is single, married, separated and widowed. Religion was operationalized using a categorical scale in terms of Muslims, Christians and others. As given in the population census of Kenya in 2019, Christians and Muslims were the two major religions thus there was a high likelihood that

the majority of the respondents were divided into these two religions. The final socio-demographic factor was parity operationalized based on a discrete scale in line with the World Health Organization (2016). Socioeconomic factors included in this study included education, access to media and employment. Education was operationalized using categorical variables in terms of, primary, secondary, Certificate/Diploma, Bachelor's degree and Postgraduate degree in line with (Tiruneh et al., 2023).

Employment was measured using a categorical variable in terms of Self-employment, Housewife/househusband, Casual employment and Employment as suggested by Worku et al. (2019). Media access was another socioeconomic variable measured using a binary scale where 1 was either listening to Radio or watching TV while 0 was otherwise. The binary scale was critical in measuring whether the pregnant women accessed media or not with regard to information and communication during the gestation period. Health system factors considered in the study included distance, quality and access to health services. The distance was measured using a categorical variable in terms of time in minutes to reach the health facility. The categories included less than 30 minutes, 30-60 minutes and above 60 minutes such that the longer it took them to reach the health facility the longer the distance between their residence and the health facility.

Minutes to reach the health facility were adopted as a measure of distance to the health facility given that pregnant women could not state the distance in kilometers from the health facility to their residents. However, it was possible to state how long it took them to reach the health facility. The quality of health services was measured based on a categorical scale where the categories included Poor, Average and Excellent. Finally, access to health services was measured based on the promptness of services and a categorical scale was

adopted. The categories included less than 30 minutes, 30-60 minutes and above 60 minutes such that the higher the category, the better the access to health services.

Table 1: Operationalization of Study Variables

Objective	**Variable**	**Variable description**	**Types of Variables**	**Measurement**
Dependent Variable				
To assess FANC service utilization among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.	FANC services utilization	Respondents were asked on FANC visits to the facility	Binary	1= 8≤ visits 0= < 8visits
To find out socio-demographic factors contributing to FANC services utilization among pregnant women seeking services at Lunga Lunga Health Centre,	Age	Respondents were asked about their age	Categorical	1.15-18 years 2.19-22 years 3.23- 25 years 4. 26 years +
	Marrital status	Respondents were asked about their marital status	Categorical	1. Single 2. Married 3. Separated 4. Widowed

Nairobi County, Kenya.	Religion	Respondents were asked about their religion	Categorical	1. Muslim 2. Christian 3. Others
	Parity	Respondents asked about the parity	Discrete	1.1 2.2 3.3 4.4 5.5≤
To determine the socio-economic factors contributing to FANC services' utilization adequacy among pregnant women seeking services at Lunga	Education	Respondents were asked about their age and that of their spouse	Categorical	1. Primary 2. Secondary 3.Certificate/Diploma 4. Bachelor's degree 5. Postgraduate degree
Lunga Health Centre, Nairobi County, Kenya.	Employment	Respondents talked about what they and their spouses did for a living	Categorical	1 Self-employment 2.Housewife/house husband 3.Casual employment 4. Employed

	Media	Respondents asked whether they listened to a radio or watched TV or owned a phone or read newspaper	Binary	1. Yes 2.No
To determine health system factors contributing to adequacy of the utilization of focused antenatal care services among pregnant women seeking services at Lungalunga health center Nairobi County, Kenya.,	Distance to the health facility	Respondents were asked how long it took them to reach a health facility	Categorical	>30 minutes 2.30-60 minutes 3.60 minutes<
	Quality of services	Respondents asked about the attitude of staff and privacy	Categorical	Poor Average Excellent

	Access to health services	Respondents were asked about the promptness of services.		1.>30 minutes 2.30-60 minutes 3. 60minutes<

3.10 Ethical Considerations

Lunga Lunga Health Centre administration approved the study through the Makadara Sub-County Health Management Team (SCHMT). Ethical approval was sought from Amref ESRC, after which a research permit was obtained from NACOSTI. The specifics of this research were communicated to each participant, and informed consent was obtained from those who volunteered. Additionally, an assent form was requested from participants under the age of 18. Participants were assured of privacy, security protection and anonymity as well as confidentiality. The principles of beneficence and non-maleficence were adhered to. For privacy and confidentiality, personally identifiable information like names and addresses was removed, and each participant had a unique identity.

There was also a restriction of access to sensitive data; for example, by the use of passwords, only authorized individuals like research assistants would access it because they were bound by a confidentiality agreement. Respondent responses were not disclosed to other participants taking part in the research. Further, the data collection was undertaken in a secured room without interference from other parties. The researcher used the hospital board room to ensure that the discussions were not accessed by non-participants in the study. The hospital board room is a private room with soundproof installation. For

withdrawal requests, an accessible process example of issuing a phone number was shared with the participants in cases of withdrawal requests.

The withdrawal requests were honoured promptly without question. Participants who chose to withdraw and had their data collected were informed if their data would be retained or destroyed. If they agreed to data retention, the informed consent would clarify to the participants how their data would be used in anonymized form. Withdrawn participant data were securely stored for confidentiality by use of passwords so as they are not easily accessible. The study did not have direct compensation example giving money to participants because of limited resources but involved indirect compensation thus participants benefited from how the study findings would contribute to improving the FANC services. Participants may access supportive services such as referrals to healthcare services if they show need or concerns related to their pregnancy.

Ensuring the environment is welcoming, thus collaborating with healthcare facility staff at the ANC clinic to provide a welcoming environment and support pregnant women. This included encouraging open communication, respecting privacy, and addressing cultural or language barriers to participation. Engaging healthcare providers in the facility who interact with the pregnant women, because they play a crucial role in interacting with pregnant women and can serve as trusted sources of information about the study. Organize health education sessions at ANC clinic waiting areas by collaborating with healthcare providers. The aim and benefits of the enquiry were communicated to the study participants in simple and well-understood language, highlighting how participating in the study would contribute to improving maternal and child health outcomes. Organize group education sessions led by healthcare providers in the ANC clinic to discuss the benefits of FANC

utilization. These sessions can also provide a forum for pregnant women to ask questions and share experiences.

The relevant stakeholders involved included healthcare providers, administrators, policymakers, patients, and community members. A detailed report was prepared, summarizing the research methodology, findings, and implications. Each stakeholder would be communicated with differently. Healthcare providers may focus on the clinical implications of the research, while policymakers and administrators may focus on resource allocation and policy changes. Scheduled meetings with stakeholders to discuss the research findings and offered opportunities for questions and discussions to ensure clarity and understanding. Offering evidence-based recommendations to policymakers at the facility, sub-county and county levels for policy revisions based on the research findings, and backing it up with data and examples from the study. Further, advocate for policy changes that align with the study's recommendations.

Collaborate with decision-makers within the health facility to develop action plans for implementing policy changes based on the research findings. Offer support and resources as needed to facilitate implementation. There would be continuous monitoring of the impact of the policy changes resulting from the research findings to assist in the sustainability of the study interventions. Sharing the research findings widely beyond the health facility will be affected, presenting at conferences, publishing in relevant journals, and using social media to reach a wider audience.

3.11 Study Constraints and Limitations

The research had limitations; first and foremost, the enquiry only included pregnant women

seeking FANC services at Lunga Lunga Health Centre and thus does not consider pregnant women who are not seeking FANC services at Lunga Lunga Health Centre. Collecting data from pregnant women was sensitive and challenging due to privacy concerns and the potential for recall bias. Self-reported data often leads to inaccuracies and memory biases. Participants may also provide socially desirable responses, affecting the validity of the data. Budget and time limitations can affect the depth and breadth of data collection and analysis. The language barrier was another challenge, especially translation from English to Swahili and then "slang" since some of the participants might not understand fluent English and fluent Swahili, however, these problems were overcome through elaborating the importance of the study.

CHAPTER 4: RESULTS

4.1 Introduction

The chapter presents the results on the identification of predictors of FANC services' utilization adequacy among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya. The data used was sourced via the administration of a survey questionnaire and data collection sheet. The survey questionnaire was responded to by 272 pregnant women visiting the Lunga Lunga health centre for various FANC services. Further, a data collection sheet was adopted to collect FANC utilization data from hospital health records. The data collected was manipulated based on cross-tabulation and binary logistic regression. Cross-tabulation involves comparing the utilization factors against the FANC utilization rate. The binary logistic regression involved the generation of an odds ratio and p-value. The chapter has been organised in terms of research objectives.

4.2 Respondent Characteristics

The study examined respondent characteristics including age, marital status, religion, parity, education, and occupation (Table 2). The majority (64.3%) of the expectant women in the survey were aged 23 years and above, with the remaining 35.7% being 22 years and below. Further, the majority (77.6%) of the expectant women in the survey were either legally married or cohabiting with spouses, with the remaining 22.4% being either single separated or divorced. Most of the expectant women in the survey were Christians (96.3%), with the remaining few being Muslims. The majority (82.7%) of the expectant women in the survey had either a secondary certificate or diploma as their highest level of education. The remaining 17.3% were primary school-level leavers. As regards employment, the

majority (54.2%) of the pregnant women in the survey were housewives, with the remaining 45.8% either self-employed, casual labourers or employed.

Table 2: Respondent Characteristics

	Category	**Freq/Percentage**
Age	15-18	19(7.0%)
	19-22	78(28.7%)
	23-25	68(25.0%)
	25<	107(39.3%)
	Total	**272(100.0%)**
Marital status	Single/never married	40(14.7%)
	Married/cohabiting	211(77.6%)
	Separated/divorced	21(7.7%)
	Total	**272(100.0%)**
Religion	Muslims	10 (3.7%)
	Christians	262(96.3%)
	Total	**272(100.0%)**
Education	Primary	47(17.3%)
	Secondary	156(57.4%)
	Certificate/diploma	69(25.4%)
	Total	**272(100.0%)**
Occupation	Self-employed	77(28.4%)
	Housewife	147(54.2%)
	Casual labourer	39(14.4%)
	Employed	8(3.0%)
	Total	**272(100.0%)**

4.3 Focused Antenatal Care (FANC) Services Utilization.

The first objective sought to assess FANC service utilization among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya. The data on FANC utilization was sourced based on a data collection sheet. The information was extracted from the hospital records of the expectant women who were involved in responding to survey questionnaires. The data was analysed based on frequency distribution and percentages of

various utilization indicators.

4.3.1 Overall FANC Utilization

The analysis of data revealed that only 9.9% of the expectant women in the study had made the recommended mandatory eight visits to the hospital for ANC health services, with the remaining majority (90.1%) failing to achieve the minimum recommended number of visits at the health facility. Therefore, overall FANC utilization was low among pregnant women visiting the Lunga Lunga health centre. The finding is presented in Figure 3.

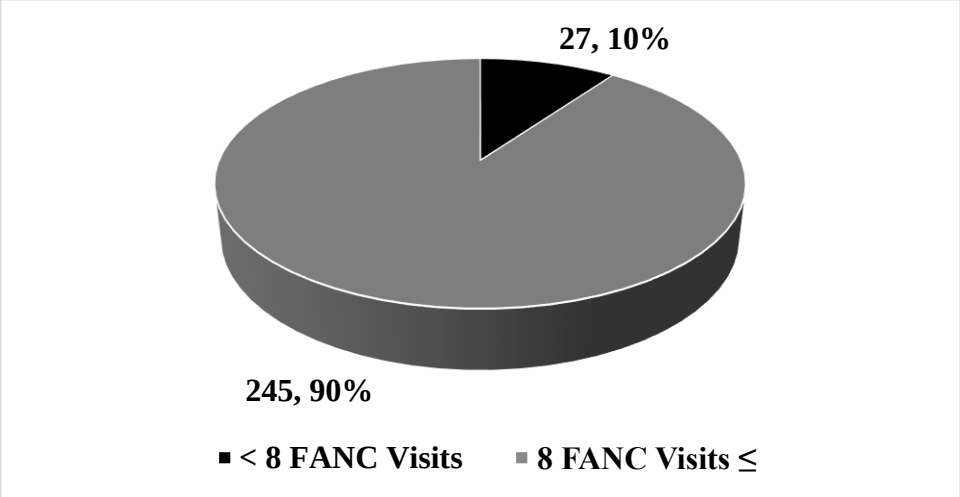

Figure 3:FANC Utilization

Further, the study examined the distribution of FANC visits to Lunga Lunga Health Facility based on frequency distribution and percentages [Table 3]. The findings show that only 27 (9.9%) of the respondents had made the recommended eight FANC visits to the health facility with the remaining majority having made fewer visits.

Table 3: Distribution of FANC Visits by Pregnant Women

	Visits	Frequency	Per cent
FANC Visits by Pregnant Women	2	4	1.47
	3	41	15.07
	4	56	20.59
	5	110	40.44
	6	21	7.72
	7	13	4.78
	8	8	2.94
	9 and above	19	6.99
	Total	272	100.0

4.3.2 First Visit to the Health Facility

The study also evaluated the first visit by the expectant women to the hospital for FANC services. The majority (67.3%) of the expectant women had first visited the hospital for FANC services late in their pregnancy (2nd and 3rd trimester). In this regard, only 32.7% had visited the hospital earlier in their first trimester (Figure 4).

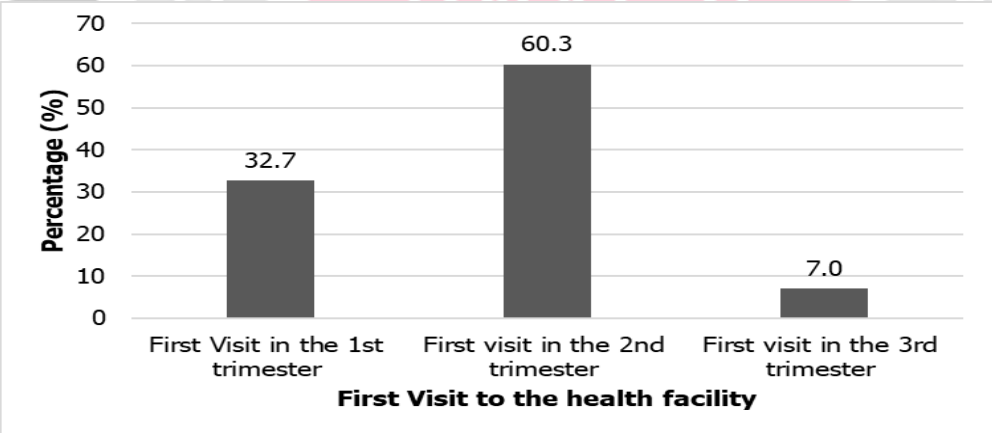

Figure 4: First Visit During Pregnancy

4.3.3 Utilization of Various Services under FANC

The study evaluated the utilization rate of various FANC services. The major services included physical and obstetric tests (Table 4), laboratory examinations (Table 5), drug administration (Table 6) and Education and counselling (Table 7).

Table 4: Physical and Obstetric Tests

	1st Trimester		2nd Trimester		3rdTrimester	
	Yes	No	Yes	No	Yes	No
Physical and obstetric Tests						
Ultrasound scan	0 (0.0%)	272(100%)	2(0.7%)	270(99.3%)	0(0.0%)	272(100%)
Blood pressure	92(33.8%)	180(66.2%)	164(60.3%)	108(39.7%)	17(6.3%)	255(93.7%)
Weight	92(33.8%)	180(66.2%)	164(60.3%)	108(39.7%)	17(6.3%)	255(93.7%)

Regarding physical and obstetric tests, only 2(0.7%) of the expectant women went for ultrasound scan tests during their pregnancy journey (Table 3). Further, 33.8%, 60.3% and 6.3% of the pregnant women had both their blood pressure and weight examined during their first, second and third trimester, respectively.

Table 5: Laboratory Examinations

	1st Trimester		2nd Trimester		3rd Trimester	
	Yes	No	Yes	No	Yes	No
Laboratory examinations						
HIV test	90(33.1%)	182(66.9%)	165(60.7%)	107(39.3%)	16(5.9%)	256(94.1%)
Blood group/rhesus	90(33.1%)	182(66.9%)	165(60.7%)	107(39.3%)	16(5.9%)	256(94.1%)
VDRL test	85(31.2%)	187(68.7%)	161(59.1%)	111(40.8%)	14(5.1%)	258(94.8%)
Anemia	84(31.2%)	188(69.1%)	162(59.5%)	110(40.4%)	12(4.4%)	260(95.5%)
Proteinuria test	90(33.1%)	182(66.9%)	165(60.7%)	107(39.3%)	16(5.9%)	256(94.1%)

The laboratory investigations were also examined as an aspect of FANC utilization. The findings showed that 33.1%, 60.7% and 16 % of the pregnant women had various lab tests (HIV test, blood group test and Proteinuria test) conducted during their 1st, 2nd and 3rd trimesters, respectively (Table 5). Additionally, the study established that 31.2%, 59.1% and 5.1% of the pregnant women had undergone VDRL tests during their 1st, 2nd and 3rd trimesters respectively. Further, the study established that 31.2%, 59.5% and 4.4% of the pregnant women had undergone an anaemia test during their 1st, 2nd and 3rd trimesters, respectively.

Table 6: Drugs Administration

	1st Trimester		2nd Trimester		3rd Trimester	
	Yes	No	Yes	No	Yes	No
Drugs administration						
Iron	89(32.7%)	183(67.3%)	160(58.8%)	112(41.2%)	17(6.3%)	255(93.8%)
Folic acid	89(32.7%)	183(67.3%)	160(58.8%)	112(41.2%)	17(6.3%)	255(93.8%)
Anti-malarial	0(0.0%)	272(100.0%)	3(1.1%)	269(98.9%)	0(0.0%)	272(100.0%)
Tetanus toxoid	6(2.2%)	266(97.8%)	148(54.4%)	124(45.6%)	17(6.3%)	255(93.8%)

The pregnant women visiting the Lunga Lunga health facility also benefited from various drug administrations as part of their FANC utilization. The findings indicated that 32.7%, 58.8%, and 6.3% of participants had been administered both iron and folic acid supplements during their first, second, and third trimesters, respectively. Further, only 1.1% of the pregnant women had received antimalarial drugs during their second trimester, with none receiving the drug during their 1st and 3rd trimester. Additionally, only 2.2%, 54.4% and 6.3% had received their recommended dosage of tetanus toxoid during their 1st, 2nd and 3rd trimesters, respectively (Table 6).

Table 7: Education and Counselling

	1st Trimester		2nd Trimester		3rd Trimester	
	Yes	No	Yes	No	Yes	No
Education and counselling						
HIV/AIDS	91(33.5%)	181(66.5%)	165(60.7%)	107(39.3%)	16(5.9%)	256(94.1%)
Diet &Nutrition	89(32.7%)	183(67.3%)	160 (58.8%)	112(41.2%)	15(5.5%)	257(94.5%)
Rest and exercise	84(30.9%)	188(69.1%)	148(54.4%)	124(45.6%)	16(5.9%)	256(94.1%)
Personal hygiene	78(28.7%)	194(71.3%)	157(57.7%)	115(42.3%)	10(3.7%)	262(96.3%)
Danger signs	91(33.5%)	181(66.5%)	165(60.7%)	107(39.3%)	16(5.9%)	256(94.1%)

The research additionally investigated the use of educational and counselling services by expectant mothers within the framework of the FANC services. The findings showed that only 33.5%, 60.7% and 5.9% of the pregnant women had received HIV/AIDs counselling and education services in their 1st, 2nd and 3rd trimesters, respectively (Table 7). Further, only 32.7%, 58.8% and 5.5% of the pregnant women had received diet and nutrition education during their 1st, 2nd and 3rd trimesters, respectively. Additionally, only 30.9%, 54.4% and 5.9% of the pregnant women had benefited from rest and exercise education during their 1st, 2nd and 3rd trimesters, respectively. Further, 28.7%, 57.7% and 3.7% of the

pregnant women had received personal hygiene education during their 1st, 2nd and 3rd trimesters, respectively. Finally, 33.5%, 60.7% and 5.9% of the pregnant women had received education on danger signs in pregnancy during their 1st, 2nd and 3rd trimesters, respectively.

4.3 Socio-demographic Factors Affecting FANC Utilization

The second objective sought to find out demographic factors contributing to FANC services utilization adequacy among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya. The research employed cross-tabulation and multivariate binary logistic regression to analyse the particular socio-demographic factors that influence FANC utilization adequacy within the health facility (refer to Tables 8 and 9).

Table 8:Socio-demographic factors Vs FANC Utilization

		FANC Utilization		Total
	Category	**<8 times**	**8 times ≤**	
Age	15-18	15 (6.1%)	4(14.8%)	19(7.0%)
	19-22	70(28.6%)	8(29.6%)	78(28.7%)
	23-25	62(25.3%)	6(22.2%)	68(25.0%)
	25<	98(40.0%)	9(33.3%)	107(39.3%)
Marital status	Single/never married	34(13.9%)	6(22.2%)	40(14.7%)
	Married/cohabiting	192(78.4%)	19(70.4%)	211(77.6%)
	Separated/divorced	19(7.8%)	2(7.4%)	21(7.7%)
Religion	Muslims	10(4.1%)	1 (0.0)	10 (3.7%)
	Christians	235(95.9%)	27(100.0)	262(96.3%)
Parity	1	72(29.4%)	12(44.4%)	84(30.9%)
	2	98(40.0%)	11(40.7%)	109(40.1%)
	3	53(21.6%)	1(3.7%)	54(19.9%)
	4	16(6.5%)	3(11.1%)	19(7.0%)
	5 and above	6(2.4%)	0(0.0%)	6(2.2%)

The finding (Table 8) showed that of the pregnant women who attended less than 8 FANC visits, the majority (65.3%) of the expectant women in the survey were aged 23 years and above, with the remaining 34.7% being 22 years and below. This is contrasted with those who attended a minimum of 8 FANC visits where those aged 23 years and above were 55.5%. Further, of the expectant who attended less than 8 FANC visits, the majority (78.4%) were either legally married or cohabiting with spouses, with the remaining 22.4% being either single separated or divorced. This is compared to those who had visited the

health facility for a minimum of 8 FANC visits where a majority (70.4%) were either married or cohabiting. The study also showed that of the women who had made less than 8 FANC visits, the majority (95.9%) were Christians with the remaining being Muslims. This is contrasted with those who had made a minimum of 8 FANC visits where almost all of them were Christians. Finally, of the expectant women who had made less than 8 FANC visits, 70.6% had multiple parity with the remaining having just one parity. In contrast, of the expectant women who had made a minimum of 8 FANC visits, 55.6% had multiple parities while 44.4% had just one parity.

Table 9:Socio-demographic Factors associated with FANC Utilization

Factors	Category	P value	Adjusted Odds ratio	95% C.I.	
				Lower	Upper
Marital Status	Married		REF		
	Single/separated/ divorced	.001	.275	.126	.600
Age	15-22		REF		
	22<	.119	.509	.218	1.190
Parity	1		REF		
	1 <	.000	.163	.072	.372
Religion	Christian		REF		
	Muslim	.037	.111	.014	.877

The marital status of the pregnant women significantly predicted their FANC utilization (Table 9). Further, pregnant women without spouses were 0.275 times less likely to access the essential minimum of FANC services in comparison to their married counterparts (p-

value<.05, AOR = .275, CI = 0.126 - 0.600). Parity as a demographic variable had a significant effect on FANC utilization rate among pregnant women. Additionally, Pregnant women who had a parity of at least 2 were 0.163 unlikely to use the required minimum of FANC services in comparison to their counterparts who had a parity of 1 (p-value <.05, AOR =.163, CI=0 .072 - 0.372). The study also established that the religion of pregnant women significantly explained their FANC utilization. Therefore, pregnant women who professed Muslim faith were 0.111 unlikely to use the required minimum of FANC services in comparison to their Christian counterparts (p value<.05, AOR =.111 and CI = 0.014 - 0.877). However, the age of the pregnant women did not significantly predict the utilization rate of FANC services.

4.4 Socio-Economic Factors Contributing to the Utilization of FANC

The third objective aimed to identify the socio-economic factors that predict the effective utilization of FANC services by expectant women accessing services at the Lunga Lunga health Centre. To analyse the specific socio-economic factors that predict the utilization of FANC at this health facility, cross-tabulation and multivariate binary logistic regression methods were employed (refer to Tables 10 and 11).

Table 10:Socio-Economic factors Vs FANC utilization

Factors	Category	FANC Utilization <8 times	8 times ≤	Total
Education (Self)	Primary	43(17.6%)	4(14.8%)	47(17.3%)
	Secondary	138(56.3%)	18(66.7%)	156(57.4%)
	Certificate/diploma	64(26.1%)	5(18.5%)	69(25.4%)
Education (spouse)	Secondary	100(52.1%)	10(52.6%)	110(52.1%)
	Certificate/diploma	78(40.6%)	7(36.8%)	85(40.3%)
	Bachelors	14(7.3%)	2(10.5%)	16(7.6%)
Occupation (self)	Self-employed	70(28.7%)	7(25.9%)	77(28.4%)
	Housewife	129(52.9%)	18(66.7%)	147(54.2%)
	Casual labourer	39(16.0%)	0(0.0%)	39(14.4%)
	Employed	6(2.5%)	2(7.4%)	8(3.0%)
Occupation (Spouse)	Self-employed	39(20.2%)	2(10.5%)	41(19.3%)
	Casual labourer	78(40.4%)	9(47.4%)	87(41.0%)
	Employed	76(39.4%)	8(42.1%)	84(39.6%)
Phone	Yes	200(81.6%)	18(66.7%)	218(80.1%)
	No	45(18.4%)	9(33.3%)	54(19.9%)
Listening to radio	Yes	94(38.4%)	10(37.0%)	104(38.2%)
	No	151(61.6%)	17(63.0%)	168(61.8%)
Watching TV	Yes	88(35.9%)	7(25.9%)	95(34.9%)
	No	157(64.1%)	20(74.1%)	177(65.1%)

Table 10 presents the socioeconomic factors cross-tabulated against FANC utilization. The finding revealed that of the expectant women who had made less than 8 FANC visits, the majority (82.4%) had either a secondary certificate or diploma as their highest level of education. The remaining 17.6% were primary school-level leavers. In contrast, of the expectant women who had made a minimum of 8 FANC visits, 85.2% had secondary education and above as their highest education level. Of the expectant women who had less than 8 FANC visits, 92.7% reported that their spouses that their spouses had either a secondary certificate or diploma education. The remaining few reported that their spouses were bachelor holders.

This was compared with expectant women who had made a minimum of 8FANC visits, where 89.5% had reported that their spouses had either a secondary certificate/diploma.

As regards employment, of the expected women who had made less than 8 FANC visits, the majority (52.9) were housewives, with the remaining 47.1% either self-employed, casual labourers or employed. This was consistent with expectant women who had made a minimum of 8 FANC visits where the majority 66.7% were housewives. Further, of the expectant women who had made less than 8FANC visits, 79.8% reported that their spouses were either employed or casual labourers, with the remaining 20.2% reporting that their spouses were self-employed. In contrast, of the expectant women who had made a minimum of 8 FANC visits, 89.5% reported that their spouses were either employed or casual labourers, with the remaining 10.5% reporting that their spouses were self-employed.

Regarding access to media, of the expectant women who reported to have made less than 8 FANC visits, 81.6% had mobile phones, with only 18.4% not possessing mobile phones. This is contrasted with expectant women who had made a minimum of 8 FANC visits where 66.7% reported to be possessing mobile phones with 33.3% reporting otherwise. Further, of the expectant women who had made less than 8 FANC visits, 38.4% reported listening to Radio, with the remaining 61.6% reporting not listening to radio. In contrast, for those expectant women who had made a minimum of 8FANC visits, 37% reported listening to radio with the remaining 63% not listening to radio. Additionally, of the expectant women who had made less than 8 FANC visits, only 35.9% reported watching television, with the remaining 64.1% not watching television. In contrast, of the expectant women who made a minimum of 8 FANC visits, 25.9% reported watching television with the remaining 74.1% not watching television.

Table 11:Socio-economic factors associated with FANC Utilization

Factors	Category	P value	AOR	95% C.I.	
				Lower	Upper
Phone	With phone Without phone	.242	1.722	REF .693	4.277
Radio	Listening to radio Not listening to radio	.000	.237	.133	.424
TV	Watching TV Not watching TV	.000	.237	REF .127	.441
Occupation (Self)	House Wife			REF	
	Self-Employed/employed	.009	.378	.183	.782
Occupation (Spouse)	self-employment			REF	
	Employed	.122	.304	.067	1.372
Education (Self)	Primary			REF	
	Secondary ≤	.006	.310	.134	.715
Education (Spouse)	Secondary			REF	
	Certificate ≤	.118	.454	.168	1.223

The findings (Table 11) showed that whether pregnant women listened to the Radio significantly predicted their utilization of FANC services. Moreover, pregnant women not listening to the radio were 0.237 less probable to utilize the minimum of 8FANC services in comparison to their counterparts who are listening to radio (p-value< .05, AOR = .237, CI = 0.133 - 0.424). Further, whether pregnant women watched TV significantly predicted their utilization of adequacy for FANC services. In this case, pregnant women not watching

television were 0.237 less probable to utilize the required minimum of FANC services in comparison to their counterparts watching television (p-value <.05, AOR= .237, CI = 0.127 - 0.441). The employment status of the expectant women significantly explained their utilization rate of FANC services. Therefore, pregnant women who were employed (either self-employed or casual labourers or employed) were 0.378 less probable to utilize the minimum of 8 FANC services in comparison to their housewife counterparts (p-value<.05, AOR= .378, CI = 0.183 - 0.782).

Further, the highest education of the pregnant women had significantly explained their utilization adequacy of FANC services. The pregnant women whose highest education was secondary and above were 0.310 less probable to utilize the minimum of 8 FANC services in comparison to their counterparts possessing a primary level of education and below (p-value <.05, AOR= .310, CI = 0.134 -0.715). However, possession of mobile phones, occupation of pregnant women's spouses and education of spouses of pregnant women weakly predicted FANC services use adequacy at the health facility.

4.5 Health System Factors Moderating the Utilization of FANC Services

Objective four aimed to identify the moderating effect of health system factors on FANC services utilization by expectant women accessing services at the Lunga Lunga health centre. The analysis of the data collected from the survey and data collection sheet was conducted using cross-tabulation and multivariate binary logistic regression (Table 12-13).

Table 12:Health System Factors Vs FANC Utilization

		FANC Utilization		Total
Factors	Category	<8 times	8 times ≤	
Availability	<30 minutes	5(2.0%)	1(3.7%)	6(2.2%)
	30-60 minutes	240(98.0%)	26(96.3%)	266(97.8%)
Quality (Staff attitude)	Adequate	18(7.3%)	1(3.7%)	19(7.0%)
	Satisfactory	163(66.5%)	11(40.7%)	174(64.0%)
	Outstanding	64(26.1%)	15(55.6%)	79(29.0%)
Quality (Privacy)	Poor	4(1.6%)	1(3.7%)	5(1.8%)
	Average	116(47.3%)	7(25.9%)	123(45.2%)
	Excellent	125(51.0%)	19(70.4%)	144(52.9%)
Distance	<30 minutes	149(60.8%)	23(85.2%)	172(63.2%)
	30-60 minutes	89(36.3%)	4(14.8%)	93(34.2%)
	60 minutes<	7(2.9%)	0(0.0%)	7(2.6%)

Table 12 showed that of the expectant women who made less than 8 FANC visits, 98.% reported being served within 30 - 60 minutes, with the remaining few respondents (2%) being served in less than 30 minutes. In contrast, expected women who had made a minimum of 8 FANC visits, 96.3% reported being served within 30 - 60 minutes, with the remaining few respondents (3.7%) being served in less than 30 minutes. Further, of the expectant women who made less than 8 FANC visits, 92.7% reported that hospital staff attitude was either satisfactory or outstanding with the remaining 7.3% reporting otherwise. This was contrasted with expectant women who had made a minimum of 8 FANC visits where 95.3% reported that hospital staff attitude was either satisfactory or outstanding with the remaining 3.7% reporting otherwise.

Additionally, of the expectant women who had made less than 8 FANC visits, 98.4% reported that the health facility observed privacy as depicted by respondents either stating excellent or average. In contrast, of expectant women who had made a minimum of 8 FANC visits, 96.3% reported that the health facility observed privacy as depicted by respondents either stating excellent or average. Finally, of the expectant women who had made less than 8 FANC visits, 60.8 % reported that it took them less than half an hour to reach the hospital as compared to the remaining who noted either 30- 60 minutes or greater than 60 minutes. In contrast, of the expectant women who had made a minimum of 8 FANC visits, 85.2% reported that it took them less than half an hour to reach the hospital as compared to the remaining who noted either 30- 60 minutes or greater than 60 minutes.

Table 13 Moderating Effect of Health System Factors on FANC Utilization

Factor	Category	Sig.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
Occupation	House Wife			REF	
(Self)	Self- Employed/employed	.036	.421	.183	.882
Marital status	Married			REF	
	Single/separated/divorced	.008	.262	.126	.613
Education (self)	Primary			REF	
	Secondary ≤	.229	.332	.055	2.004
Education	Secondary			REF	
(Spouse)	Certificate ≤	.476	.630	.176	2.250
Parity	1			REF	
	1 <	.000	.145	.024	.500
Availability	<30 minutes			REF	
	30 minutes ≤	.000	.170	.111	.281
Quality	Satisfactory			REF	
(Staff attitude)	Average	.623	.575	.063	5.215
Quality (privacy)	Not excellent			REF	
	Excellent	.366	.271	.016	4.580
distance	<30 minutes			REF	
	30 minutes ≤	.079	.327	.094	.937
Occupation	Self employed			REF	
(Partner)	Employed	.333	.396	.061	2.585
Age	15-22			REF	
	22<	.879	.893	.210	3.805
Religion	Cristian			REF	
	muslin	.537	.418	.026	6.698
phone	Yes			REF	
	No	.178	.358	.080	1.596
Listening to	Yes			REF	
Radio	No	.000	.222	.248	.426
Watching TV	Yes			REF	
	No	.010	0.318	.532	.719

The results presented in Table 13 indicated in the presence of the moderators (Health system Factors), marital status of the pregnant women significantly predicted their FANC utilizatio. Further, pregnant women without spouses were 0.262 times less likely to access

the essential minimum of FANC services in comparison to their married counterparts (p-value <.05, AOR = .262, CI = .183 - .882). Parity had a significant effect on FANC utilization rate among pregnant women. Additionally, Pregnant women who had a parity of at least 2 were 0.145 unlikely to use the required minimum of FANC services in comparison to their counterparts who had a parity of 1 (p-value <.05, AOR = .145, CI= .024- 0.50). However, the effect of religion was not significant after moderation.

In the presence of the moderator, findings showed that whether pregnant women listened to the Radio significantly predicted their utilization of FANC services. Moreover, pregnant women not listening to the radio were .222 less probable to utilize the minimum of 8FANC services in comparison to their counterparts who are listening to radio (p-value< .05, AOR = .222, CI = .248 - 0.426). Further, whether pregnant women watched TV significantly predicted their utilization of adequacy for FANC services. In this case, pregnant women not watching television were 0.318 less probable to utilize the required minimum of FANC services in comparison to their counterparts watching television (p-value <.05, AOR= 0.318, CI = .532 0.719). The employment status of the expectant women significantly explained their utilization rate of FANC services. Therefore, pregnant women who were employed (either self-employed or casual labourers or employed) were .421 less probable to utilize the minimum of 8 FANC services in comparison to their housewife counterparts (p-value<.05, AOR= 0.421, CI = 0.183- 0.882). The effect of education was not significant with moderation.

Further, the direct effect of the moderator on FANC utilization was also examined. The distance to the health facility is a significant predictor of FANC services' utilization adequacy. Specifically, expectant mother who indicated that their travel time to the

hospital was half an hour or more were .327 times less probably to utilize the essential minimum of 8 FANC visits in comparison to those who reported a travel time of less than half an hour (p-value <0.05, AOR = .327, CI = .094 - .937). Further, availability of services had a significant effect on FANC utilization by pregnant women in the survey. The expectant mothers who reported that the service at the hospital was rendered in 30 minutes and above were .170 less probably to utilize the required minimum of FANC services in comparison to their counterparts who reported to have received health services within less than 30 minutes (p-value <0.05, AOR= .170, CI= 0.111- 0.281).

CHAPTER 5: DISCUSSIONS

5.1 Introduction

The chapter discusses the findings on the factors contributing to the utilization of focused antenatal care services among pregnant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya.

5.2 FANC Service Utilization among Pregnant Women

The findings revealed that 9.9% of the expectant mothers had received the required 8 FANC visits in the course of their gestation. Therefore, overall FANC utilization was low among pregnant women visiting the Lunga Lunga health centre. The finding is consistent with Gitonga (2017), who noted that below 50% of expectant women in Kenya meet the required 8FANC visits. Further, 67. 3% of the pregnant women had first visited the hospital for FANC services late in their pregnancy (2nd and 3rd trimester). In this regard, only 32.7% had visited the hospital earlier in their first trimester. The finding agrees with Nima (2019), who established that the majority of pregnant women visiting Median Hospital for FANC services visited late in their pregnancy. The finding has implications for policy towards enhancing the utilization of FANC services.

Regarding physical and obstetric tests, only 2(0.7%) went for ultrasound scan tests during their pregnancy journey. The results imply that either the Lunga Lunga Health facility did not have medical equipment to offer the service or the pregnant women were less interested in the service. The finding is in congruence with several studies that have identified a low uptake of physical activity and obstetric examinations among pregnant women. Matiang'i et al. (2021) observed that only 21% of expectant women underwent routine ultrasound

screening before reaching 24 weeks of gestation, while the majority of participants (45%) travelled an average distance of 3 to 5 kilometres to utilize the POCUS service. Further, Luntsi et al. (2022) noted that despite the WHO advising that a minimum of one ultrasound examination should be conducted during eight antenatal care appointments, most pregnant women in low- and middle-income nations fail to meet this guideline. The finding points towards making Ultrasound health equipment and services accessible and affordable to pregnant women.

Further, 33.8%, 60.3% and 6.3% of the pregnant women had both their blood pressure and weight examined during their first, second and third trimester, respectively. The low service uptake in the first trimester is linked to late reporting by most pregnant women to the health facility for FANC services. There was a higher uptake of blood pressure and weight in the second trimester as given by most of the expectant mothers visiting the health facility in their second trimester. A study conducted in Senegalese antenatal care clinics found that only 32% of pregnant women received complete results for recommended laboratory tests, including blood group and Rhesus factor determination (Van't Hoog et al., 2020).

The findings also showed that 33.1%, 60.7% and 16 % of the pregnant women had various lab tests (HIV test, blood group test and Proteinuria test) conducted during their 1st, 2nd and 3rd trimesters, respectively. Similarly, the uptake of the service was low during the first and third trimesters as explained by most relatively few women visiting the health facility in their first and third trimesters. High service intake was witnessed in the second trimester as explained by most pregnant women visiting the health facility in their second trimester of pregnancy. The finding is supported by similar research in the Netherlands by Van der Meij (2021), which reported that the uptake of non-invasive prenatal testing, which includes

blood group genotyping, was more than two times lower in socioeconomically disadvantaged neighborhoods (20.3%) compared to other areas (47.6%). This disparity suggests that socioeconomic factors predict the utilization of prenatal testing services.

Further, the findings showed that 31.2%,59.1% and 5.1% of the pregnant women had undergone VDRL test during their 1st, 2nd and 3rd trimesters respectively. Just like in HIV, blood group and Proteinuria tests, the VDRL test had a high uptake in the second trimester as given by most pregnant women visiting the health facility for FANC services in their second trimester as compared to first or third trimesters. The findings are corroborated by numerous empirical studies. For example, restricted access to antenatal care services, along with low testing rates among expectant mothers in specific sub-populations, frequently results in inadequate screening coverage for infections like syphilis, particularly within vulnerable groups (Savolainen-Kopra et al., 2016). Further, the study established that 31.2%, 59.5% and 4.4% of the pregnant women had undergone an anaemia test during their 1st, 2nd and 3rd trimesters, respectively.

Finally, results showed that 32.7%, 58.8% and 6.3% had received both iron and folic acid drugs in their 1st, 2nd and 3rd trimesters, respectively. There was also a significant utilization of the service during the second trimester, attributed to the considerable number of pregnant women seeking FANC services at the health facility during this period, in contrast to the other trimesters. These results are consistent with a study in Tanzania, which revealed that merely 35.6% of pregnant women reported having consumed iron-folic acid supplements at least once in the week preceding the data collection (Munyogwa, 2024).

Further, only 1.1% of the expectant mothers had received antimalarial drugs during their second trimester and none received the drug during their 1st and 3rd trimester. The low

uptake of antimalarial drug administration at the health facility is linked to the low prevalence of Malaria in Nairobi. Further, 2.2%, 54.4% and 6.3% had received their recommended dosage of tetanus toxoid during their 1st, 2nd and 3rd trimesters, respectively. The low uptake of the service in the first and third trimesters is likely due to a low number of pregnant women visiting the health facility for FANC services in their first and third trimesters.

5.3 Socio-Demographic Factors Contributing to FANC Utilization

The results revealed that pregnant women without spouses were 0.275 times less probable to use the required minimum of FANC services in comparison to their counterparts who were married. Pregnant women without spouses (i.e., single, divorced and separated) tended not to have spousal support in seeking FANC services. Additionally, pregnant women without spousal support tended to be sole providers of their families and hence were more likely engaged in income-generating activities such as self-employment and thus may not have time to attend adequately to FANC services. The results agree with Nima (2019), who noted that married women tended to attend FANC services earlier than their divorced or widowed counterparts. The findings point towards sensitization of pregnant women without spouses to attend FANC services.

Additionally, pregnant women that had a parity of at least 2 were 0.163 less probable to use the required minimum of FANC services in comparison to those with a parity of 1. The finding means that pregnant women who had greater parity felt that they were much more informed on pregnancy progression and, hence, attended fewer FANC services. Therefore, there is a need for the county government to sensitise pregnant women with multiple parity not to ignore FANC visits. The findings agree with Gitonga (2017) in Kenya indicated that

women who had more pregnancies before did not utilize FANC services; a similar study done in Indonesia indicated that first-time pregnancy women attended four ANC visits than those who had pregnancies before (Efendi et al., 2017). Further, Kabir et al. (2022), in a study conducted in Nigeria, noted that multiparous women were less likely to complete the WHO-recommended eight ANC contacts while highlighting logistical constraints and attitudinal. A contradicting study done in Tanzania indicates that FANC utilization tends to be lower among first-time expectant young women (Hackett et al., 2019).

Additionally, pregnant women who professed Muslim faith were 0.111 less probable to use the required minimum of 8 FANC visits in comparison to their Christian counterparts. The findings can be linked to the cultural limitation of Muslim pregnant women, in which case they prefer to go to a health facility managed or with staff that profess the Muslim faith. Moreover, pregnant women pressing the Muslim faith often do not allow male service providers to offer them FANC services, thus low utilization of FANC services. It is thus critical that Muslim women be sensitised on the benefits of adequate FANC utilization. Further, the government should find ways of debunking norms that discourage Muslim women from seeking early FANC visits. The results are in line with Abebe et al. (2022) observed that Muslim-affiliated women were significantly associated with late initiation of ANC visits as an attribution to religious and cultural norms that delayed healthcare-seeking behaviour. A contrasting study by Ayivi et al. (2023) undertaken in Togo noted that Muslim women showed a higher likelihood of facility delivery compared to their Christian counterparts.

Further, the age of the expectant mother weakly predicted the utilization rate of FANC services. This was contrary to other studies that established that the age of the pregnant woman predicted their utilization of various FANC services. For instance, Gitonga (2017)

indicated that young women below the age of 20 had the lowest FANC utilization rate, with approximately 31% of them accessing these services. In contrast, approximately 63% of women aged 30 to 34 exhibited a higher rate of utilization. Age did not significantly predict the Uptake of FANC services because other predictors like education and employment status may play a stronger role in determining ANC utilization than age. For instance, younger or older women with high education may access ANC more than those with lower education.

5.4 Socio-Economic Factors Contributing to FANC Utilization

The study established that pregnant women not listening to the radio were 0.237 less probable to use the required 8 FANC visits in comparison to their counterparts who listen to the radio. Further, expectant mothers not watching television were 0.237 less probable to use the required 8 FANC visits in comparison to their counterparts who watch television. The finding implies that pregnant women not listening to the radio or not watching television missed public sensitization on the specific media platforms about the importance of seeking FANC services. There is a need for health service providers to encourage pregnant women to interact with available media such as radio and TV where health education is often relayed. The results agree with the Indonesia study that showed that awareness of maternal health influenced positively FANC services (Efendi et al., 2017). Further, Aboagye et al. (2022) on the influence of mass media on FANC utilization showed that radio listening, newspaper reading and TV viewing increased ANC attendance.

Additionally, pregnant women who were either self-employed, casual labourers or employed were 0.378 less probable to use the recommended 8 FANC visits in comparison

to their housewife counterparts. The findings imply that pregnant women who were either self-employed, casual labourers or employed tended to have most of their time spent in income-generating activities. Therefore, they may not have adequate time to allow them access to FANC services offered in health facilities compared to housewives. Employed women often have demanding work schedules, making it difficult to attend ANC appointments during regular clinic hours. Further, some workplaces may not offer maternity leave or flexible working hours, discouraging frequent visits. A study examining the predictors of ANC visits among working women in Indonesia has revealed that economic status strongly explains the completion of these visits (Denny et al., 2022). In contrast, a systematic review conducted in SSA indicated that employed women were more likely to attend at least one ANC visit than those who were unemployed (Okedo-Alex et al., 2019).

Further, pregnant women whose highest education was secondary and above were less likely to use the recommended FANC visits in comparison to their counterparts who are primary school leavers. The findings imply that better-educated women may believe they already have enough knowledge about pregnancy and childbirth, reducing their perceived need for frequent ANC visits. Further, educated women may rely more on self-monitoring, online information, or private consultations rather than routine ANC visits at public health facilities. Additionally, women with advanced education tend to occupy more demanding positions, which may restrict their availability for FANC visits. This observation contradicts the majority of empirical research that indicates a positive correlation between higher educational levels among pregnant women and greater use of FANC services. For example, a study showed that women with higher educational qualifications were more inclined to utilize antenatal care optimally compared to their uneducated counterparts

(Raru, 2022).

Further, possession of mobile phones, occupation and education of spouses of pregnant women weakly predicted FANC services utilization adequacy. Access to mobile phones may not predict utilization of FANC services, given that having a phone does not mean a woman is using it to seek FANC information, book appointments, or communicate with healthcare providers. Some women also may primarily use phones for social communication rather than health-related purposes. While access to mobile phones among pregnant women has been explored as a potential facilitator for improving antenatal care utilization, studies indicate that mere ownership does not necessarily translate into increased service use. A study revealed that while 76.7% of expectant women possessed mobile phones and 71.2% expressed a willingness to receive health interventions via SMS, this access did not necessarily result in improved attendance at antenatal care (ANC) services (Endehabtu et al., 2018).

Additionally, the weak effect of education and employment of pregnant woman spouses on FANC utilization implies that due to cultural factors, men are often not actively involved in pregnancy-related decisions, even if they are highly educated or employed. Moreover, some men may be unaware of the importance of ANC despite their education and employment, leading to minimal influence on their wives' healthcare-seeking behaviour. The finding was contrary to the majority of empirical studies that tend to indicate that the education and employment status of spouses of pregnant women significantly influence FANC use adequacy. For instance, Wulandari et al. (2022) in Indonesia found that husbands with higher education levels were more likely to go to the health facility together with their spouses for FANC visits.

5.5 Health System Factors Affecting Adequacy of Utilization of FANC Services

The results indicated that expectant mothers who stated it took them half an hour or more to access the health facility were 0.230 less probable to utilize the essential minimum of 8 FANC visits in comparison to those reporting reaching the facility in under half an hour. The finding implies that pregnant women who had to travel long distances to attend FANC services at the hospital tended to miss most of their appointments, hence fewer FANC utilizations. The findings inform the need for the government at the county and national level to construct more hospitals to provide FANC services near where women stay. In addition, technology should be integrated into health services delivery to enable pregnant women to access some of FANC services in the comfort of their homes without having to physically travel to the health facility. The finding is congruent with Alex (2020), who noted that distance affects FANC utilization and that inadequate transportation, particularly in developing countries, makes the situation even worse; this has made expectant women look for alternatives.

Further, pregnant women who reported that they were served in half an hour and above were less probable to use the recommended 8 FANC visits in comparison to counterparts who reported to have been served in less than half an hour. The finding implies that pregnant women did not like to stay longer at the health facility waiting to be served due to the physical toll the pregnancy had on them. The hospital facilities like chairs may not be comfortable enough to enable them to sit comfortably for a long waiting to be served. Thus, those who were served in a time longer than 30 minutes tended to miss some of the FANC services. Hospitals should be adequately staffed, and service charters should be followed to the letter to hasten service provision. The finding corresponds with Wilunda et

al. (2016), who observed that due to an inadequate number of staff members, women are frequently sent back home without receiving the necessary services, this is because of high workloads, long queues leading to long waiting times etc, and all these affect utilizations of FANC services.

However, the attitude of health staff and health facility did not significantly predict FANC services utilization at the health facility contrary to empirical studies. The weak effect of the attitude of staff on FANC utilization is accounted for by the fact that what one woman considers rude or unhelpful behaviour might not be seen the same way by another, leading to inconsistencies in how staff attitudes influence ANC use. Additionally, some women may accept poor treatment as normal and still access ANC services, especially if they believe healthcare is essential. While the attitude of healthcare staff is often considered a strong predictor of FANC services use among expectant mothers, some studies suggest that it may not be the primary determinant. For instance, a systematic review identified socioeconomic and health system factors as more critical determinants, with less emphasis on healthcare staff attitudes (Alibhai et al., 2022).

Finally, the finding that privacy did not significantly explain FANC service utilization may be accounted for by women who prioritize getting care over privacy; they may continue to attend ANC visits despite inadequate privacy. Additionally, women may not have alternative health facilities to choose from, so they use ANC services even if privacy is lacking. Further, some women may accept shared spaces in healthcare facilities as normal and not see them as a barrier to seeking care. While privacy at health facilities is often considered a strong predictor of FANC service utilization, some studies suggest that it may not be the primary determinant. For instance, a study in Bangladesh did not specifically

identify privacy concerns as a major barrier to ANC utilization (Khan et al., 2024).

CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

The chapter presents the salient study outcomes on predictors of FANC services' utilization adequacy among expectant mothers visiting the health facility. Further, conclusions are drawn from the findings with various recommendations put forward to help in enhancing the utilization rate of FANC services. The chapter concludes with further research areas.

6.2 Conclusion

6.2.1 FANC Utilization Among Pregnant Women

The findings established that only a few pregnant women had made the recommended minimum of eight visits to the hospital for ANC health services, with the majority failing to do so. Therefore, the study concludes that overall FANC utilization was low among pregnant women visiting the Lunga Lunga health centre. The findings point towards an urgent need to provide support to pregnant women to enhance their utilization of FANC services.

6.2.2 Socio-Economic Factors Influencing FANC Utilization Adequacy

The findings revealed that socio-demographic factors such as marital status, religion and parity significantly explained FANC utilization among pregnant women visiting Lunga Lunga Health facility. The study, therefore, specifically concludes as follows:

i. The marital status of pregnant women significantly predicted their FANC utilization. Pregnant women without spouses were less probable to attend the

recommended FANC visits in comparison to married women.

ii. Parity strongly explained the utilization of FANC services and that pregnant women who had multiple parity were unlikely to use the recommended FANC visits in comparison to counterparts with unitary parity.

iii. Religion has significantly explained the utilization of FANC services. Pregnant women who professed Muslim faith were less likely to use the recommended 8FANC visits when compared to Christian women.

iv. The age of the pregnant woman did not influence their utilization adequacy of FANC services.

6.2.3 Socio-Economic Factors Affecting FANC Services' Utilization Adequacy

The study established that socio-economic factors, including education of pregnant women, access to media (i.e. listening to Radio and watching TV), and employment status, had significantly predicted FANC services utilization among pregnant women. Specifically:

i. Watching TV and listening to the Radio strongly predicted FANC services utilization. Moreover, expectant mothers not watching TV or listening to the radio tended to use less than recommended FANC services.

ii. The employment status of pregnant women significantly predicted FANC services utilization. Further, pregnant women who were either self-employed or casual labourers or employed were less probable to make the recommended 8FANC visits in comparison to housewives.

iii. The highest education of the pregnant women significantly explained their utilization of FANC services in the health facilities. Moreover, pregnant women

whose highest education was secondary and above were unlikely to utilize the suggested FANC visits in comparison to primary school leavers.

iv. Finally, possession of mobile phones, occupation and education of spouses of pregnant women had no effect on FANC services utilization adequacy at the health facility.

6.2.4 Health System Factors Affecting Utilization of FANC Services

The results showed that promptness of health services and distance to health facility strongly explained FANC services utilization in Lunga Lunga Health facility. Specifically:

i. Health service promptness strongly explained FANC utilization among pregnant women. Additionally, pregnant women who were being served in half an hour and above were less probable to undertake the 8 FANC visits in comparison to those who reported that services were rendered in less than half an hour.

ii. The distance to the hospital strongly predicted FANC services utilization. Pregnant women who reported that it took them more than half an hour to get to the health facility were unlikely to attain the recommended 8 FANC visits in comparison to those who reported less distance.

iii. Finally, staff attitude and facility privacy did not affect FANC services' utilization adequacy.

6.3 Recommendations

6.3.1 Lunga Lunga Health Facility

i. The Health Facility management should enhance its maternal health services' promptness to improve FANC utilization. When pregnant women stay at the facility for longer, they tend to go back without getting needed services and may not present themselves for future visits.

ii. The study also recommends that Lunga Health Facility management to implement strategies like m- m-health to improve the utilization of FANC services, especially for those not able to physically come to the facility.

6.3.2 Nairobi County Health Department

i. The health department and the health chief officer in Nairobi County ought to ensure that health facilities in Nairobi County have adequate staff to improve health service promptness.

ii. The health department and the health chief officer of the Nairobi County should also implement measures such as performance contracts and a Customer Service Charter to ensure that pregnant women get services promptly.

6.3.3 National Government of Kenya

i. The Ministry of Health and Social Health Authority should ensure that universal health services programs such as the Social and Health Insurance covers the FANC services to enhance utilization.

ii. The national government should build and equip more health facilities in Nairobi

to ensure ease of access for pregnant women without having to travel for long to seek maternal health services line FANC.

6.4 Recommendations for Future Research

Future studies can be undertaken on other factors affecting FANC services utilization such as health system factors and cultural factors. Further, future studies can be undertaken with a mixed methodology to generate both quantitative and qualitative data that capture all aspects of FANC utilization and its determinants. The study recommends in-depth studies using experimental or longitudinal designs to validate findings. Further, future studies can delve deeper into other health system factors that may have a bearing on FANC utilization.

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APPENDICES

APPENDIX I: CONSENT FORMS

Informed Consent. This form for Informed Consent is for pregnant women utilizing Focused Antenatal Care (FANC) services at Lunga Lunga Health Centre who are permitted to take part in this research on identifying factors predicting focused antenatal care services utilization among pregnant women seeking services at Lunga Lunga Health centre, Nairobi County, Kenya.

The study title is "Determinants of FANC Services Utilization among pregnant women seeking services at Lunga Lunga Health Center, Nairobi County, Kenya."

Principal Investigator's Name: Phylister Hellen Nanzala

Name of Organization: Amref International University Two sections make up the written informed consent form.

Information Sheet (to provide you with information regarding the study). Certificate of Consent, which must be signed if you accept to participate.

PART I: Information Sheet

Introduction

My name is Phylister Hellen Nanzala. I am a master's student at AMREF International University, studying public health. I'm performing a research study on determinants of FANC services utilization among expectant women seeking services at Lunga Lunga Health Centre, Nairobi County, Kenya, to fulfil the university's requirements for my degree

completion and award. I would like to provide an overview of this study and extend a cordial invitation for you to participate voluntarily. I will communicate in a manner that is easily understandable for you. Throughout the data collection process, you are encouraged to pose any inquiries you may have regarding the study. Additionally, after the data collection phase, you may continue to ask questions by reaching out to the contact information I will provide after this document.

Study objective

The main objective of the study is to investigate how different factors like: -socio-economic, socio-demographic factors and facility factors contribute to FANC services utilization adequacy among expectant women seeking services at Lunga Lunga Health Centre. The study will help in identifying ways of filling in the gaps and generating new knowledge on maternal health.

Participant selection

The study is welcoming pregnant women seeking services at Lunga Lunga Health Centre.

Voluntary participation

The study shall be voluntary with no payments. You have the freedom to withdraw from this study at any time. Your choice will be honoured, and it will not impact your relationship with the healthcare facility or the standard of care you receive. Should you decide to withdraw from the study, any data gathered from you will be preserved and may be utilized in the analysis of the study. However, your personal information will be removed, and your data will be anonymized to protect your privacy.

Study procedure and duration

You will be interviewed on a variety of topics. The study interview will take a maximum of 30 minutes per participant. In agreement to be part of this study, you will have to fill out

a form or be asked questions to answer; your honest opinions and experiences will be highly appreciated.

Risks

Participating in this research doesn't carry any hazards.

Benefits

Your involvement is anticipated to assist us in identifying the answers to the research questions. The study's published findings, however, will be useful to later generations.

Confidentiality

Any expected risks involved in the study shall be addressed using ethical principles. Your identity or any other information will not be shared with other participants and we will discourage the use of names to conceal your identification. The records will be kept strictly confidential.

PART II: Certificate of consent

I acknowledge that I have received an explanation of this consent form in a language that I understand. I am aware that I have the right to withdraw from participation at any time without facing any consequences.

Signature of participant/Thumbprint_____

Date:

_____

Study No.:

Signature of assistant: Date_____

Contact: For further information or inquiries before, during or after the research, contact Phylister Hellen Nanzala, Tel 254725508505,Email:phylishellen@gmail.com

Assent Form

(13 years to 17 years) Investigator: Phylister Hellen Nanzala

Institution: AMREF International University

Background

Please take the time to read and understand this document thoroughly, as it contains essential information about the study in which your participation is being solicited, along with the associated benefits. A signature will be required to indicate your acceptance of participation. You will receive a copy of this document for your records.

Study title:

Determinants of focused antenatal care services utilization among pregnant women seeking services at Lunga Lunga health centre, Nairobi county, Kenya.

Aim

The results will add to the sum of information already in existence concerning maternal health, the information will also be used by different stakeholders and policymakers in Nairobi County and beyond. This study will greatly help in improving the physical, social and emotional support of young expectant mothers.

What to know before choosing to take part

Your parents have been informed of our conversation with you and our discussion of this research. Even if your parent or guardian has provided their consent, should you choose to agree at this moment, you will not face any repercussions if you later decide not to

Participate. You have the option to reconsider and withdraw from involvement in the future, and there will be no negative feelings directed towards you.

Confidentiality

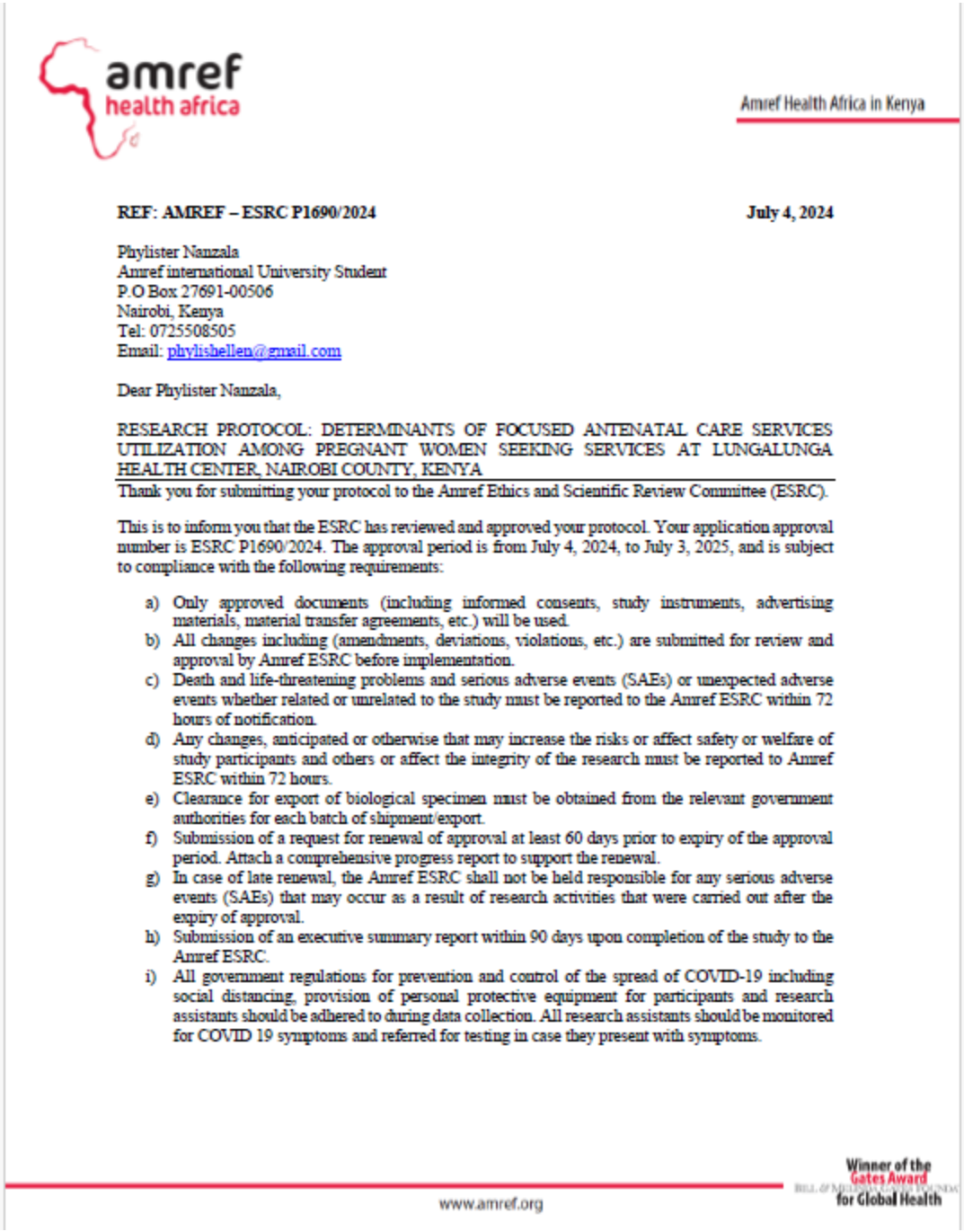
The data gathered from this research will be regarded as confidential, guaranteeing that the identities of participants will remain undisclosed in any reports generated from this study. Each questionnaire will be assigned a unique code and will be securely stored by these codes.

Benefits of participation

By participating in this study, you will contribute to the identification of crucial strategies that can assist young women, like yourself, in achieving healthy pregnancy outcomes. Your participation will not result in any immediate advantages or benefits to you. Your involvement will help generate valuable insights that can potentially enhance the well-being of pregnant young women.

APPENDIX II: APPROVALS AND AUTHORIZATION LICENSES

ESRC



amref health africa

Amref Health Africa in Kenya

REF: AMREF – ESRC P1690/2024 **July 4, 2024**

Phylister Nanzala
Amref international University Student
P.O Box 27691-00506
Nairobi, Kenya
Tel: 0725508505
Email: phylishellen@gmail.com

Dear Phylister Nanzala,

RESEARCH PROTOCOL: DETERMINANTS OF FOCUSED ANTENATAL CARE SERVICES UTILIZATION AMONG PREGNANT WOMEN SEEKING SERVICES AT LUNGALUNGA HEALTH CENTER, NAIROBI COUNTY, KENYA

Thank you for submitting your protocol to the Amref Ethics and Scientific Review Committee (ESRC).

This is to inform you that the ESRC has reviewed and approved your protocol. Your application approval number is ESRC P1690/2024. The approval period is from July 4, 2024, to July 3, 2025, and is subject to compliance with the following requirements:

a) Only approved documents (including informed consents, study instruments, advertising materials, material transfer agreements, etc.) will be used.
b) All changes including (amendments, deviations, violations, etc.) are submitted for review and approval by Amref ESRC before implementation.
c) Death and life-threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the Amref ESRC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to Amref ESRC within 72 hours.
e) Clearance for export of biological specimen must be obtained from the relevant government authorities for each batch of shipment/export.
f) 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.
g) In case of late renewal, the Amref ESRC shall not be held responsible for any serious adverse events (SAEs) that may occur as a result of research activities that were carried out after the expiry of approval.
h) Submission of an executive summary report within 90 days upon completion of the study to the Amref ESRC.
i) All government regulations for prevention and control of the spread of COVID-19 including social distancing, provision of personal protective equipment for participants and research assistants should be adhered to during data collection. All research assistants should be monitored for COVID 19 symptoms and referred for testing in case they present with symptoms.

amref health africa

Amref Health Africa in Kenya

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.

Please do not hesitate to contact the ESRC Secretariat (esrc.kenya@amref.org) for any clarification or query.

Yours sincerely,

AMREF - ESRC P.O. Box 27691 - 00506, NAIROBI

Prof. Mohamed Karama
Chair, Amref ESRC
CC: Samuel Mubula, Senior Manager, Learning and Impact, Amref Health Africa.

NACOSTI Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 523996

Date of Issue: 24/September/2024

RESEARCH LICENSE

This is to Certify that Ms.. PHYLISTER HELLEN NANZALA of AmrefInternational University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: DETERMINANTS OF FOCUSED ANTENATAL CARE SERVICES UTILIZATION AMONG PREGNANT WOMEN SEEKING SERVICES AT LUNGALUNGA HEALTH CENTER, NAIROBI COUNTY, KENYA. for the period ending : 24/September/2025.

License No: NACOSTI/P/24/39973

523996

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

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

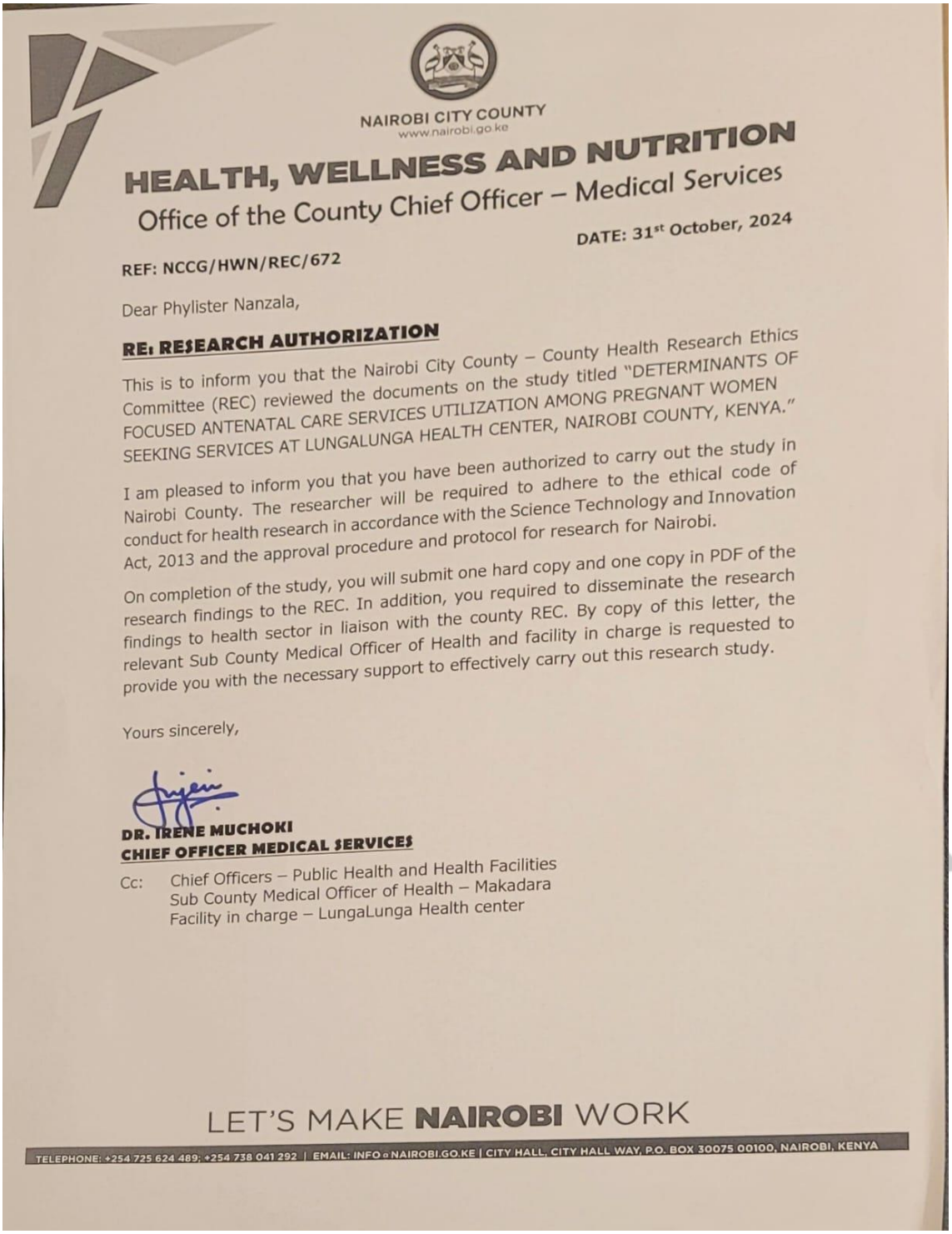
The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Approval Letter from Nairobi County Government



NAIROBI CITY COUNTY
www.nairobi.go.ke

HEALTH, WELLNESS AND NUTRITION

Office of the County Chief Officer – Medical Services

DATE: 31st October, 2024

REF: NCCG/HWN/REC/672

Dear Phylister Nanzala,

RE: RESEARCH AUTHORIZATION

This is to inform you that the Nairobi City County – County Health Research Ethics Committee (REC) reviewed the documents on the study titled "DETERMINANTS OF FOCUSED ANTENATAL CARE SERVICES UTILIZATION AMONG PREGNANT WOMEN SEEKING SERVICES AT LUNGALUNGA HEALTH CENTER, NAIROBI COUNTY, KENYA."

I am pleased to inform you that you have been authorized to carry out the study in Nairobi County. The researcher will be required to adhere to the ethical code of conduct for health research in accordance with the Science Technology and Innovation Act, 2013 and the approval procedure and protocol for research for Nairobi.

On completion of the study, you will submit one hard copy and one copy in PDF of the research findings to the REC. In addition, you required to disseminate the research findings to health sector in liaison with the county REC. By copy of this letter, the relevant Sub County Medical Officer of Health and facility in charge is requested to provide you with the necessary support to effectively carry out this research study.

Yours sincerely,

DR. IRENE MUCHOKI
CHIEF OFFICER MEDICAL SERVICES

Cc: Chief Officers – Public Health and Health Facilities
Sub County Medical Officer of Health – Makadara
Facility in charge – LungaLunga Health center

LET'S MAKE **NAIROBI** WORK

TELEPHONE: +254 725 624 489; +254 738 041 292 | EMAIL: INFO@NAIROBI.GO.KE | CITY HALL, CITY HALL WAY, P.O. BOX 30075 00100, NAIROBI, KENYA

APPENDIX III: RESEARCH TOOLS

Survey Questionnaire

Section A: Demographic factors Questionnaire ID Sub County_

Location_____

Sub-location_____

Ward_____

1. How old are you?

   15-18 ( )

   19-22 ( )

   23-25 ( )

2. Marital status?

   Single ( )

   Married ( )

   Separated ( )

   Divorced ( )

   Widowed/widower ( )

   Others explain.

3. What is the highest level of schooling you have attained?

Primary ( )

Secondary ( )

Post-secondary ( )

Tertiary/University ( )
None ( )

Others please explain.

4. Respondent's husband's/partner's/spouse's education level:

Primary ( )

Secondary ( )

University ( )

None ( )

Others (specify)… .....

5. What do you do for a living? (Tick one)

Self-employed ( )

Housewife ( )

Casual labourer ( )

Employed ( )

Others please explain.

6. What is your husband/spouse/partner's main occupation? (Tick one)

Self-employed ( )
Casual labourer ( )
Employed ( )
Others please explain.

7. Do you own a phone?

   Yes( )

   No ( )

   Do you read Newspapers?

   Yes ( )

   No ( )

8. If yes, how many times?

   <Once a week [ ]

   At least once a week [ ]

   >once a week [ ]

9. Do you listen to the radio?

   Yes ( )

   No ( )

10. If yes, how many times?

    <Once a week [ ]

    At least once a week [ ]

    >Once a week [ ]

11. Do you watch television?

    Yes ( )

No ( )

12. If yes, how many times?

<Once a week [ ]
At least once a week [ ]

>Once a week [ ]

13. What religion do you follow?

Muslim [ ]

Christian [ ]
Others specify [ ]

14. Parity?

One ( )

two ( )

Three ( )

Four ( )

more ( )

SECTION B: LEVEL OF FANC UTILIZATION

15. Did you seek FANC services during pregnancy?

Yes ( )

No ( )

16. If yes, at what period of your pregnancy?

First trimester ( )

Second trimester ( )

Third trimester ( )

17. How frequently did you seek FANC services during the pregnancy?

Once ( )
Two times ( )
More than two times ( )
Over 5 ( )

18. Do you believe that the only help during pregnancy comes from religion or spirituality?

Yes ( )

No ( )

19. If yes, explain, please.

20. If no, explain, please.

SECTION C: SOCIAL AND CULTURAL FACTORS INFLUENCING UNDERUTILIZATION OF FANC SERVICES.

21. Do you think your culture and beliefs impact your pregnancy outcome?

Yes ( )

No ( )

22. If yes, explain, please.

23. If no, explain, please.

Others specify?

24. Did a family member encourage you to go to the ANC services?

Ye s ( )

No ( )

25. Do you seek FANC services with your husband?

Ye s ( )

No ( )

26. Who made the decision to seek FANC services?

Myself( )

My husband ( )

My inlaws ( )

Other ( )

27. Does your husband show you support towards seeking FANC services?

Yes( )

No ( )

28. Do you think your husband's support can lead to a great pregnancy outcome?

Ye s ( )

No ( )

29. Do you engage in the use of any illicit substances?

    Ye s ( )

    No ( )

30. If yes, provide an explanation

31. Do you believe illicit substances can have an impact on your pregnancy?

    Ye s ( )

    No ( )

32. If yes, how?

SECTION D: EALTH SYSTEM-RELATED FACTORS INFLUENCINg UTILIZATION OF FANC SERVICES

33. How prompt was the service when you sought FANC services?

    Less than 30 minutes [ ]

    Between 30 and 45 minutes [ ]

    Over 60 minutes [ ]

34. What was the staff attitude/ friendliness while seeking FANC services?

    Outstanding ( )

    Satisfactory ( )

    Adequate ( )

    Poor ( )

35. How was privacy while seeking FANC services?

    Excellent ( )

    Average ()

    Poor ( )

36. How can you rate FANC services?

    Excellent ( )

    Average( )

    poor ( )

37. Did you get Linda's mama membership card when seeking FANC services?

    Yes( )

    No ( )

38. How much time does it typically take you to travel to the facility to access focused antenatal care (FANC) services?

    Less than 30 minutes ( )

    30 minutes to 45 minutes ( )

    over 60 minutes ( )

39. What mode of transportation do you use when seeking FANC services?

    Car/ Bus ( )

    Bicycle ( )

Motorcycle ( )

Walking ( )

THANK YOU FOR YOUR TIME

Data Collection Sheet

Patient Number……..	First Trimester		Second Trimester		Third Trimester	
Number of FANC visits						
	Yes	No	Yes	No	Yes	No
Comprehensive History						
Physical and Obstetric Examination						
Laboratory investigations						
Drug Administration and Immunization						
Education & counselling						
Comprehensive History taking						
Past medical/surgical history						
Family History						
Past obstetric history						
History of complaints in current pregnancy						
Physical and Obstetric Examination						
ultrasound scan						
Blood pressure						
Weight						
Whole body examination						

Laboratory Investigation and Test						
HIV test						
Blood Grouping and rhesus factor						
VDRL for syphilis testing						
Anaemia and Hemoglobinopathies						
Test urine for proteinuria.						
Drug administration						
Iron						
Folic Acid						
Anti-malarial						
Tetanus toxoid						
Education & counselling						
Pregnancy & its complications						
HIV/AIDS counselling						
Diet and Nutrition						
Rest and exercise during pregnancy						
Personal hygiene						
Schedule of return visits						
Plans for delivery						

Danger signs in pregnancy						
Harmful habits						

APPENDIX VI: PLAGIARISM CHECKER CERTIFICATE

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APPENDIX VII: MAP OF LUNGA LUNGA HEALTH FACILITY CATCHMENT