



**PATTERNS, DETERMINANTS AND PERCEPTIONS ASSOCIATED
WITH UTILIZATION OF ANTENATAL CARE SERVICES AMONG
ADOLESCENT MOTHERS IN KAJIADO WEST SUB-COUNTY IN
KENYA.**

**Department of Obstetrics and Gynecology,
College of Health Sciences, School of Medicine,
The University of Nairobi.**

DR. KETENTE JENNIFER TIMPIYIAN

H58/11348/18

**A Dissertation Submitted in Partial Fulfilment of the Requirements for the Award of
Masters of Medicine Degree in Obstetrics and Gynecology.**

2022

SUPERVISORS' CERTIFICATES AND APPROVAL

The dissertation has been submitted with the approval of the following supervisors:

DR. KIREKI OMANWA MD, PhD

Consultant Obstetrician and Gynecologist, Fertility Specialist.

Senior Lecturer, Department of Obstetrics and Gynecology, University of Nairobi.

Signature:



Date: 29/08/2022

DR. KIHARA ANNE BEATRICE

MBChB, MMed OBS/GYN (University of Nairobi),

Consultant Obstetrician and Gynecologist,

Senior Lecturer, Department of Obstetrics and Gynecology, University of Nairobi.

Signature:



Date: 29/08/2022

DR. PULEI ANNE NAIPANOI

MBChB, MMed OBS/GYN (University of Nairobi), B.Sc. Anatomy (Hons), M.Sc. (Anatomy),

MPH

Lecturer, Department of Human Anatomy, University of Nairobi.

Signature:



Date: 30/08/2022

DECLARATION

I declare that this research was undertaken in partial fulfillment of the Masters of Medicine in Obstetrics and Gynecology from the University of Nairobi and is my original work under the supervision of Dr. Kireki Omanwa, Dr. Kihara Anne and Dr. Pulei Anne. It has not been undertaken and presented for a degree in any other university.

Signed:

Dr. Ketente Jennifer Timpiyan (MBChB, University of Nairobi),

M. Med student, Department of Obstetrics and Gynecology, University of Nairobi.

CERTIFICATE OF AUTHENTICITY

This is to certify that this dissertation is the original work of Dr. Jennifer Timpiyan Ketente, a Masters of Medicine student in the Department of Obstetrics and Gynecology, College of Health Sciences, University of Nairobi, under the guidance and supervision of Dr. Kireki Omanwa, Dr. Kihara Anne and Dr. Pulei Anne. This confirms that the thesis has not been presented to the University for the Award of any other degree.

PROFESSOR EUNICE CHESEREM

MBChB, MMed (OBS&GYN), PGDRM

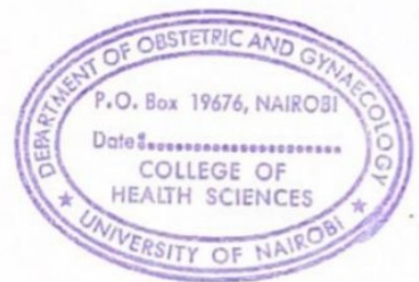
Associate Professor of Obstetrics and Gynecology,

Chairperson, Department of Obstetrics and Gynecology,

School of Medicine, University of Nairobi.

Signature:

Date: 30/08/2022



LIST OF ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
ASAL	Arid and Semiarid Lands
ASRH	Adolescent Sexual and Reproductive Health
ASRHR	Adolescent Sexual and Reproductive Health Rights
AYFS	Adolescent and Youth Friendly Services
CHVs	Community Health Volunteers
CIDP	County Integrated Development Plan
COVID-19	Coronavirus- 2019
CPR	Contraceptive Prevalence Rate
DHIS	District Health Information System
EmONC	Emergency Obstetric and Neonatal Care
FANC	Focused antenatal care
FGM/C	Female genital mutilation/cutting
HTPs	Harmful Traditional Practices
IPV	Intimate partner violence
KES	Kenyan Shillings
KHIS	Kenya Health Information System
KDHS	Kenya Demographic and Health Survey
LMICs	Low and middle-income countries
MHS	Maternal Health Services
MNCH	Maternal, Newborn, and Child Health
MoH	Ministry of Health
NCPD	National Council on Population and Development
PNC	Postnatal care

SBA	Skilled Birth Attendant
SDG	Sustainable Development Goals
SPSS	Statistical Package in Social Science
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Adolescence is a transitional growth and development phase between childhood and adulthood. (Britannica)

Adolescent- A person within the age group of 10-19 years. (WHO)

Adolescent mother – Any woman between 10-19 years who have delivered a baby irrespective of gravida, parity, neonatal outcome or marital status. (WHO)

Adolescent pregnancy- Pregnancy in a woman aged 10-19 years. (WHO)

Antenatal care- A series of pregnancy-related health care provided by skilled healthcare professionals in a health facility to pregnant women and adolescent girls to ensure the best health conditions for both mother and baby during pregnancy. (WHO)

Adolescent and youth-friendly services (AYFS) - Sexual and Reproductive Health services that are accessible, acceptable, appropriate, effective and equitable for adolescents and youth. (Ministry of Health, Kenya, 2016)

Child- An individual who has not attained the age of eighteen years. (Kenya Constitution, 2010)

Emancipated minor- A person has been considered an adult before age 18 years and separated from parents or legal guardians. (WHO)

Mature minor- A person who has not attained the age of 18 years and has been determined by a qualified medical professional to make health-related decisions. (Law Insider)

Female genital mutilation (FGM) - comprises all procedures involving partial or total removal of the female genitalia or any other injury to the female genital organs or any harmful procedure to the female genitalia for non-medical reasons and includes: clitoridectomy, excision and infibulations, but does not include a sexual reassignment procedure or a medical procedure that has a genuine therapeutic purpose. (Kenya Constitution, 2010)

Focused Antenatal care- A quality and goal-oriented provision of ANC services which recommends that pregnant women attend a minimum of four scheduled ANC visits and receive all the WHO-recommended comprehensive packages by skilled healthcare providers (WHO, [2014](#)).

Moranism- A rite of passage where young men aged 10-14 years are transitioned from boyhood to manhood through initiation by circumcision and being warriors for a duration of about 12-15 years. It usually allows young men to have casual sex with adolescent girls. (The Kenyan Legal Scholar)

Maternal morbidity - Any health condition attributed to and/or aggravated by pregnancy and childbirth that harms the woman's wellbeing (WHO, 2013).

Positive pregnancy experience- Maintaining physical and sociocultural normality, maintaining a healthy pregnancy for mother and baby (comprising of preventing or treating risks, illness and death), having an effective transition to positive labour and birth, and achieving positive motherhood inclusive of maternal self-esteem, competence and autonomy. (WHO 2017)

Postnatal period- is the duration immediately after the birth of a baby and extends to six weeks. (WHO, 2017)

Skilled Birth attendant - an accredited health professional — such as a midwife, doctor, or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth, and the immediate postnatal period, and in the identification, management, and referral of complications in women and newborns. (WHO)

Traditional birth attendant- refers only to traditional, independent (of the health system), non-formally trained, and community-based providers of care during pregnancy, childbirth, and the postnatal period. (WHO)

TABLE OF CONTENTS

SUPERVISORS' CERTIFICATES AND APPROVAL	ii
LIST OF ABBREVIATIONS AND ACRONYMS.....	iv
OPERATIONAL DEFINITION OF TERMS.....	vi
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xi
LIST OF FIGURES	xii
ABSTRACT.....	xiii
CHAPTER ONE: INTRODUCTION.....	1
1. Introduction.....	1
CHAPTER TWO: LITERATURE REVIEW	4
2. Literature Review.....	4
2.1. Socio-demographic characteristics and health-seeking behaviour among adolescents	4
2.2. Barriers to ANC utilization.....	5
2.2a.Socio-cultural barriers.....	5
2.2b. Accessibility and coverage barriers	6
2.2c. Information barriers	7
2.2d. Provider and service delivery barriers	8
2.3. Patterns of ANC utilization.....	8
2.3a. Timing of first contact.....	9
2.3b. Number of ANC contacts.....	9
2.3c. Range of services	10
2.4. Perceptions of adolescent mothers to the attendance of ANC	10

2.5. Conceptual framework.....	11
2.6. Study Justification.....	13
2.7. Research Question	13
2.8. Objectives	14
CHAPTER THREE: METHODOLOGY	15
3.1. Study design.....	15
3.2. Study site.....	15
3.3. Study population	17
3.4. Sample Size Calculation	18
3.4.1. Quantitative Component	18
3.4.2. Qualitative Component	19
3.5. Sampling Procedures	19
3.6. Study Flow Diagram	20
3.7. Data variables and sources of data (Table as per specific objectives)	21
3.8. Data Collection Procedures.....	21
3.9. Data quality assurance and analysis.....	23
3.10. Ethical Considerations	24
CHAPTER FOUR.....	26
4.0. RESULTS	26
CHAPTER FIVE	41
5.1. DISCUSSION	41
5.3. CONCLUSION.....	47
5.4. RECOMMENDATIONS	47

REFERENCES	49
ANNEXES	58
Annex 1: Letter to ERC	58
Annex 2: Consent Form/ Fomu ya Idhini	59
Annex 3: Questionnaire	64
Annex 4: FOCUS GROUP DISCUSSION GUIDE	69
Annex 5: KEY INFORMANTS INTERVIEW GUIDE	70

LIST OF TABLES

Table 1: Estimated population of adolescent pregnancies for Kajiado West sub-County in 2019 (Source: DHIS2).....	17
Table 2: Proportionate sampling for the quantitative component study participants in Kajiado West Sub County	20
Table 3: Study variables and data sources	21
Table 4: Socio-demographic, reproductive, and cultural characteristics of the adolescent mothers.....	26
Table 5: Pattern of ANC services utilization.....	29
Table 6: Range of services received during ANC Clinic	30
Table 7: Association between socio-demographic, cultural and reproductive characteristics an number of ANC contacts.....	31
Table 8: Association between the level of education with access to smartphone.....	33
Table 9: Association between determinants of ANC utilization to 1st ANC visit.....	33
Table 10: Association between determinants of ANC utilization and number of ANC visits	35

LIST OF FIGURES

Figure 1: Conceptual framework	12
Figure 2: Kajiado County map showing the distribution of health facilities and schools	16
Figure 3: Study Flow Diagram	21

ABSTRACT

Background: Pregnant adolescents are more prone to obstetric complications which could be averted by proper utilization of Antenatal care (ANC). The burden of adolescent pregnancy and motherhood is at 20% in Kajiado County, which is higher than the country's average of 18%. According to Kenya Health Information System (KHIS), Kajiado West Sub County had the highest rate of adolescent pregnancy in the county in 2020.

Broad Objective: To evaluate the pattern, determinants and perceptions associated with the utilization of antenatal care services among adolescent mothers in Kajiado West Sub County in Kenya from July 2021 to September 2021.

Methodology: Mixed method study design with quantitative and qualitative components. Participants were adolescent mothers in the puerperium. The sample size was 137 participants for the quantitative component. The qualitative component had five Focus group discussions and 15 key informant interviews. Ethical approval was sought from the KNH/UON Ethics Review Committee and the Department of Health Services in Kajiado County was sought. Informed consent was sought from eligible participants as per WHO research ethics guidelines among adolescents. Quantitative data analysis was done using SPSS version 23. Categorical variables were analyzed using frequencies and percentages while continuous variables were analyzed using mean and standard deviation. The Chi-square test was used to compare the association between determinants of ANC utilization to the level of utilization. A P-value of <0.05 was considered statistically significant. Qualitative data were analyzed by NVivo version 12.4 software thematically.

Results: All the study participants had at least one ANC visit with 56% having ≥ 4 visits and only 10% starting ANC clinic at < 12 weeks. Owning a smartphone was found to be statistically significant to the utilization of ANC services. From the qualitative data findings, the barriers identified for ANC utilization were; fear of disclosure, long distance to the health facility, lack

of transport means, poor infrastructure, cultural barriers, drug stock-outs, shortages of HCPs and inadequate knowledge of the importance of ANC services.

Conclusion: Utilization of ANC services is sub-optimal among pregnant adolescents in Kajiado West Sub County. There is a need for the implementation of community-based strategies through CHV empowerment to promote ANC utilization among pregnant adolescents.

Utility of the study: The study findings may be useful in making policies and designing appropriate programs that are responsive to the health needs of adolescent mothers in arid and semi-arid settings.

Keywords: Adolescent mothers, antenatal care utilization, determinants, Kajiado.

CHAPTER ONE: INTRODUCTION

1. Introduction

Adolescent pregnancy is a global public health and social concern especially in low and middle-income countries(LMICs).¹ According to World Health Organization (WHO), an estimated 21 million girls aged 15–19 years become pregnant and about 12 million of them give birth annually in developing regions.² In Kenya, 18% of adolescent girls aged 15-19 years are mothers or pregnant with the first child. This rate has been static in both the Kenya Demographic Health Survey (KDHS) 2008/9 and 2014 reports.³ In Kajiado county, 20% of women aged 15- 19 years have had a live birth or are pregnant which is higher than the country's average of 18%.³ This is mostly fueled by Harmful traditional practices (HTPs) such as female genital mutilation, early marriage, patriarchy and *moranism*. Poor infrastructure in the rural parts of Kajiado County is a contributor to the low uptake of Maternal health services (MHS), antenatal care included.⁴ According to Kenya Health Information System (KHIS), adolescent mothers constituted 58% of the total ANC attendance in Kajiado West in 2019.⁵

Since the Coronavirus-2019 (COVID-19) pandemic hit, there has been an upsurge in cases of adolescent pregnancies in Kenya.⁶ This has been aggravated by the lockdown, closure of learning institutions and a rise in unemployment and poverty levels.^{5, 6} According to the National Council of Population Dynamics (NCPD), two out of every five adolescent girls are either pregnant or young mothers in Kenya.⁶ The NCPD statistics have shown Kajiado as one of the leading counties countrywide in adolescent pregnancies during the COVID-19 pandemic.⁶

WHO recommends the focused ANC approach which aims at quality and goal-oriented provision of ANC services. It recommends at least four ANC visits distributed throughout the gestational period as follows; 1st visit at 8-12weeks, 2nd at 24-28weeks, 3rd at 30-32weeks and

4th at 36-40 weeks with a specific range of services per visit.⁹ The FANC is currently being utilized in Kajiado County. The new WHO ANC guidelines for a positive pregnancy experience have not been implemented in Kajiado West Sub County.

Globally, maternal complications are the leading cause of mortality among girls aged 15–19 years.^{7,8} The complications are more likely to occur among pregnant adolescents compared to women aged 20 years and above. This is because they are still undergoing physical and emotional development achieved during puberty.^{9, 10} The complications include; unsafe abortions, eclampsia, obstructed labour, haemorrhage, postpartum depression, puerperal endometritis and systemic infections. Additionally, their babies are at a higher risk of preterm delivery, small for gestation age, low birth weight, neonatal sepsis and high infant and child mortality.¹¹⁻¹⁴ The aforementioned morbidities are higher among younger adolescent girls aged 14 years or below.¹⁵

In Kenya and Kajiado county, the Maternal Mortality Ratio (MMR) is 362/100,000 and 299/100,000 respectively.³ This is higher than that targeted by the third Sustainable Development Goal (SDG) of less than 70/100,000 live births.¹⁶ ANC attendance is one of the key Maternal Health Services (MHS) whose proper utilization can reduce maternal and perinatal morbidity.¹⁷ The ‘Three delays model’ which was developed by Thaddeus and Maine in 1994 suggests that mortalities due to pregnancy are majorly attributed to delays in (1) deciding to seek care; (2) identifying and reaching an appropriate health facility; and (3) receiving adequate and appropriate care in the health facility.^{18, 19} Understanding the model can help elaborate the barriers to ANC utilization and minimize adverse obstetric outcomes among adolescent mothers in Kajiado West Sub County. According to the DHIS report, Kajiado County is still using Focused Antenatal Care (FANC).⁵ In this study, with reference to

other studies,²⁰⁻²² good ANC utilization of ANC was indicated by 1st contact within the first trimester and a total of 4 or more contacts distributed within the three trimesters. Poor or suboptimal utilization of ANC services was defined as less than 4 contacts and 1st contact after the first trimester.

Previous studies have shown that young age, premarital status, low socio-economic status, rural residence, low educational status, unplanned pregnancy, high parity, wrong perception of ANC attendance, unavailability of mass media, and poor accessibility of ANC services were found to be predictors of poor ANC utilization.^{17,22-25} Majority of the negative predictors mentioned describe the socio-demographic characteristics of the adolescent girl in the rural Kajiado West Sub-county.⁴ Women in rural settings generally record lower ANC attendance compared to their counterparts in urban settings in Kenya,³ therefore, forming the basis of this study. There is a need to understand factors associated with the utilization of ANC services among this vulnerable nomadic population to avert preventable morbidities and mortalities, ultimately positively contributing to the attainment of SDG 3.

CHAPTER TWO: LITERATURE REVIEW

2. Literature Review

According to National Adolescent and Youth Survey (NAYS), the three leading causes of health challenges among the youth in Kajiado county are as follows; HIV/STI, drug and substance abuse and adolescent pregnancy.²⁶ The essential package for Adolescent and Youth Friendly Services (AYFS) introduced by the Ministry of Health (MOH) addresses the above-mentioned concerns among other services to meet the needs of the diverse adolescent and youth population in Kenya.²⁷ For every maternal mortality, approximately 20 other women undergo serious injuries, infections, or disabilities in Low and middle-income countries (LMICs).²⁸ These findings are expected to be worse among the rural pregnant adolescents who are vulnerable and marginalized. Therefore, it is necessary to understand the current situation on adolescent pregnancy, and the utilization of ANC services to enable the implementation of measures to prevent adolescent pregnancy and avert related complications when pregnancy ensues.

2.1. Socio-demographic characteristics and health-seeking behaviour among adolescents

Socio-demographic and cultural characteristics of the pregnant adolescent contribute to the first delay, which is deciding to seek care. Young age and primigravida status affect health-seeking behaviour negatively which could increase the chances of obstetric complications among pregnant adolescents.²⁹ Some studies however have shown that adolescents have better utilization of ANC services compared to their adult counterparts^{3,12,30} Adolescent pregnancies occur mostly in marginalized communities and this is attributed to poor socio-economic status and illiteracy.^{2,26,31} Low socioeconomic status of parents makes adolescent girls vulnerable to unintended pregnancies as they cannot afford basic needs and contraceptives leading to

exploitation by male adults through the provision of the basic needs and engaging in sexual relationships with them.^{24,25}

In previous studies, the following were determinants of ANC uptake among pregnant adolescents; key decision maker, religion, ethnicity, residence, wealth quintile, level of education, mass media exposure, geographic distance and accessibility.^{3,4,20,32}

Low level of education is a predictor of poor utilization of ANC services.^{3,29} In Kenya, 66% of the adolescent mothers had only completed primary education while 8% did not have formal education.³² In the rural parts of Kajiado, the average dropout rate in secondary school is 30%.³³ The high rate of school dropout promotes a vicious cycle of poverty, unemployment, unwanted second pregnancy and poor ANC utilization.

2.2. Barriers to ANC utilization

A study by Mbugua et al³⁴ in Narok County in 2015 on the access to Sexual and Reproductive Health Services (SRHS) among adolescents, categorized barriers to ANC utilization as follows: sociocultural, accessibility, information and provider and service delivery barriers. The barriers linked with the three delays that cause maternal morbidities and mortalities. All AYFS including ANC should be equitable, accessible, acceptable, appropriate and effective to cater to the sexual and reproductive health needs of young people,^{34,35} thus eliminating the barriers to ANC utilization.

2.2a. Socio-cultural barriers

In Kajiado, as in some other parts of Sub-Saharan Africa, the risk of high child and maternal mortality and morbidity is propagated by HTPs such as FGM/C and child forced marriages which promote school dropout leading to adolescent pregnancy and childbirth.^{20,36} Other HTPs include *moranism*, patriarchy, subordination of females, devaluing formal education for the girl child, and physical and gender-based violence.³⁴

Moranism is a rite of passage for boys aged 10-14 years, where they are circumcised and initiated into manhood. After initiation, the young men become *morans* for a duration of 12-15 years then they are transitioned to young elders.³⁷ The *morans* are socialized to casually engage in sex with their female peers regardless of the outcomes.³⁷ An incidence was reported where *morans* stormed to a girls' school and demanded to be given their wives.³⁸ When pregnancy ensues in such cases, girls are mostly in denial, concealing the pregnancy and hence not attending ANC. Traditionally, girls are socialized to believe that their role is to take care of children and boys are prioritized in obtaining formal education.³⁹

In a patriarchal society where women are termed and treated as 'children',^{34,40} it creates a hindrance for pregnant women to take charge of their health and decide to attend ANC. This is worse among adolescent girls who have been married off forcefully because just they had no choice in their marriage, they still have no choice on when to conceive and on how to take care of the pregnancy when it ensues.⁴¹ Pregnancy and delivery among the Maasai people are viewed as natural therefore no need to seek ANC and related interventions.^{24, 31} Furthermore, FGM is often conducted by Traditional Birth Attendants (TBAs) who follow up on the women during pregnancy and childbearing. Such cultural practices promote sub-optimal utilization of ANC services among pregnant adolescents.

2.2b. Accessibility and coverage barriers

The critical health system factors which affect ANC utilization by pregnant adolescents include; distance to the health facility, quality of service offered, and service level of satisfaction.^{19,31,42} Nearness to a health facility has shown better utilization of reproductive health services among adolescents.³⁴ According to County Integrated Development Plan (CIDP), the average distance to a health facility in Kajiado is 14.3km.³³ This severely adds up to the second delay in the model in a sub-county where the health facilities are small and sparsely distributed per ward. Since maternal complications such as hemorrhage can be

unpredictable during pregnancy and childbirth,⁴³ there is a need for emergency preparedness, availability of Emergency Obstetric and Neonatal Care (EmoNC) and proper referral systems to minimize the third delay.

Due to the nomadic lifestyle of the community, there is a tendency for families to migrate to remote areas far from where the girls are attending school promoting them to drop out, exposing some to ‘bodaboda’ riders and other casual workers who exploit them sexually in exchange for money to buy necessities.³⁴ Considering the lack of family planning knowledge and unsafe sexual practices, majority of the adolescent girls end up with unplanned pregnancies.⁴⁴ The seasonal migration and the circumstances surrounding the pregnancy often lead to poor ANC uptake.

A mixed design cross-sectional study done by Karanja et al⁴ in Kajiado West in 2018 revealed the need to improve transport mechanisms to minimize delay to reach a health facility. Since health facilities are far and do not mostly work at night, most pregnant women and girls are reluctant to attend ANC as it is not a surety for hospital delivery.^{27, 39} There is a positive association between access to SRH services and their use among adolescents.^{33, 44, 45}

2.2c. Information barriers

Although the government of Kenya has developed policies on adolescent health, adolescents especially in rural settings still have minimal access to information and health services that will improve their health.³⁴ About 20% of adolescent mothers do not have access to mass media.³² This is attributable to low social economic status, illiteracy and lack of electricity in the rural regions. Mass media exposure and living in an urban setup are positive determinants of the use of ANC and other Maternal health services (MHS) among adolescent mothers.^{21,46}

One of the important functions of ANC is the provision of health education and counselling.¹⁵ The topics covered include but are not limited to dietary modifications, danger signs, common

physiological changes and emergency preparedness.¹⁵ Pregnant adolescents who do not attend ANC properly miss out on this invaluable information hence prone to poor outcomes.

2.2d. Provider and service delivery barriers

Provider and service delivery barriers attribute to the third delay in the model. Adolescents face various challenges at public health facilities as some healthcare personnel have negative attitudes towards them because access to Adolescent Sexual and Reproductive Health (ASRH) services is associated with social reproach.¹³⁻¹⁵ Research has indicated that some Healthcare workers(HCWs) disapproved of adolescents who engaged in sexual activities and were conservative in providing reproductive health services while some admitted they were not trained to provide ARHS.^{19,23,35} Some friendly HCWs and older pregnant women have been reported but the majority have a poor attitude towards adolescents.⁴⁷ Such attitude inspires fear towards utilization of ANC services, especially in cases of unplanned pregnancies.

Further, delays in public health facilities were noted when providing appropriate care due to the following lack of essential drugs and supplies, negative attitude of the HCWs when handling adolescents and inadequate referral systems.^{15, 27} Pregnant adolescents have misconceptions about ANC and other reproductive health services. Some believe that young girls are criticized by nurses during ANC services provision, HIV is tested and results are shared with family members without their consent during ANC while others feel discriminated against.^{26, 42} However, those with proper knowledge of ANC services and are the decision maker to attend ANC have shown better utilization.³⁰

2.3. Patterns of ANC utilization

The patterns of ANC utilization among pregnant adolescents were reviewed according to the timing of first visit, number of visits and range of services provided. WHO ANC guidelines recommend a shift from 4 to 8 ANC contacts distributed within the three trimesters as follows; 1st contact within the first 12 weeks gestation and consecutive contacts at 20, 26, 30, 34, 36,

38 and 40 weeks gestation.¹⁵ ANC range of services are identification of risks, prevention and management of obstetric-related or concurrent illnesses, health education and promotion.¹⁵ Further recommendations include; nourishment throughout pregnancy, prevention and treatment of common physiological complaints during pregnancy, preventive measures for some conditions such as malaria and/or HIV and provision of support to women who may be undergoing intimate partner violence (IPV).¹⁵

2.3a. Timing of first contact

Most pregnant women in sub-Saharan Africa delay initiating ANC attendance.²³ Among pregnant adolescents, this is commonly due to their limited autonomy relating to decision-making and financial resources.⁴⁸ Further, ANC clinic is started late and is infrequent for unplanned pregnancies⁴⁵ which is commoner among unmarried adolescents due to fear of disclosure. According to a study by Gulema et al²⁴ in Ethiopia in 2017, about 40% of pregnant women do not start ANC visits in the first trimester commonly due to ignorance of the recommended ANC schedule. In Rwanda, 25% of women start ANC within the WHO recommended timeframe with a worse situation among unplanned pregnancies.⁴⁹ When dealing with pregnant adolescents in the Maasai community the delay is likely to worsen since pregnancy is usually a concealed affair until it is obvious.⁴

2.3b. Number of ANC contacts

Regular contact with a healthcare worker in pregnancy allows women to receive essential services important to their health and the unborn child.⁵⁰ Most studies have been done using the initial Focused Antenatal Care (FANC) as the guideline which recommended 4 visits. According to KHIS, only 17% of the pregnant women had a total of 4 visits in Kajiado West Sub County in 2019.⁵ Less than the recommended ANC visits and loss to ANC follow-up were linked to adverse maternal outcomes such as anaemia, Pregnancy induced hypertension (PIH),

higher rates of caesarian deliveries and poor neonatal outcomes among adolescent pregnancies.⁵¹

2.3c. Range of services

The range of ANC services to ensure a positive pregnancy experience includes: (a). nutritional supplementation and advice, (b). Assessment of mother and fetus (c). Health promotion and disease preventive measures, (d) Common physiological changes interventions and (e) Birth preparedness plan. A significant proportion of pregnant adolescents in Sub-Saharan Africa do not access and use maternity services during pregnancy⁴⁶ whereas, in India, pregnant adolescents have had better ANC utilization on some indicators than adult women.¹² Nutritional interventions and supplementation are vital during pregnancy among the Maasai community since tradition imposes dietary restrictions on expectant women.⁵² This was done with the belief that the babies will be small hence lower chances of complicated deliveries.⁴

2.4. Perceptions of adolescent mothers to the attendance of ANC

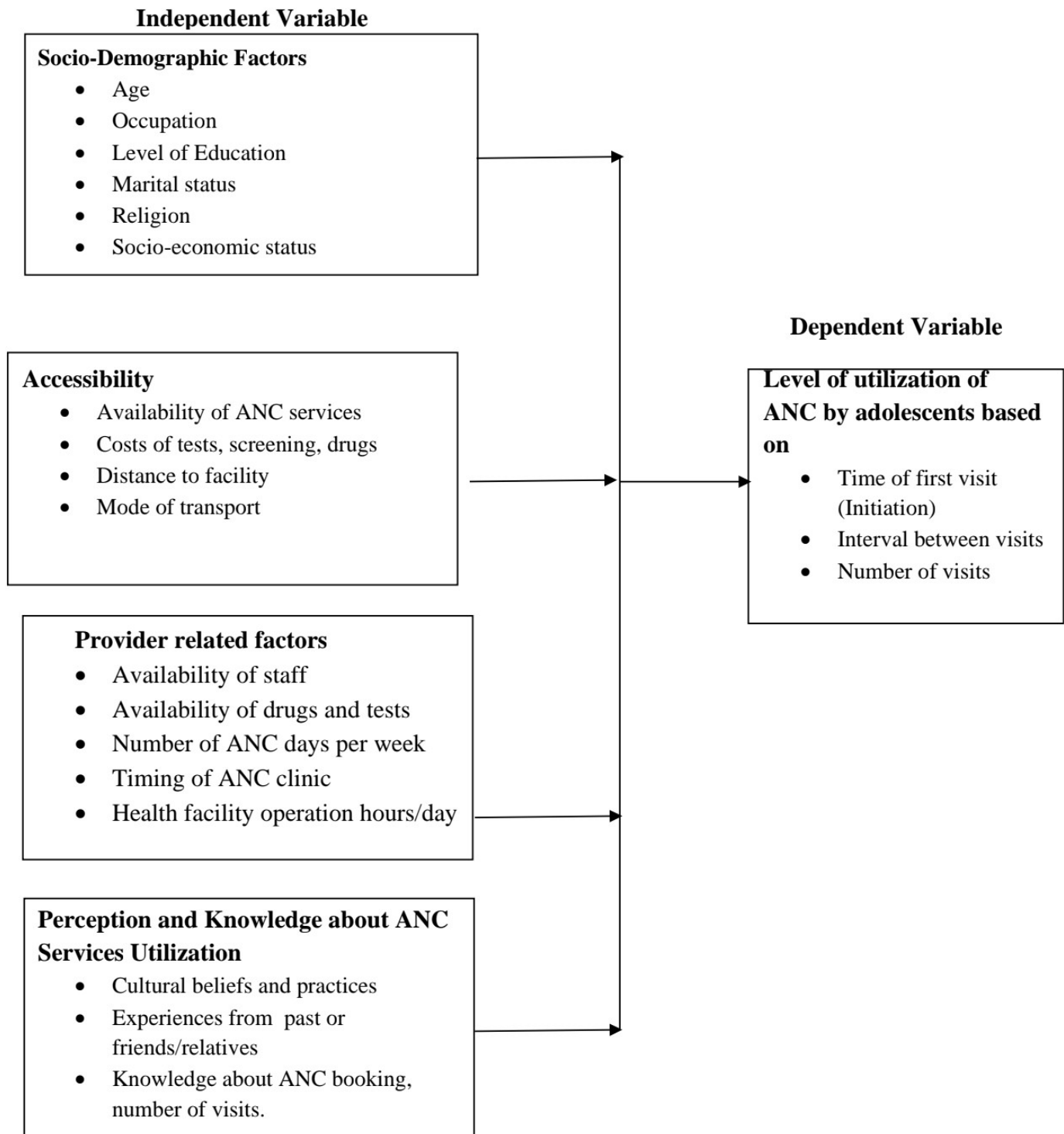
Inadequate knowledge about the ANC services could be a negative determinant of women's utilization of ANC services.⁵³ Qualitative studies done by Mbai et al.⁵³ in Kibera on the level of ANC utilization reported that pregnant adolescents did not know the importance of ANC services and had to be pushed by their mothers. Some were concealing the pregnancy and therefore unwilling to attend ANC appropriately. Pregnant adolescents who were knowledgeable of the recommended ANC visits utilized ANC services more than their counterparts with poor knowledge.¹²

2.5. Conceptual framework

The conceptual framework (figure 1) below shows the relationship between the dependent and the independent variables. It provides a logical structure that guides this study and forms an overview of ideas and practices that shape the way this study was done.

The independent variables have been categorized into four major factors. The first three tables list factors that contribute to the three delays in accessing healthcare. The fourth table lists variables which influence the participants' perception and knowledge of utilizing ANC services. The dependent variables namely; time of 1st ANC visit, number of ANC visits and range of services received assess the level of ANC utilization among the adolescent mothers.

Figure 1: Conceptual framework



2.6. Study Justification

Adolescent pregnancy is a global challenge and is termed a high-risk pregnancy since it is associated with long-term social, physical, educational and mental impacts.^{24, 39} Since we aim to reduce the MMR to <70/100,000 according to the third SDG, studying the most vulnerable and least-studied population will help us achieve this target.

Kajiado West Sub-county is majorly comprised of the Maasai and has the highest number of adolescent pregnancies in the county according to KHIS in Kajiado.⁵ Kajiado West Sub-County is one of the ASALs, these are regions made up of pastoralist communities and known to have poor infrastructure and inadequate social services, healthcare included. This study was meant to identify associated challenges which can be used as a basis to obtain solutions. The community practices nomadic pastoralism and has high levels of illiteracy, poverty and HTPs such as FGM/C meant to transform girls into women therefore ready for sexual relations.⁴ Additionally, FGM/C has been shown to cause obstetric complications during childbirth.^{53, 54} Other practices include; child marriages and polygamy whereby young girls are married off to old men. With such socio- demographics and limited studies done in this region, it is paramount to study ANC utilization among this population. Following an extensive search of the literature, there are no studies done to assess the prevalence, determinants and perceptions associated with the utilization of ANC services among adolescent mothers in Kajiado West Sub-County.

2.7. Research Question

What are the patterns, determinants and perceptions associated with the utilization of ANC services among adolescent mothers in Kajiado West Sub-County?

2.8. Objectives

i. Broad Objective

To evaluate patterns, determinants and perceptions associated with utilization of antenatal care services among adolescent mothers in Kajiado West Sub County from July 2021 to September 2021.

ii. Specific Objectives

Among adolescent mothers in Kajiado West Sub County:

1. To investigate the patterns of ANC services utilization.
2. To identify determinants of utilization of ANC services.
3. To assess the knowledge and perceptions of adolescent mothers and community leaders regarding the utilization of ANC services among adolescent mothers.

CHAPTER THREE: METHODOLOGY

3.1. Study design

This study used mixed methods study design involving both quantitative and qualitative components. A quantitative cross-sectional study was conducted to document the number of ANC visits, first antenatal care visit, socio-demographic, cultural and reproductive factors associated with antenatal care uptake and the extent to which the “Three delays” model influenced ANC utilization among adolescent mothers in the community. The qualitative component used focus group discussions (FGD) and Key informants interviews (KII) to assess barriers to ANC utilization among pregnant adolescents, knowledge and perceptions of ANC services.

3.2. Study site

This study was conducted in Kajiado West Sub-county, Kenya. The area size of the Sub-county is 8519.8 square Kilometers and has five administrative wards namely; Magadi, Keekonyonkie, Mosiro, Ewuaso Kidong’ and Iloodokilani. Each of the wards has a health center with sparsely distributed dispensaries as shown in the map below. There is one private hospital, Magadi hospital which serves as the referral facility at a subsidized cost to locals. Ideally, Kajiado Level 4 hospital is the referral hospital but often inaccessible due to long distance, bad state of the roads and unavailability of means of transport. The total population of Kajiado County is 1,117,840 and Kajiado West is 82,849 in National Census 2019.⁵⁶

The study site is in Arid and semi-arid lands (ASAL). ASAL regions comprise pastoralist communities and are classified by the government of Kenya as underprivileged regarding equitable distribution of national resources, infrastructure and access to essential social services, healthcare included. The communities have poor Maternal, neonatal and child health (MNCH) indicators that are attributable to factors such as inadequate, poorly-equipped and

understaffed health facilities; long distance to health facilities; migratory lifestyles; conservative cultural practices and gender biases.⁴

Below is a geographical map representing the area of study (Kajiado County) showing the distribution of health facilities and schools.

Figure 2: Kajiado County map showing the distribution of health facilities and schools



3.3. Study population

The study population is made up of adolescent mothers up to their sixth week of the postnatal period. The estimated number of adolescent girls in the Sub-county is 14,099; out of these, 17% were reported to have gotten pregnant in 2019. The estimated number of pregnant adolescent girls in each of the wards in the year 2019 was as follows:

Table 1: Estimated population of adolescent pregnancies for Kajiado West sub-County in 2019 (Source: DHIS2)

Ward	The approximate number of adolescent girls	The approximate number of adolescent pregnancies	Percentage of adolescent mothers
1. Magadi	2633	785	29.8
2. Keekonyonkie	6527	498	7.6
3. Mosiro	827	166	20.1
4. Ewuaso Kidong'	2589	374	14.4
5. Iloodokilani	1523	124	8.1
Total	14,099	2,395	17

i. Inclusion Criteria

Adolescent mothers who delivered within the last six weeks regardless of the number of ANC visits, pregnancy outcome or place of delivery.

ii. Exclusion Criteria

Those with a history of mental illness or inability to hold a reasonable discussion.

Adolescents who had pregnancy losses before 28 weeks, therefore, have minimal chance of fetal viability and lost to ANC follow-up.

3.4. Sample Size Calculation

3.4.1. Quantitative Component

The sample size was determined using the formula recommended by Fisher et al. (1998), as follows:

$$n = \frac{Z^2 * (p) * (1-p)}{d^2}$$

Where;

n= the desired sample size (if the target population is greater than 10,000),

z = the standard normal deviate at the required confidence level (1.96),

p = the proportion of pregnant adolescents approximated to have attended less than the formerly recommended 4 ANC visits, in this case, estimated to be 91.2% based on a study by Mulinge et al²⁰ in Malindi sub-county in 2017. Therefore, 8.8% met the former standard of 4 ANC visits.²⁰

d=level of statistical significance set which is 0.05

Therefore;

$$\frac{1.96^2 \times 0.912 \times 0.088}{0.05^2}$$

$$0.05^2$$

$$n = 124 \text{ respondents}$$

Since there were non-respondents or missing variables, the sample size was increased by an additional 10%.

The sample size was therefore **137** respondents for the quantitative component.

3.4.2. Qualitative Component

Focus group discussions (FGDs) were undertaken to assess determinants of ANC utilization, knowledge and perceptions by adolescent mothers on the utilization of ANC services in Kajiado West Sub County. According to Johnson & Christensen, 2004 a sample size of two to three FGD is likely to capture $\geq 80\%$ of themes or topics including those broadly shared.⁵⁷ Therefore, this research conducted 5 focus group discussions among adolescent mothers, one in each of the five wards with each group comprising 6 participants to capture comprehensive data on associated factors to saturation point. The sample size for the qualitative component was therefore 30 respondents. The meeting duration was about 40- 60 minutes per group of 6. The conversation was recorded for data analysis.

Key Informant Interviews (KII) were conducted with specific key resourceful individuals in the community who had valuable insight and resourceful specialized knowledge regarding the topic of study. This involved the chief, ANC nurse and a CHW in each of the five administrative wards. This was a total of 15 respondents.

Given the unprecedented times of COVID-19, FGD and KII were conducted while observing the guidelines from the MOH. These include; a social distance of 1.5 meters between individuals, temperature checks, wearing of face masks, use of hand sanitizers and hand washing.

3.5. Sampling Procedures

All the five administrative wards in Kajiado West Sub County were purposively included in the study. Respondents were selected using a non-probabilistic sequential sampling method from the five sub-county wards. The probable study participants were identified by the CHWs who are stationed in the five administrative wards. Participants were recruited from post-natal care clinics and child immunization clinics. Proportionate sampling based on data from the

Kenya Health Information Software (KHIS) in 2020 was used to identify the specific number of adolescent mothers for the administration of the study questionnaires as follows:

Table 2: Proportionate sampling for the quantitative component study participants in Kajiado West Sub County

Ward	The approximate number of adolescent pregnancies	Number sampled
1. Magadi	785	45
2. Keekonyonkie	498	29
3. Mosiro	166	10
4. Ewuaso Kidong'	374	21
5. Iloodokilani	124	32
Total	2,395	137

3.6. Study Flow Diagram

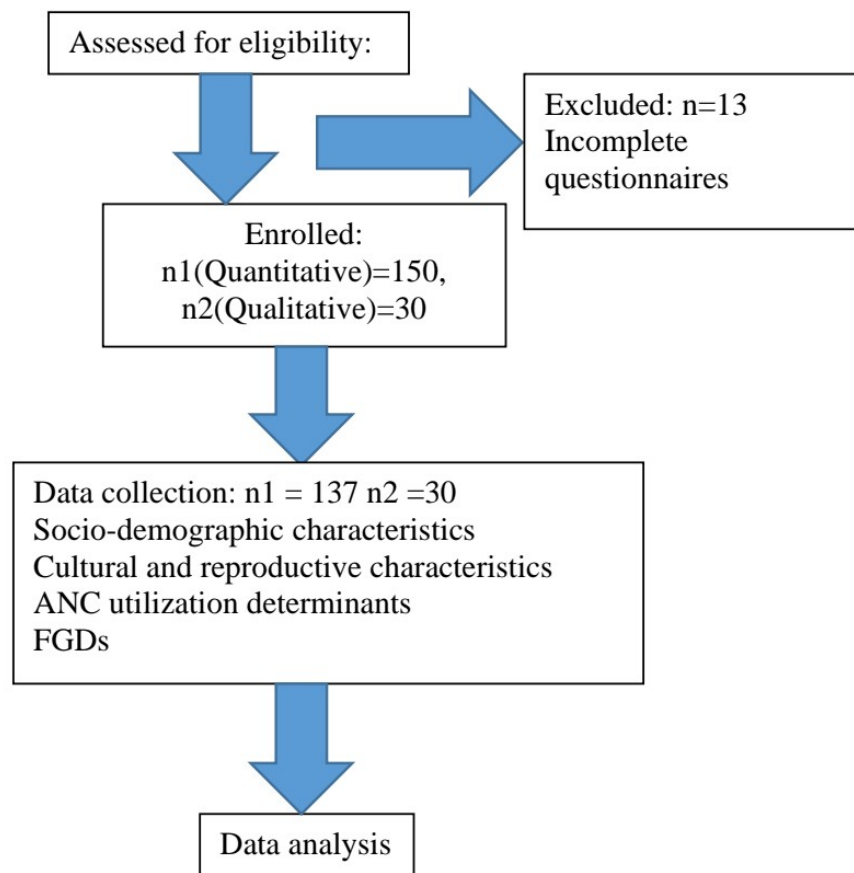


Figure 3: Study Flow Diagram

3.7. Data variables and sources of data (Table as per specific objectives)

Table 3: Study variables and data sources

Objective	Exposure Variable	Outcome Variable	Sources of Data
To investigate the patterns of ANC services utilization among adolescent mothers in Kajiado West sub-county.	Socio-demographic and cultural characteristics of the study population	Number of ANC visits made 1-3, 4 and above visits Timing of first ANC visit	ANC booklets. Hospital records Questionnaires to the study population
To identify determinants of utilization of ANC utilization among adolescent mothers in Kajiado West sub-county.	Cultural beliefs and practices Distance to the health facility Accessibility to the health facility Availability and timing of ANC services Availability of health services providers Perceived attitude of health service providers	Timing of first ANC visit Number of ANC visits made 0, 1-3, 4 and above visits. Range of ANC services	ANC booklets Hospital records Questionnaires to the study population
To assess the knowledge and perceptions of adolescent mothers and community leaders regarding the utilization of ANC services among adolescent mothers in Kajiado West sub-county.	Cultural beliefs and practices Availability of social/mass media, digital technologies for information and clinic reminders information Perceived attitude of health service providers Having a supportive caregiver that encouraged her to attend the ANC clinic Feeling out of sync with the other expectant mothers when attending ANC clinic Experiencing disrespectful maternity care and feared making return visits	This will provide various thematic categories and theory emergence as to the meaning behind the various patterns of ANC utilization	Focus group discussions among adolescents stratified into age group Key Informant Interviews among opinion leaders

3.8. Data Collection Procedures

For purposes of soundness and accuracy of the information, a pre-screening questionnaire was utilized to include only eligible participants. The materials for data collection included stationery, questionnaires, data storage files, password-protected computer, hard drives and

flash drives. Quantitative data were collected using semi-structured questionnaires administered by trained research assistants. The MOH COVID-19 prevention guidelines were observed. The respondents were adolescent mothers in their puerperium period. The questionnaires were accorded serial numbers for easy traceability.

For qualitative data, five FGDs made up of six participants were carried out by the principal investigator while observing the COVID-19 ministry of health guidelines. The FGDs were one per administrative ward. The discussions were facilitated by the researcher who led the participants on the various topics regarding ANC utilization using the interview guide and conduct the session in the language of understanding. In the FGD, participants were given code names (for example, 1, 2, 3...) to ensure that their names are not recorded and they remain anonymous. The principal investigator made notes alongside the audio recording during the FGD. The participants were assured that their names and statement remained anonymous. Those who declined to be part of an open discussion in the FGD were excluded.

For the KII, the chiefs were reached from their offices while the nurses and the CHWs were interviewed from the health facilities. An interview tool consisting of open-ended questions was used to direct the interviews. With the respondents' consent, the information was recorded using an audio recorder. The PI took notes alongside the audio recording. The duration per interview was about 30 minutes and information was recorded for analysis. The participants were assured that their names and statement will remain anonymous. Those who declined to take part in the KII were excluded.

The audio recording of the FGD and KII was done using a password-protected voice recorder which can only be accessed by the PI. The recordings were transferred by the PI to the PI's personal computer for transcription, coding, categorization, conceptualization and abstraction utilizing the grounded theory.

3.9. Data quality assurance and analysis

a) Data cleaning: This was done during collection, data entry and analysis. Data collection sheets and questionnaires were checked for completeness and errors at the end of each week during data collection.

b) Data entry: Data was checked for completeness and free of error before entry into a Microsoft Excel 2017 spreadsheet, thereafter it was exported to the Statistical Package for Social Sciences version 23.0 for analysis. The qualitative data was collected via audio recording using a tape recorder.

c) Data protection and security: Paper records and audio recordings were kept under lock and key and not accessible to anyone other than the PI. This computer was password protected with up-to-date Kaspersky antivirus, internet firewall protection and a backup. The audio records were erased once transcription was completed and the study was ready for publication.

d) Sharing: Data was encrypted when sharing through the internet. Participant identifiers were omitted.

e) Quality assurance

The research assistants were trained using the questionnaires outside the study period on antenatal care utilization, inclusion and exclusion criteria of the study participants and ensure that they are clarified in the collection tool. The audio recording had a computer-protected backup and in deriving the transcription, coding, categorization, conceptualization and abstraction utilizing the grounded theory. Two independent research assistants familiar with qualitative research methods reviewed the data independently and where there was no congruence review was repeatedly made with the engagement of the PI.

f) Statistical Data Analysis

The quantitative data were analyzed by SPSS version 26 while the qualitative data was analyzed by NVivo version 12.4 software. Demographic characteristics were analyzed and presented as frequencies and percentages for categorical variables, while the continuous data was presented as means with standard deviation or medians with interquartile range. Pearson Chi-square tests and Fisher's exact tests were used to determine the associations between socio-demographic factors, accessibility and transport factors and health system factors with the utilization of ANC among adolescent mothers. Statistical significance was set at a p-value of less than 0.05.

According to grounded theory⁵⁸, qualitative data analysis was done alongside data collection to allow theoretical sampling. Data coding, comparing and categorization were undertaken until the saturation point was reached. Results were expressed as a substantive theory. The resulting themes were entered into MS Word to provide a meaningful reading of the content according to Dawson⁵⁹ et al., 1993. The COREQ checklist for qualitative study was used to ensure every area is covered.

3.10. Ethical Considerations

The study was submitted to the Kenyatta National Hospital/ University of Nairobi Ethics Review Committee (KNH/UON ERC) for ethical approval before commencing the recruitment. Permission was sought from the University of Nairobi Department of Obstetrics & Gynecology, local health facilities' administration and the local community leaders before the commencement of the study. Participants consented and voluntarily signed a consent form in a language they best comprehend. For the study participants below 18 years, once they assent, their parent/ legal guardian appended their signature as per the WHO guidelines.⁶⁰ Informed consent was sought from emancipated and mature minors as per the WHO

guidelines⁶⁰ Informed consent for audio recording was sought from the key informants and the FGD participants.

Confidentiality was maintained because no names were disclosed in the research report. Upon completion of the interviews, participants were provided with a pamphlet with information on the timing, schedule and importance of ANC attendance to help in their future pregnancies.

CHAPTER FOUR

4.0. RESULTS

A total of 137 adolescent mothers who fit the eligibility criteria were interviewed from 20th July 2021 to 25th September 2021 in Kajiado West Sub County, their demographic and reproductive health characteristics are presented in Table 6. Their median age was 16.0 (IQR 14.0-18.0) years, where the minimum age was 12.0 years and the maximum age was 19.0 years. The majority of the participants were aged between 15 to 19 years at 102 (74.5%), and those who attended school were 100 (73.0%) with 79 (57.7%) of them having attained primary level education. Further, 79 (57.7%) of the participants were single, 133 (97.1%) resided in rural areas and 120 (87.6%) were unemployed. The next of kin of most participants were unemployed, 77 (56.2%). The pregnancy was unplanned among 71% of the adolescent mothers, while 56% did not know about contraceptives. Half of the participants were the sole decision-makers on ANC attendance while for the rest, the decision was made majorly by their mothers. The majority had undergone FGM (90%), delivered via SVD (88%) and had no complications (96%).

Table 4: Socio-demographic, reproductive, and cultural characteristics of the adolescent mothers

Age (years)	Frequency (n=137)	Percent
10 – 14	35	25.5
15 – 19	102	74.5
Attended school		
Yes	100	73.0
No	37	27.0
Education level		

Primary	79	57.7
Secondary	21	15.3
None	37	27.0
Parity		
P1+0	110	80.3
P1+1	6	4.4
P2+0	21	15.3
Marital status		
Single (never married)	79	57.7
Married	58	42.3
Residence		
Urban	4	2.9
Rural	133	97.1
Occupation		
Unemployed	120	87.6
Businessperson	2	1.5
Casual laborer	3	2.2
Student	12	8.8
Occupation (next of kin)		
Employed	2	1.5
Unemployed	77	56.2
Businessperson	13	9.5
Casual laborer	33	24.1
Farmer	4	2.9
Pastoralist	8	5.8
Planned pregnancy		

Yes	40	29.2
No	97	70.8
Contraceptives knowledge		
Yes	60	43.8
No	77	56.2
FGM/C		
Yes	123	89.8
No	14	10.2

Decision for ANC

Self	68	49.6
Other	69	50.4

If other

Friends	4	5.8
Grandmother	4	5.8
Guardian	1	1.4
Mother	39	56.5
Mother-in-law	3	4.3
Nurse	2	2.9
Parents	4	5.8
Sister	1	1.4
Spouse	11	15.9

Mode of delivery	Frequency (n=137)	Percent
Vaginal delivery	120	87.6
Elective CS	8	5.8
Emergency CS	9	6.6
Outcome of delivery		
Good	132	96.4
Bad	5	3.6

Objective 1. To investigate the patterns of ANC services utilization among adolescent mothers at Kajiado West Sub County.

The study findings showed that 75/137 (55%) of the adolescent mothers had ≥ 4 visits, while 58/137 (42%) had 2-3 visits and only 4/137 (2.9%) had one visit.

Further, only 10/137 (7%) had 1st ANC contact within the 1st trimester. The majority of the participants, 87/37 (64%), were within the 2nd trimester and 40(29%) within the 3rd trimester.

Table 5: Pattern of ANC services utilization

Gestation at 1st visit	Frequency (n=137)	Percent
1st Trim (0-13wks)	10	7.3
2nd Trim (14-26wks)	87	63.5
3rd Trim (27-40wks)	40	29.2
Number of ANC visits		
1	4	2.9
2 – 3	58	42.3
≥ 4	75	54.7

Range of services received during ANC Clinic

All the services rendered according to the FANC model were generally well received each at above 95% as tabulated in Table 6 below. These include; history and examination, IFAS supplementation, screening and tests, tetanus toxoid administration, health education, advice and counselling as well as management of common physiological changes of pregnancy and pregnancy-related complications.

Table 6: Range of services received during ANC Clinic

	Frequency (%)
History and examination	136 (99.3)
IFAS Supplementation	134 (97.8)
Screening and tests	132 (96.4)
Tetanus toxoid administration	130 (94.9)
Health education, advice and counseling	131 (95.6)
Management of common physiological changes of pregnancy and pregnancy-related complications.	135 (98.5)

Objective 2. To identify determinants of utilization of ANC services among adolescent mothers in Kajiado West Sub County.

There was an association between owning a smartphone ($p=0.014$) and the number of ANC visits made as indicated in Table 7 below. There was no correlation between adolescents' age, marital status, education status, occupation, residence, parity, next of kin occupation, ANC attendance decision maker and undergoing FGM/C to the number of ANC visits made.

Table 7: Association between socio-demographic, cultural and reproductive characteristics an number of ANC contacts

	N	<4	≥4	p-value
Age, <i>n</i> (%)				
10 – 14	35	18 (29.0)	17 (22.7)	0.395
15 – 19	102	44 (71.0)	57 (77.3)	
Attended school, <i>n</i> (%)				
Yes	100	41 (66.1)	59 (78.7)	0.100
No	37	21 (33.9)	16 (21.3)	
Marital status, <i>n</i> (%)				
Single (never married)	79	39 (62.9)	40 (53.3)	0.259
Married	58	23 (37.1)	35 (46.7)	
Occupation, <i>n</i> (%)				
Unemployed	120	53 (85.5)	67 (89.3)	0.796
Business	2	1 (1.6)	1 (1.3)	
Casual	3	1 (1.6)	2 (2.7)	
Student	12	7 (11.3)	5 (6.7)	
Owning a smartphone, <i>n</i> (%)				
Yes	106	42 (67.7)	64 (85.3)	0.014
No	31	20 (32.3)	11 (14.7)	
Residence, <i>n</i> (%)				
Urban	4	2 (3.2)	2 (2.7)	1.000

Rural	133	60 (96.8)	73 (97.3)	
Parity, <i>n</i> (%)				
P1+0	110	49 (79.0)	61 (81.3)	0.610
P1+1	6	4 (6.5)	2 (2.7)	
P2+0	21	9 (14.5)	12 (16.0)	
Next of kin occupation, <i>n</i> (%)				
Employed	2	0 (0.0)	2 (2.7)	0.517
Unemployed	77	33 (53.2)	44 (58.7)	
Business	13	7 (11.3)	6 (8.0)	
Casual laborer	33	14 (22.6)	19 (25.3)	
Farmer	4	3 (4.8)	1 (1.3)	
Pastoralist	8	5 (8.1)	3 (4.0)	
ANC attendance decision-maker, <i>n</i> (%)				
Self	68	28 (45.2)	40 (53.3)	0.341
Other	69	34 (54.8)	35 (46.7)	
Undergone FGM/C, <i>n</i> (%)				
Yes	123	56 (90.3)	67 (89.3)	0.849
No	14	6 (9.7)	8 (10.7)	

Association between education status and owning a smartphone

Those that attended school had better access to smartphones compared (81.1% vs. 18.9%) to those who did not attend school. There is an association between school attendance and owning a smartphone with a P value of <0.001 as shown in Table 8 below.

Table 8: Association between education status and owning a smartphone

	n	Own	Don't own	p-value
Attended school, n (%)				
Yes	100	86 (81.1)	14 (45.2)	<0.001
No	37	20 (18.9)	17 (54.8)	

Association between determinants of ANC utilization to 1st ANC visit

There was a statistically significant association between the fear of disclosing pregnancy (**P value of 0.018**) to 1st ANC visit as seen in table 8 below. Other determinants investigated namely; unplanned pregnancy, cultural practices, distance to the health facility, unavailability of ANC services, the attitude of HCPs and limited knowledge of the importance of ANC had no association with 1st ANC visit.

Table 9: Association between determinants of ANC utilization to 1st ANC visit

Factor	N	≤12	>12	p-value
Unplanned pregnancy, n (%)				
Yes	61	2 (20.0)	59 (46.5)	0.105
No	76	8 (80.0)	68 (53.5)	
Cultural, n (%)				
Yes	23	2 (20.0)	21 (16.5)	0.675
No	114	8 (80.0)	106 (83.5)	
Distance to HF, n (%)				

Yes	92	4 (40.0)	88 (69.3)	0.080
No	45	6 (60.0)	39 (30.7)	
Fear of disclosing pregnancy, <i>n</i> (%)				
Yes	65	1 (10.0)	65 (51.2)	0.018
No	71	9 (90.0)	62 (48.8)	
Limited knowledge (ANC), <i>n</i> (%)				
Yes	39	2 (20.0)	37 (29.1)	0.724
No	98	8 (80.0)	90 (70.9)	
Unavailability of ANC service, <i>n</i> (%)				
Yes	2	0 (0.0)	2 (1.6)	1.000
No	133	10 (100.0)	125 (98.4)	
The attitude of HCP, <i>n</i> (%)				
Yes	1	0 (0.0)	1 (0.8)	1.000
No	134	10 (10.0)	126 (99.2)	

Association between determinants of ANC utilization and number of ANC visits.

The study findings revealed that fear of disclosing pregnancy was statistically associated with the number of ANC visits (**p=0.005**) as demonstrated in Table 9 below. However, other determinants investigated namely; unplanned pregnancy, cultural practices, distance to the health facility, unavailability of ANC services, attitude of HCPs and limited knowledge of ANC importance had no association with the number of ANC visits.

Table 10: Association between determinants of ANC utilization and number of ANC visits

Factor	N	<4	≥4	p-value
Planned pregnancy, <i>n</i> (%)				
Yes	61	30 (48.8)	46(61.3)	0.129
No	61	31 (51.6)	29(38.7)	
Cultural, <i>n</i> (%)				
Yes	23	14 (22.6)	9 (12.0)	0.099
No	114	48 (77.4)	66 (88.0)	
Distance to/from HF, <i>n</i> (%)				
Yes	92	44 (71.0)	48 (64.0)	0.387
No	45	18 (29.0)	27 (36.0)	
Fear of disclosing pregnancy, <i>n</i> (%)				
Yes	66	38 (61.3)	28 (37.3)	0.005
No	71	24 (38.7)	47 (62.7)	
Limited knowledge (ANC), <i>n</i> (%)				
Yes	39	22 (35.5)	17 (22.7)	0.098
No	98	40 (64.5)	58 (77.3)	
Unavailability of ANC service, <i>n</i> (%)				
Yes	2	2 (3.2)	0 (0.0)	0.117
No	133	60 (96.8)	75 (100.0)	

The attitude of HCP, n

(%)

Yes	1	1 (1.6)	0 (0.0)	0.270
No	134	61 (98.4)	75 (100.0)	

3. To assess knowledge and perceptions of adolescent mothers and community/ opinion leaders regarding ANC utilization among adolescent mothers in Kajiado West Sub-county.

The following themes were identified from the qualitative studies

Theme 1: Importance of ANC utilization

The importance of ANC is to check the status of the unborn baby and monitor the health of the pregnant mother. Additionally, TT Vaccination for the pregnant mother is administered, laboratory tests including HIV status are done, ANC provides the opportunity for the pregnant mother to be checked in case of other sickness and subsequently the mother receives medication if any ailment is found; last but not least as the pregnant mother attends the ANC an atmosphere of hope is created as she waits for delivery.

“R6: The importance of the clinic is to check if the child you are carrying is okay and also go for the TT vaccination for the pregnant mother” FGD

R4: I will be able to get medicines and also I get the hope to wait to delivery after the assurance that the baby is fine” FGD Mosiro

R3: It was good because I was given some medication, TT vaccination and also I was sent to the Lab for blood tests including an HIV test” FGD Iloodokilani

“The adolescents are young and have never given birth before, therefore due to complications during delivery they need to be in the good hands of the medical professionals” KII Chief Magadi ward

“These adolescent girls, their sexual reproductive organs are not that mature, so we need to be more conscious so that we prevent some complications that accompany teenage pregnancies” KII Nurse Ewuaso ward

Theme 2: Timing of 1st ANC contact

Most of the participants noted that the timing should be immediately after a mother realizes that she is pregnant she should start her ANC visits.

The majority admitted to not starting ANC within the 1st trimester.

“R3: Immediately you realize that you are pregnant” FGD Iloodokilani

“R4: I did not start early for fear of using a motorbike when the pregnancy is small” FGD Keekonyokie

“Immediately she realizes that she is pregnant” KII Nurse Mosiro

“At two months after the mother realizes that she is pregnant, she should visit the clinic for follow-up” KII Chief Magadi

Theme 3: Number of ANC contacts

The majority of the participants reported that a pregnant mother should have a minimum of four (4) visits to the ANC clinic before delivery.

R3: A mother should at least attend ANC 4 times” FGD Ewuaso ward

“4 visits but if a mother has a troubled pregnancy we encourage her to attend more than the 4 visits” KII Nurse Mosiro ward

Theme 4: Determinants of ANC utilization

The majority of the participants insisted that the distance to the health facilities was one of the biggest challenges to ANC utilization. The pregnant mothers, therefore, are forced to use

available means of transport to facilitate their movement to the clinic and at times they lack bus fares to the facilities. When it is raining it is hard to access the health facilities due to the poor road network which is also difficult for motorbike rides as one of the most commonly used means of transport. Other barriers reported were; cultural beliefs and practices, lack of parental support, unavailability of medicines at the health facility as well as shortage of health care providers at the facility. Some adolescents feared and were hiding their pregnancy and in so doing did not attend ANC as required.

“R2: Distance, mostly we use the motorbikes to the facility and at times there is no money for the motorbike, so many of us will not go since the distance is too far” FGD Mosiro ward

R6: At times there was a shortage of health care providers” FGD Iloodokilani ward

R2: I decided to hide the pregnancy and my parents knew I was pregnant at seven months” FGD Ewuaso ward

R4: At times there was no medicine at the hospital” FGD Mosiro

“One of the challenges is that the adolescent feel ashamed and stigmatized because they have gotten pregnant at a very young age and fear that if they go to the ANC the health care providers will have a negative attitude towards them” KII CHV Magadi ward

“The Maasai culture especially Kajiado West the community was resistance to hospital visits but currently they are accepting to seek medical attention” KII CHV Ewuaso ward

“Distance is a big issue because in some areas the pregnant mothers cover a distance of about 40 kilometers so they take like two days to reach the health facility so distance is a very big challenge and also the road network is very poor even for motorbikes” KII Chief Keekonyokie ward

“Although we have a youth-friendly facility, on the day the adolescents are supposed to come for services they don’t turn up because of lack of support and transport” KII Nurse Iloodokilani ward

Theme 5: Factors that would promote the likelihood to attend ANC in future pregnancies

The participants interviewed suggested several factors that would promote the likelihood to attend ANC in future pregnancies. To curb the issue of long distances to the health facilities the participants suggested that healthcare facilities should be built near the community for easy access for pregnant mothers. Others felt that there should be a way to facilitate them to get to the health facility and to improve the road network.

The health providers at the facility should conduct counselling for the adolescent mothers on guiding them on when to visit and the subsequent follow-up visits. The TBAs, CHVs and HCPs should create awareness of the importance of the ANC services as well as encourage hospital deliveries. The adolescent mothers had requested to have a separate room for young mothers from the older mothers.

“R2: The distance is long, the health care facility is far from our homes so like sometimes the pregnancy is ‘heavy’ and therefore I am not able to walk the long distance so I request that you build a health facility near or within the community” FGD

R1: the health care providers should provide counseling to the adolescent mothers” FGD

R4: the young mothers should have a separate section or room where they are seen separately from the older women because of shame” FGD Iloodokilani“

I think we can have healthy talks with the chiefs, TBAs, and the mothers and parents at large and sensitize them on the importance of attending the ANC services and like now in Ewuaso we have a youth-friendly center so that we strengthen our youth-friendly services” KII Nurse Ewuaso ward

“Use of the CHVs who are part of the community where these adolescents are can act as a link to sensitize the adolescents on the importance of ANC, identify them and refer them to the facility for ANC” KII CHV, Keeekonyokie ward

“Change of attitude of the health workers towards the adolescent mothers” KII Nurse

Magadi ward

CHAPTER FIVE

5.1. DISCUSSION

The research findings showed that all the study participants had at least one ANC visit with 55% of the participants having ≥ 4 visits and only 10% having started ANC within the 1st trimester.

From the quantitative study findings, owning a smartphone, which was used to determine access to mass media, was found to be statistically significant to the utilization of ANC services. Although owning a smartphone was associated with education status, there was no association between education status and utilization of ANC services. Further, the fear of pregnancy disclosure was found to be statistically significant to the utilization of ANC services. From the qualitative data analysis, barriers to ANC utilization were as follows; distance to the health facility, fear of disclosure, cultural hindrances, lack of family support and unavailability of medicines at the health facility as well as a shortage of health care providers at the facility.

5.1.1. Patterns of ANC utilization

For purposes of this study, similar to a study by Mulinge et al²⁰ on utilization of ANC among adolescent mothers in Kilifi County, good utilization was defined as 1st contact at ≤ 12 weeks and ≥ 4 visits. Sub-optimal utilization was defined as starting ANC clinic at >12 weeks and having <4 ANC contacts.

Since all the participants had at least one ANC visit, this was in tandem with the KDHS 2014 which showed that 97% of women had at least one ANC visit. However, this was better than the Ugandan National Survey which indicated that only 62% of pregnant adolescents attended at least one ANC visit.

5.1.2. Number of ANC visits

Findings in this study demonstrated that 55% of the adolescent mothers had ≥ 4 visits, similar to KDHS 2014 which is at 58% and a study by Worku et al in South Africa at 49%. Further, a

study in rural Tanzania on ANC utilization among pregnant adolescents showed that only 41% of the participants made ≥ 4 visits.⁶¹ Qualitative studies indicated that the majority of the mothers and key opinion leaders knew that a pregnant mother should make at least 4 ANC visits. One interviewee said, “*4 visits but if a mother has a troubled pregnancy we encourage her to attend more than the 4 visits.*”

5.1.3. Timing of 1st ANC visit

Further, only 10(7%) of the adolescent mothers had 1st ANC contact at ≤ 12 weeks. This corroborates a study in Nigeria that showed that adolescents generally initiated ANC at or later than four months and in Tanzania that showed that only 12% of pregnant adolescents initiated ANC within the first trimester.⁴⁶ In Nigeria, a study by Ebeigbe et al⁶² found that pregnant adolescents are more likely to start ANC late and to also deliver via Caesarean section. Comparable to our study findings, a study in Kibera by Mbai et al⁵³ on ANC use among adolescent mothers showed that only 19% of adolescent mothers knew they should start ANC within the 1st trimester.

Some girls cited they were afraid to travel using lorries and motorbikes on bad roads and hence risk losing the pregnancy at the early stages. One stated, “*I did not start early for fear of using a motorbike when the pregnancy is small.*” Since adolescents are more prone to complications such as unsafe abortions and preeclampsia, it is important to have timely initiation of ANC to allow timely interventions.

5.1.4. Range of services

The recommended range of services as per the FANC guidelines namely; history and examination, IFAS Supplementation, screening and tests, tetanus toxoid administration, health education, advice and counselling on management of common physiological changes of pregnancy and treatment of pregnancy and obstetrics related complications were well received by the participants at above 90%. The findings contrast with those found in Ghana

by Ziblin et al⁶³ among pregnant adolescents that showed average utilization of the various ANC services. The reason for the average utilization of the ANC services in that study was that participants had little knowledge of ANC importance whereas, in our setting, there was a good knowledge of ANC importance.

Nutrition advice and supplements among the adolescent mothers were paramount because the Maasai culture discourages pregnant women to eat certain foods.⁵² Karanja et al did a study in Magadi ward which indicated that MCH services uptake was sub-optimal since the community view pregnancy as a natural process therefore no need to intervene, nutritional interventions included.⁴ In Ewuaso ward, they have a program [*Anzilisha Mama Initiative*] whose aim is to curb nutrition-related complications from the start of pregnancy until the child turns 2 years old. This program has been rolled out in various counties in Kenya to enhance MNCH and nutrition services.

5.1.5. Determinants of ANC utilization

Among the socio-demographic, cultural and reproductive characteristics evaluated namely adolescents' age, marital status, education status, occupation, residence, parity, next of kin's occupation, ANC attendance decision maker, undergoing FGM/C and owning a smartphone, the latter had a statistically significant association to the number of ANC visits made. This could be because those who owned phones were literate, exposed and able to understand clinic return dates. This was similar to a study by Fatema et al⁶⁴ in South Asia which indicated that access to mass media was associated with utilization of MHS. Further, a study in Ethiopia reported that mass media access was associated with better antenatal care utilization.¹⁷

5.1.6. Barriers to ANC utilization

Barriers to ANC utilization identified from the qualitative study findings are as follows; unplanned pregnancy, cultural and religious barriers, fear of disclosing pregnancy, distance to

the health facility, lack of transport means, limited knowledge, unavailability of ANC services and shortage of, HCPs.

5.1.6a. Fear of disclosure

It was revealed from both quantitative and qualitative studies that some pregnant adolescents reported late due to fear of disclosure. As stated by one FGD respondent, *“I decided to hide the pregnancy and my parents knew I was pregnant at seven months.”* These findings corroborate other studies done on LMICs among pregnant adolescents namely Rwanda and Tanzania which reported that adolescent mothers initiated ANC later than 1st trimester due to fear of disclosure.^{48, 61}

One of the key informants said, *“They hide the pregnancy, a 14-year-old pregnant girl came for ANC and on examination, the doctor directed her to the maternity ward because she was about to delivery yet she did not know.”*

Additionally, it was revealed that the fear of disclosure was sometimes self-imposed which compares to findings in a study by Mweteni et al.⁶¹ One of the key informants said, *“I would say it is not harder for them to access ANC but the only challenge would be out of their feeling or shame, fear or stigma for their early pregnancy”*

5.1.6b. Inaccessibility and coverage barrier

From the qualitative studies, distance to the health facility was the main barrier to the utilization of ANC services among the participants. One of the participants said, *“Distance is a major barrier, mostly we use the motorbikes to the facility and at times there is no money for the motorbike, so many of us will not go since the distance is too far.”* Karanja et al⁴ study among nomadic pastoralists in Magadi cited distance to health facilities and lack of transport as major barriers to hospital deliveries. Similar findings were also found in a study in Ghana ⁶⁵ and in support of the three delay model second delay in seeking healthcare.¹⁹ To counter the challenge

of accessibility and coverage, the health facilities have resolved to provide ANC and child immunization clinics on the market days.

5.1.6c. Cultural barriers

The study findings showed cultural beliefs and practices hindered some participants from attending ANC. *“The Maasai culture especially in Kajiado West the community was resistance to hospital visits but currently they are accepting to seek medical attention,”* said one CHV. This echoes findings from other studies done in Kajiado and Narok counties which largely comprise the Maasai.^{24, 33}

Further, cultural practices such as early marriages were seen to contribute to adolescent pregnancy and impede optimal ANC utilization. One of the nurses said, *“The issue of culture and early marriages in that if the area chief can take the issue of early marriages seriously and discourage it, it would help reduce the rate of early pregnancies and lack of ANC use.”*

Some opted to be seen by the TBAs but the health facilities through CHVs work closely to ensure the pregnant adolescents are brought to ANC. In another study by Gross et al,²³ TBAs were also found to be effective promoters of ANC utilization similar to this study's findings

5.1.6d. Perceived attitude towards HCPs

It was reported that the HCPs were friendly to pregnant adolescents and participants were not discriminated with some finding hope when they attend ANC. One FGD respondent said, *“As a young mother I was not mistreated at the facility.”* Some health centres in Kajiado West have youth-friendly clinics and specific days to attend to the youth SRH services. This corroborates findings from a qualitative study in Zambia by Bwalya et al⁴⁷ that cited cases of friendly HCPs. Similarly, Mbai et al⁵³ in Kibera revealed that 87% of the HCPs are friendly to pregnant adolescents. Study findings by Ziblin et al⁶³ in Ghana reported that 93% of the adolescent mothers reported HCPs to be friendly.

5.1.6e. Shortage of healthcare personnel and medical supplies

Like in other studies, one in Kajado West and another one in Nakuru^{4,66} lack of medicine and shortage of health care personnel were cited as barriers to ANC utilization among pregnant adolescents. From the FGD, a participant said, “*At times there was a shortage of the health care providers*” Another one said, “*At times there was no medicine at the hospital.*”

This corroborates findings by Hackett et al⁴⁸ among adolescent mothers in Ghana and Tanzania which stated that medical stock outs and staff shortages were a hindrance to ANC utilization.

5.1.6f. Knowledge of the importance of ANC utilization

The adolescent mothers and the key informants considered the services provided very important and motivated them to attend ANC. One CHV stated, “*It is important because the mother will get the TT vaccination and also have medication, examination to check how the child is in the womb, will be given medication to increase her blood and is educated on what nutritional foods to eat while pregnant. They are advised to sleep under a treated net so as not to get malaria as well as vaccination of the baby after delivery.*”

However, some reported having attended ANC as routine or were directed by parents to attend. One said, “*The parents encouraged me to attend the ANC.*” The findings are similar to a study by Mbai et al in Kibera which revealed that adolescents were mostly pushed by their mothers to attend ANC.

It was reported that adolescent mothers are more prone to complications as their systems are not yet mature to carry a pregnancy to term therefore the need to attend ANC. One of the nurses stated, “*Their sexual reproductive organs are not that mature, so we need to be more conscious so that we prevent complications that accompany teenage pregnancies.*”

5.2. Strengths and limitations of the study

The strength of this study is that it utilized mixed methods study design therefore we were able to obtain diverse data on the study topic. Complementing FGD and KII ensured that we got opinions from both the service providers and the clients.

Since participants in this study were interviewed within six weeks of their post-natal period, there were cases of recall bias on their ANC history. Their ANC booklets were used in the extraction of some data and confirming others already stated by them. Some participants had a language barrier in both national languages. This was countered by ensuring some of the interviewers spoke the local dialect. While using Zoom meetings, there were network and connectivity constraints sometimes necessitating rescheduling of the meetings.

5.3. CONCLUSION

ANC utilization among pregnant adolescents in Kajiado West is sub-optimal.

Owning a smartphone was found to be statistically associated with the utilization of ANC services. Fear of disclosure of pregnancy plausibly due to stigma related to unplanned pregnancy was associated with sub-optimal utilization of ANC services. The qualitative findings have clearly shown the barriers causing sub-optimal ANC utilization specifically; fear of disclosure, long distance to the health facility, lack of transport means, poor road coverage, cultural barriers, medicine stock-outs, shortage of HCPs and lack of adequate knowledge on the importance of ANC services.

5.4. RECOMMENDATIONS

This study recommends the implementation of community-based strategies through CHV and TBAs empowerment, utilizing effective communication strategies using media and stigma reduction to improve ANC utilization among adolescent mothers. There is a need for advocacy and multi-level interventions in the ASALs regions to not only prevent unplanned adolescent

pregnancy but also to ensure that those who are pregnant have access to ANC services. Studies on ANC utilization among women in the reproductive age group in Kajiado West are recommended for further research.

REFERENCES

1. Chandra-Mouli V, Camacho AV, Michaud PA. WHO Guidelines on Preventing Early Pregnancy and Poor Reproductive Outcomes Among Adolescents in Developing Countries. *J Adolesc Health* [Internet]. 2013 [cited 2020 Jun 21];52:517–22. Available from: <http://www.sciencedirect.com/science/article/pii/S1054139X13001213>
2. Adolescent pregnancy [Internet]. [cited 2020 May 7]. Available from: <https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>
3. KDHS 2014 - Google Search [Internet]. [cited 2020 May 3]. Available from: https://www.google.com/search?ei=9gKpXujbAq6bjLsP_LqGkAE&q=KDHS+2018&oq=KDHS+2018&gs_lcp=CgZwc3ktYWIQDFAAWABg4ipoAHAAeACAAQCIAQCSAQCYAQCqAQdnd3Mtd2l6&sclient=psy-ab&ved=0ahUKEwjorrvL5ozpAhWuDWMBHXydARIQ4dUDCAw
4. Karanja S, Gichuki R, Igunza P, Muhula S, Ofware P, Lesiamon J, et al. Factors influencing deliveries at health facilities in a rural Maasai Community in Magadi sub-County, Kenya. *BMC Pregnancy Childbirth* [Internet]. 2018 [cited 2020 Apr 29];18:5. Available from: <https://doi.org/10.1186/s12884-017-1632-x>
5. KHIS Aggregate [Internet]. [cited 2021 Feb 4]. Available from: <https://hiskenya.org/dhis-web-reporting/showDataSetReportForm.action>
6. Maema C. The teen pregnancy conundrum in Kenya [Internet]. *CGTN Africa*. [cited 2020 Nov 9]. Available from: <https://africa.cgtn.com/2020/07/02/unravelling-the-teen-pregnancy-conundrum-in-kenya/>
7. Nairobi is county with the highest number of teenage pregnancies [Internet]. *Nairobi News*. [cited 2020 Nov 8]. Available from: <https://nairobinews.nation.co.ke/life/nairobi-is-county-with-the-highest-number-of-teenage-pregnancies>

8. Rise in Teenage Pregnancies in Kenya Linked to COVID-19 Lockdown [Internet]. Global Citizen. [cited 2020 Nov 9]. Available from: <https://www.globalcitizen.org/en/content/rise-in-teenage-pregnancies-during-kenya-lockdown/>
9. Table 1. Focused antenatal care (ANC): The four-visit ANC model... [Internet]. ResearchGate. [cited 2021 Nov 8]. Available from: https://www.researchgate.net/figure/Focused-antenatal-care-ANC-The-four-visit-ANC-model-outlined-in-WHO-clinical_fig5_262539886
10. WHO | Causes of death among adolescents [Internet]. WHO. World Health Organization; [cited 2020 May 26]. Available from: http://www.who.int/maternal_child_adolescent/data/causes-death-adolescents/en/
11. Global Strategy | Every Woman Every Child [Internet]. [cited 2020 May 8]. Available from: <https://www.everywomaneverychild.org/global-strategy/>
12. Fulpagare PH, Saraswat A, Dinachandra K, Surani N, Parhi RN, Bhattacharjee S, et al. Antenatal Care Service Utilization Among Adolescent Pregnant Women—Evidence From Swabhimaan Programme in India. *Front Public Health* [Internet]. 2019 [cited 2020 Apr 28];7. Available from: <https://www.frontiersin.org/articles/10.3389/fpubh.2019.00369/full>
13. Shirin F, Khanam Z, Ara S, Panna M. Adolescent Pregnancy: Risk Factors, Outcome and Prevention. *Chattagram Maa-O-Shishu Hosp Med Coll J*. 2016;15:53.
14. Mayor S. Pregnancy and childbirth are leading causes of death in teenage girls in developing countries. *BMJ* [Internet]. 2004 [cited 2020 May 26];328:1152. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC411126/>
15. World Health Organization, editor. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: World Health Organization; 2016. 152 p.

16. SDG Indicators — SDG Indicators [Internet]. [cited 2020 May 3]. Available from: <https://unstats.un.org/sdgs/metadata/>
17. Tekelab T, Chojenta C, Smith R, Loxton D. Factors affecting utilization of antenatal care in Ethiopia: A systematic review and meta-analysis. Lassi ZS, editor. PLOS ONE [Internet]. 2019 [cited 2020 Apr 28];14:e0214848. Available from: <http://dx.plos.org/10.1371/journal.pone.0214848>
18. Barnes-Josiah D, Myntti C, Augustin A. The “three delays” as a framework for examining maternal mortality in Haiti. *Soc Sci Med* 1982. 1998;46:981–93.
19. Thaddeus S, Maine D. Too far to walk: Maternal mortality in context. *Soc Sci Med* [Internet]. 1994 [cited 2020 May 24];38:1091–110. Available from: <https://linkinghub.elsevier.com/retrieve/pii/0277953694902267>
20. Mulinge N. Factors Influencing Utilization of Antenatal Care Services Among Teenage Mothers in Malindi Sub-County Kenya-A Cross Sectional Study. *Sci J Public Health*. 2017;5:61.
21. Nima A.H Vol32 Issue S1.pdf [Internet]. [cited 2020 Dec 15]. Available from: <https://jogeca.or.ke/folder/journal/articles/Nima%20A.H%20Vol32%20Issue%20S1.pdf>
22. Gwako GN, Were F, Obimbo MM, Kinuthia J, Gachuno OW, Gichangi PB. Association between utilization and quality of antenatal care with stillbirths in four tertiary hospitals in a low-income urban setting. *Acta Obstet Gynecol Scand* [Internet]. [cited 2021 Jan 26];n/a. Available from: <https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1111/aogs.13956>
23. Gross K, Alba S, Glass TR, Schellenberg JA, Obrist B. Timing of antenatal care for adolescent and adult pregnant women in south-eastern Tanzania. *BMC Pregnancy Childbirth* [Internet]. 2012 [cited 2020 May 12];12:16. Available from: <https://doi.org/10.1186/1471-2393-12-16>

24. Ewunetie AA, Munea AM, Meselu BT, Simeneh MM, Meteku BT. DELAY on first antenatal care visit and its associated factors among pregnant women in public health facilities of Debre Markos town, North West Ethiopia. *BMC Pregnancy Childbirth*. 2018;18:173.
25. Shahabuddin ASM, Delvaux T, Abouchadi S, Sarker M, Brouwere VD. Utilization of maternal health services among adolescent women in Bangladesh: A scoping review of the literature. *Trop Med Int Health* [Internet]. 2015 [cited 2020 Jun 19];20:822–9. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/tmi.12503>
26. Kajiado-County-Adolescents-and-Youth-Survey-NAYS.pdf [Internet]. [cited 2020 Jun 3]. Available from: <https://ncpd.go.ke/wp-content/uploads/2020/05/Kajiado-County-Adolescents-and-Youth-Survey-NAYS.pdf>
27. National-guidelines-for-provision-of-youth-friendly-services.pdf [Internet]. [cited 2020 Jun 7]. Available from: <http://csakenya.org/wp-content/uploads/2016/10/National-guidelines-for-provision-of-youth-friendly-services.pdf>
28. Allan AI. A community survey to evaluate the level of utilization of antenatal and delivery services in Teso district, Kenya. :60.
29. Taffa N, Omollo D, Matthews Z. Teenage pregnancy experiences in rural Kenya. *Int J Adolesc Med Health*. 2003;15:331–40.
30. Rurangirwa AA, Mogren I, Nyirazinyoye L, Ntaganira J, Krantz G. Determinants of poor utilization of antenatal care services among recently delivered women in Rwanda; a population based study. *BMC Pregnancy Childbirth* [Internet]. 2017 [cited 2020 Dec 15];17:142. Available from: <https://doi.org/10.1186/s12884-017-1328-2>
31. Yakubu I, Salisu WJ. Determinants of adolescent pregnancy in sub-Saharan Africa: a systematic review. *Reprod Health*. 2018;15:15.

32. Banke-Thomas A, Banke-Thomas O, Kivuvani M, Ameh C. Maternal Health Services Utilisation by Kenyan Adolescent Mothers: Analysis of the Demographic Health Survey 2014. *Sex Reprod Healthc*. 2017;12.
33. Kajiado.pdf [Internet]. [cited 2020 May 24]. Available from: <http://www.kpda.or.ke/documents/CIDP/Kajiado.pdf>
34. Leah NM. ACCESS TO SEXUAL AND REPRODUCTIVE HEALTH CARE SERVICES BY ADOLESCENT GIRLS AGED 15-19 YEARS AMONG PASTORAL COMMUNITIES IN NAROK COUNTY, KENYA. :75.
35. Godia PM, Olenja JM, Lavussa JA, Quinney D, Hofman JJ, van den Broek N. Sexual reproductive health service provision to young people in Kenya; health service providers' experiences. *BMC Health Serv Res* [Internet]. 2013 [cited 2020 May 3];13:476. Available from: <https://doi.org/10.1186/1472-6963-13-476>
36. Final-NATIONAL-ADOLESCENT-SEXUAL-REPRODUCTIVE-HEALTH-POLICY.pdf [Internet]. [cited 2020 May 25]. Available from: <http://tciurbanhealth.org/wp-content/uploads/2018/05/Final-NATIONAL-ADOLESCENT-SEXUAL-REPRODUCTIVE-HEALTH-POLICY.pdf>
37. Admin. Moranism [Internet]. The Kenyan Legal scholar. 2019 [cited 2020 Nov 8]. Available from: <https://legalscholarsite.com/moranism/>
38. Panic as Maasai morans raid school for 'wives' [Internet]. Nation. [cited 2020 Nov 10]. Available from: <https://nation.africa/kenya/news/panic-as-masai-morans-raid-school-for-wives--789944>
39. Nyagetia AO. Challenges to unmarried adolescent motherhood: A case study of Masaba South subcounty, Kisii county, Kenya. [Internet] [Thesis]. University of Nairobi; 2015 [cited 2020 Apr 29]. Available from: <http://erepository.uonbi.ac.ke/handle/11295/93244>

40. Nduba J, Kamenderi MG. Reproductive health in nomadic communities: Challenges of culture and choice. :16.
41. Blum RW, Gates WH. *Girlhood, not motherhood preventing adolescent pregnancy*. New York: United Nations Fund for Population Activities (UNFPA); 2015.
42. Ja A, P AB, D AV. Determinants of Antenatal Healthcare Utilisation by Pregnant Women in Third Trimester in Peri-Urban Ghana. *J Trop Med* [Internet]. 2018 [cited 2020 May 9];2018:1673517–1673517. Available from:
<https://europepmc.org/article/PMC/5832169>
43. Maternal mortality [Internet]. UNICEF DATA. [cited 2020 May 27]. Available from:
<https://data.unicef.org/topic/maternal-health/maternal-mortality/>
44. Worku EB, Woldesenbet SA. Factors that Influence Teenage Antenatal Care Utilization in John Taolo Gaetsewe (JTG) District of Northern Cape Province, South Africa: Underscoring the Need for Tackling Social Determinants of Health. *Int J MCH AIDS* [Internet]. 2016 [cited 2020 Apr 28];5:134–45. Available from:
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5187645/>
45. Magadi MA, Madise NJ, Rodrigues RN. Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities. *Soc Sci Med* [Internet]. 2000 [cited 2020 May 12];51:551–61. Available from:
<http://www.sciencedirect.com/science/article/pii/S0277953699004955>
46. Mekonnen T, Dune T, Perz J. Maternal health service utilisation of adolescent women in sub-Saharan Africa: a systematic scoping review. *BMC Pregnancy Childbirth* [Internet]. 2019 [cited 2020 May 14];19:366. Available from: <https://doi.org/10.1186/s12884-019-2501-6>
47. Bwalya BC, Sitali D, Baboo KS, Zulu JM. Experiences of antenatal care among pregnant adolescents at Kanyama and Matero clinics in Lusaka district, Zambia. *Reprod*

Health [Internet]. 2018 [cited 2020 Apr 28];15:124. Available from: <https://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-018-0565-9>

48. Hackett K, Lenters L, Vandermorris A, LaFleur C, Newton S, Ndeki S, et al. How can engagement of adolescents in antenatal care be enhanced? Learning from the perspectives of young mothers in Ghana and Tanzania. *BMC Pregnancy Childbirth* [Internet]. 2019 [cited 2020 Jun 6];19:184. Available from: <https://doi.org/10.1186/s12884-019-2326-3>

49. Pregnancy intention and gestational age at first antenatal care (ANC) visit in Rwanda - Midwifery [Internet]. [cited 2020 Apr 28]. Available from: [https://www.midwiferyjournal.com/article/S0266-6138\(18\)30262-6/pdf](https://www.midwiferyjournal.com/article/S0266-6138(18)30262-6/pdf)

50. Antenatal care [Internet]. UNICEF DATA. [cited 2020 May 9]. Available from: <https://data.unicef.org/topic/maternal-health/antenatal-care/>

51. Govender T, Reddy P, Ghuman S. Obstetric outcomes and antenatal access among adolescent pregnancies in KwaZulu-Natal, South Africa. *South Afr Fam Pract* [Internet]. 2018 [cited 2020 Jun 8];60:1–7. Available from: <https://doi.org/10.1080/20786190.2017.1333783>

52. Lennox J, Petrucka P, Bassendowski S. Eating practices during pregnancy: perceptions of select Maasai women in Northern Tanzania. *Glob Health Res Policy* [Internet]. 2017 [cited 2020 Dec 17];2. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5683358/>

53. Mbai CM. Factors influencing the utilization of antenatal care services among reproductive women: a case of Kibera, Nairobi county, Kenya [Internet] [Thesis]. University of Nairobi; 2015 [cited 2020 Apr 28]. Available from: <http://erepository.uonbi.ac.ke/handle/11295/92873>

54. Rushwan H. Female genital mutilation (FGM) management during pregnancy, childbirth and the postpartum period. *Int J Gynecol Obstet* [Internet]. 2000 [cited 2020 May

25];70:99–104. Available from:

<https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1016/S0020-7292%2800%2900237-X>

55. Gayle C, Rymer J. Female genital mutilation and pregnancy: associated risks. *Br J Nurs* [Internet]. 2016 [cited 2020 May 24];25:978–83. Available from:

<https://www.magonlinelibrary.com/doi/full/10.12968/bjon.2016.25.17.978>

56. Kenya National Bureau of Statistics, editor. 2019 Kenya population and housing census. Nairobi: Kenya National Bureau of Statistics; 2019.

57. Johnson RB, Onwuegbuzie AJ. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educ Res* [Internet]. 2004 [cited 2020 Jul 14];33:14–26. Available from: <http://journals.sagepub.com/doi/10.3102/0013189X033007014>

58. Sbaraini A, Carter SM, Evans RW, Blinkhorn A. How to do a grounded theory study: a worked example of a study of dental practices. *BMC Med Res Methodol* [Internet]. 2011 [cited 2021 Mar 5];11:128. Available from: <https://doi.org/10.1186/1471-2288-11-128>

59. Dawson S, Manderson L, Tallo VL, Countries INF for D, Diseases UBSP for R and T in T. A manual for the use of focus groups [Internet]. Boston : International Nutrition Foundation for Developing Countries; 1993 [cited 2020 Dec 9]. Available from:

<https://apps.who.int/iris/handle/10665/41795>

60. 9789241508414-eng.pdf [Internet]. [cited 2021 Mar 5]. Available from:

<https://apps.who.int/iris/bitstream/handle/10665/273792/9789241508414-eng.pdf?ua=1>

61. Mweteni W, Kabirigi J, Matovelo D, Lassier R, Yohani V, Shabani G, et al. Implications of power imbalance in antenatal care-seeking among pregnant adolescents in rural Tanzania: a qualitative study. 2020.

62. Ebeigbe PN, Gharoro EP. Obstetric complications, intervention rates and maternofetal outcome in teenage nullipara in Benin City, Nigeria. *Trop Doct*. 2007;37:79–83.

63. Ziblim SD, Yidana A, Mohammed AR. Determinants of Antenatal Care Utilization among Adolescent Mothers in the Yendi Municipality of Northern Region, Ghana. 2018;78–97.
64. Fatema K, Lariscy JT. Mass media exposure and maternal healthcare utilization in South Asia. *SSM - Popul Health* [Internet]. 2020 [cited 2021 Nov 10];11:100614. Available from: <https://www.sciencedirect.com/science/article/pii/S2352827320302512>
65. Konlan KD, Saah JA, Amoah RM, Doat AR, Mohammed I, Abdulai JA, et al. Factors influencing the utilization of Focused antenatal care services during pregnancy, a study among postnatal women in a tertiary healthcare facility, Ghana. *Nurs Open* [Internet]. 2020 [cited 2021 Feb 9];7:1822–32. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/nop2.569>
66. Muthingu MC. UPTAKE OF FOCUSED ANTENATAL CARE SERVICES AMONG WOMEN OF REPRODUCTIVE AGE IN NAKURU COUNTY, KENYA. :112.

ANNEXES

Annex 1: Letter to ERC

Dr. Ketente Jennifer (MB ChB- University of Nairobi)
H58/11348/2018

The Chairperson,
Ethics, Research and Standards Committee,
Kenyatta National Hospital and University of Nairobi,
P.O. Box 20723,
NAIROBI.

Dear Sir/Madam,

RE: SUBMISSION OF MASTER'S DEGREE RESEARCH PROPOSAL FOR APPROVAL

I wish to submit my research proposal for review and approval by your committee. I am currently a 3rd-year student pursuing a Master's Degree in Obstetrics and Gynecology at the University of Nairobi, College of Health Sciences.

Yours Sincerely,

.....

Dr. Ketente Jennifer,
Department of Obstetrics and Gynecology,
College of Health Sciences
The University of Nairobi.

Annex 2: Consent Form/ Fomu ya Idhini

Study title:

PREVALENCE, DETERMINANTS AND PERCEPTIONS ASSOCIATED WITH UTILIZATION OF ANTENATAL CARE SERVICES AMONG ADOLESCENT MOTHERS IN KAJIADO WEST SUB-COUNTY, KENYA.

Principal investigator: Dr. Ketente Jennifer Timpiyan.

Introduction:

I, Dr. Ketente Jennifer, a postgraduate student at the Department of Obstetrics & Gynecology, University of Nairobi, am conducting a study on prevalence, determinants, and perceptions associated with utilization of antenatal care among adolescent mothers in Kajiado West sub-county, Kenya. You are hereby requested to participate in the study.

This information will help you decide on whether to participate in the study or not. You may ask any questions about the study or anything in this form that is not clear.

Purpose of the study:

Adolescent pregnancy is on the rise in Kenya, especially among the nomadic communities fuelled by harmful traditional practices. Adolescent girls face a higher risk of obstetric-related complications such as pre-eclampsia, postpartum hemorrhage, obstetric fistula, postpartum depression, and neonatal deaths among others. Proper utilization of the available antenatal care (ANC) services can help avert some of these complications. This study aims to look at the prevalence, determinants and perceptions associated with the utilization of ANC services among adolescent mothers in Kajiado West.

Benefits:

Your participation in the study will help us obtain information that will be used to fully understand the prevalence, determinants, and perceptions associated with the utilization of ANC services among adolescent mothers, therefore, establishing pragmatic interventions to be put in place to ensure that adolescent mothers are handled and managed in a better way. This study is expected to benefit your household, the local community, Kenya and mothers globally.

Possible risks:

The study will have no invasive procedures and you'll only be required to answer a few questions. There will be no added risks to your standard care as that accorded to other patients. There are no physical and legal risks involved. Some psychological and social risks may be felt

as the study may evoke guilt and embarrassment in some adolescent mothers. This will be countered by re-assuring and answering any areas of their concern.

Voluntarism:

This is a voluntary exercise and you can withdraw at any point during the study with no repercussions. The management you receive at the hospital will be standard and not influenced by your decision.

Compensation:

No compensation will be offered for participation in the study.

Procedure:

As a study participant, the researcher and research assistant will obtain some information from you and conduct a short interview with you and your responses filled in a questionnaire. Some participants will participate in focus group discussions and key informant interviews which will be recorded.

Confidentiality:

The information from you will be confidential. No names will be included in the questionnaires, audio recordings and the final report.

Contact information:

If you have any questions regarding the study, please contact Dr. Jennifer Ketente through telephone number 0727626388. You may also contact the KNH/UoN/ERC Committee-0735-274288/0721-665077.

Or

The Chairperson,
KNH/UON Ethics and Research Committee
P.O. Box 20723-00202, Nairobi.
Telephone number: (254-020) 2726300-9 Ext 44355
Email: uonknh_erc@uonbi.ac.ke

Your participation in the study will be highly appreciated.

Consent:

I..... hereby consent to take part in the study, the purpose and intent of which have been explained to me by Dr. /Mr/ Ms..... I clearly understand that my participation is completely voluntary.

Signature of participant Date.....

Signature of Researcher/ Assistant Date

FOMU YA IDHINI

Kichwa cha utafiti:

UENEZI, VIASHIRIA NA MITAZAMO INAYOHUSIANA NA MATUMIZI BORA YA HUDUMA ZA UJAUZITO MIONGONI MWA WASICHANA WAJAWAZITO WABALEGHE KATIKA KAUNTI NDOGO YA KAJIADO MAGHARIBI, NCHINI KENYA.

Mtafiti Mkuu: Dkt. Jennifer Timpiyan Ketente

Utangulizi:

Mimi, Dkt. Ketente Jennifer, mwanafunzi wa shahada ya uzamili katika Idara ya Obstetrics and Gynecology, Chuo kikuu cha Nairobi, ninafanya utafiti kuhusu masuala ya uenezi, viashiria na mitazamo inayohusiana na matumizi bora ya huduma za ujauzito miongoni mwa vijana wazazi katika kaunti ndogo ya Kajiado Magharibi, nchini Kenya. Unaombwa kushiriki katika utafiti huu. Maelezo haya yatakusaidia kufanya uamuzi kuhusu kushiriki katika utafiti. Unaweza kuuliza swali lolote kuhusu utafiti au jambo lolote katika fomu hii ili kukuwezesha uelewe zaidi.

Kusudi la utafiti:

Ujauzito miongoni mwa wasichana wabaleghe nchini Kenya unazidi kuongezeka, haswa miongoni mwa jamii za wahamaji na unazochochewa zaidi na utendaji hasi wa kiutamaduni. Wasichana wabaleghe wanakabiliwa na hatari kubwa ya hali zinazohusiana na uzazi kama vile pre-eclampsia, kutokwa na damu baada ya kujifungua, fistula ya uzazi, unyogovu baada ya kujifungua, vifo vya watoto wachanga na mengine. Matumizi sahihi ya huduma zinazopatikana za utunzaji wa ujauzito (ANC) zinaweza kusaidia kuzuia baadhi ya hali hizi. Utafiti huu unakusudia kuchunguza kuenea, viashiria na mitazamo inayohusiana na matumizi bora ya huduma za ujauzito miongoni mwa wasichana wazazi katika kaunti ndogo ya Kajiado Magharibi.

Faida:

Ushiriki wako katika utafiti utatusaidia kuelewa sababu za utumiaji duni wa huduma za uja uzito kati ya kina mama wachanga na unachangia katika kuwahudumia wanawake wazito kwa njia mwafaka. Utafiti huu unatarajiwa kufaidi familia yako, jamii yako, nchi ya Kenya na akina mama duniani.

Hatari zilizowezekana:

Utafiti huu hautakuwa na athari zozote kwako na utahitajika tuu kujibu maswali machache. Hakutakuwana hatari zaidi ya huduma ya kawaida kama ileiliyopewa wagonjwa wengine.

Hiari:

Hili ni zoezi la hiari na unaweza kujiondoa wakati wowote wa utafiti bila lawama. Usimamizi unaopokea kwenye hospitali utakuwa wakawaida na hauta athiri uamuzi wako.

Fidia:

Hakuna fidia itatolewa kwa kushiriki katika utafiti huu.

Utaratibu:

Kama mshiriki wa utafiti, mtafiti na msaidizi wautafiti watapata maelezo kutoka kwa kufanya mahojiano mafupi nawe. Baadhi ya washiriki wataulizwa maswali yatakayo rekodiwa.

Usiri:

Taarifa kutoka kwako itakuwa siri. Hakuna majina wala maelezo yoyote yakukutambulisha yatakayonukuliwa kwenye ripoti ya utafiti huu.

Maelezo ya mawasiliano:

Ukiwa na swali lolote kuhusu utafiti huu, unaweza kuwasiliana na Dkt. Ketente Jennifer kupitia namba ya rununu 0727626388. Unaweza pia kuwasiliana na KNH / UoN / ERC Committee kupitia nambari 0735-274288 / 0721-665077.

Ama:

Mwenyekiti,

KNH / UON Kamati ya Maadili na Utafiti

S. L. P. 20723-00202, Nairobi.

Nambari ya simu: (254-020) 2726300-9: 44355

Barua pepe: uonknh_erc@uonbi.ac.ke

Tunakushukuru sana kwa ushiriki wako katika utafiti huu.

Idhini:

Mimi..... nimeamua kwa hiari yangu mwenyewe
kushiriki katika utafiti huu baada ya maelezo ya kina kutoka kwa Dkt. / Bwana /
Bi..... ninaelewa wazi kwamba ushiriki wangu ni kwa hiari.

Sahihi ya Mshiriki Tarehe

Saini ya Mtafiti / Msaidizi Tarehe

Annex 3: Questionnaire

Study Title: PREVALENCE, DETERMINANTS AND PERCEPTIONS ASSOCIATED WITH UTILIZATION OF ANTENATAL CARE SERVICES AMONG ADOLESCENT MOTHERS IN KAJIADO WEST SUB COUNTY, KENYA.

Date:

Time:

Section I (to be administered to all the study participants by the research assistant; please tick the boxes as appropriate)

1. Serial number.....

2. Adolescent mother's age

3a. Have you ever attended school?

Yes

No

3b. if yes, what is your highest attained level of education (*tick as appropriate?*)

Primary

Secondary

Tertiary (College/University)

4. What is your tribe?

Maasai

Kikuyu

Kamba

Other specify

5. How many children do you have? Have you lost any pregnancies? If so, how many?

..... (Indicate as para.....+.....)

6. Marital status

Single (never married)

- Married
- Divorced/Separated
- Cohabiting

7. Where do you live?

- Urban
- Rural

8. What is your occupation?

- Employed
- Unemployed
- Businessperson
- Casual laborer
- Other specified

9. What is the occupation of your next of kin? Employed

- Unemployed
- Businessperson
- Casual laborer
- Other specified

10. What is your religion?

- Christian
- Muslim
- Other

11. Was the pregnancy planned for?

- Yes
- No

12. Do you have any knowledge of contraceptives?

- Yes
- No

If yes, which ones have you used?

Any side effects from the ones used?

.....

13. Have you undergone FGM/C?

Yes

No

14. Who was the decision maker on your ANC attendance?

Self

Others

If others, specify.....

15. Have you had problems with your previous pregnancy?

Yes

No

If Yes, state the problem

16. What was the mode of delivery for your last pregnancy?

Vaginal Delivery

Elective Caesarian Section

Emergency Caesarian Section

17. What was the outcome of the baby?

Good

Bad

If bad, specify

18. At what gestation age did you start attending ANC services? (Indicate in weeks)

.....

19. How many ANC visits did you attend in total?

.....

20. What services did you receive during ANC attendance?

- History and examination
- IFAS Supplementation
- Screening and tests
- Tetanus toxoid administration
- Health education, advice and counseling
- Management of common physiological changes during pregnancy
- Treatment of pregnancy and obstetrics-related complications

21. What factors do you think limited your level of utilization of ANC services?

- Unplanned pregnancy
- Cultural/ religious factors
- Distance to and from the facility
- Fear of disclosing pregnancy
- Limited knowledge about the importance of ANC
- Unavailability of ANC services
- Attitude and handling of healthcare provider
- Others (specify)
- None

22. What was your perception about the services was as offered to you during ANC?

- Given adequate information
- I was screened adequately for potential problems during pregnancy
- I was not given much information during the antenatal visits
- Other, indicate.....

23. Did you register/ use the following during pregnancy or delivery?

- NHIF

Linda mama

None

24. Do you have access to a smartphone?

Yes

No

Annex 4: FOCUS GROUP DISCUSSION GUIDE

Pre-interview preparation

Participants will undergo COVID 19 safety measures precautions as per the MoH guidelines. These are wearing a face mask, temperature checked and recorded, hand washing or sanitizing and observing 1.5 meters social distance. With the help of research assistants, the participants will sign informed consent forms, their identity maintained confidential and be guided to join the meeting. The principal investigator will welcome all participants and lead the group into randomized selfa -introduction. Thereafter, familiarization with the objectives (questions) to be discussed, laying down ground rules and the meeting proceeds.

Questions will be tracked for completion and follow-up on the topics/themes/objectives of discussion will be done by the PI. The conclusion of the session will be made with acknowledgment

of the participants' participation. The recordings will be transferred by the PI to her personal computer for transcription, coding, categorization, conceptualization and abstraction utilizing the grounded theory.

Discussion guide

1. What do you understand by antenatal care (ANC)?
 - a. Definition
 - b. When should a mother start attending ANC?
2. What is the importance of ANC?
3. How many antenatal care contacts should a pregnant mother have?
4. What is the timing, and schedule of the ANC visits that need to be made during pregnancy?
5. Provide promoters and barriers you encountered while attending ANC.

6. Do you think the ANC services provided are friendly for pregnant adolescents? Expound more.

7. What would assist you increase your likelihood to attend ANC in future pregnancies?

8. Post interview:

Appreciate their time and provide a guidance pamphlet elaborating on the timing, schedule, range of services per visit and importance, of ANC according to WHO guidelines.

Annex 5: KEY INFORMANTS INTERVIEW GUIDE

Pre-interview preparation

Participants will be informed before the interview and an appointment booked for the interview. They will be introduced to the importance of the study to the community and that there are no personal gains for participation. The COVID 19 safety measures precautions as per the MoH guidelines. These are wearing a face mask, temperature checked and recorded, hand washing or sanitizing and observing 1.5 meters social distance. The participants will sign informed consent forms, their identity maintained confidential and be guided ,to participate in the one-on-one interview. The PI will welcome the participant, a brief introduction done and thereafter, familiarization with the objectives (questions) to be discussed and the meetin,g proceeds. Questions will be tracked for completion and follow-up on the topics/themes/objectives of discussion will be done. The conclusion of the session will be made with acknowledgment of the participant's participation. Data will be analyzed using coding, categorization, conceptualization and abstraction, utilizing the grounded theory.

The recordings will be transferred by the PI to her personal computer for transcription.

Interview guide

1. What do you understand by antenatal care (ANC)?
 - a. Definition

- b. When should a mother start attending ANC?
2. What is the importance of ANC?
3. What do you think about adolescent pregnancy in this area?
4. Why should adolescent mothers attend ANC?
5. What do you think challenges adolescent mothers to attend ANC as required?
6. What would assist to reduce the rate of adolescent pregnancy in Kajado West Sub County?
7. What would assist to promote the utilization of ANC services among adolescent mothers in Kajiado West?

8. Post interview:

Appreciate their time and provide a guidance pamphlet elaborating on the timing, schedule and importance of ANC.