FACTORS ASSOCIATED WITH TIMING OF FIRST ANTENATAL VISIT AMONG PREGNANT WOMEN ATTENDING WEBUYE COUNTY HOSPITAL, BUNGOMA COUNTY, KENYA

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF MASTER OF MEDICINE, FAMILY MEDICINE (M.MED. FM) OF MOI UNIVERSITY

DECLARATIONS

I declare that this thesis is my original work and that it has not been presented to any training institution as a research paper for the award or conferment of any academic degree

Signature---------- Date----------

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SM/PG/FM/01/2017

Declaration by the supervisors

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

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DEDICATION

I dedicate this work to my wife Janeth and my children. Their prayers and patience have brought me this far.

ABBREVIATIONS

ANC - Ante-Natal Clinic

BEMONC - Basic Emergency Obstetric and Newborn Care

CHWS - Community Health Workers

CORPS - Community-Owned Resource Persons

DHIS_ District Health Information System

HBM - Health Belief Model

FANC - Focused Ante-natal Care

KDHS - Kenya Demographic Health Survey

KEPH - Kenya Essential Package for Health

LMICS - Low- And Middle-Income Countries

MCH - Maternal and Child Health

MDG - Millennium Development Goals

MMR - Maternal Mortality Ratio

NHIF- National Health Insurance Fund

NHSSP - National Health Sector Strategic Plan

PMTCT - Prevention of Mother To Child Transmission

PNC - Post Natal Clinic

PCU - Progressive Care Unit

SDG - Sustainable Development Goals

TBAS - Traditional Birth Attendants

UHC – Universal Health Care

WHO - World Health Organization

OPERATIONAL DEFINITIONS

Antenatal care (ANC) – Is care provided by skilled health-care professionals to pregnant women and adolescent girls to ensure the best health conditions for both mother and baby during pregnancy.

Timing of first ante-natal visit – A visit to Ante-natal clinic for the first time during the current pregnancy.

Delayed ante-natal first visit – defined as a visit to the Ante-natal clinic by a pregnant woman for the first time during her current pregnancy after 12 weeks of gestation as per her normal last menstrual periods and timely early ANC visit is defined as a visit within 12 weeks of gestation (WHO 2016).

ABSTRACT

Background: Timely Antenatal Care (ANC) is essential for quality neonatal and maternal outcomes. World Health Organization (WHO) recommends eight ANC visits during pregnancy, with the first visit being within 12 weeks of conception. According to the Bungoma health indicator report of 2017, less than 37% of pregnant women attended their first ANC before 20 weeks gestation.

Objective: To determine and explore the factors associated with timely first ANC visits by pregnant women in Webuye County Hospital.

Methods: This was a facility-based cross-sectional study employing mixed methods. Data collection was done from December 2019 to July 2020. The researcher recruited participants from the Webuye County Hospital Maternal Child Health clinic and used systematic sampling to enroll 354 for the quantitative arm. Pretested structured questionnaire was utilized in data collection. The data were cleaned and entered into Statistical Package for Social Sciences (SPSS) version 20.0. The researcher conducted data analysis using descriptive and inferential statistics to summarize data from categorical variables. Pearson's Chi-square test was employed in both variate and multivariate models to test for the association between dependent and independent variables. The analyzed data was presented in tables. Purposive sampling was used to enroll 22 participants for the qualitative arm. In-depth interviews using pretested structured interviewer guide questionnaires with tape recording were used. Data were entered into N*vivo software. Data were analyzed using codes and grouped in themes.

Results: Thirty-five point three percent of the women made their first visit during the first trimester (95% CI: 23–35%). Educational status of the women (secondary (OR = 3.21; CI 95%: 1.73, 6.22), the timing of antenatal care in the last pregnancy (second/third trimester) (OR = 0.19; CI 95%: 0.08, 0.41), and experiencing complications in the previous pregnancy (OR = 2.56; CI 95%: 1.43, 4.67) were significantly associated with appropriate timing of the first ANC. The research found that age was not statistically significant (p-value 0.144). A total of 22 pregnant women were interviewed for the qualitative arm. Fear of Covid-19, lack of spouse support, perceived quality of hospital services to be good, cultural beliefs, socioeconomic factors, and misconception of ANC emerged as major themes determining ANC timing.

Conclusion: Women with higher education levels, those with previous early ANC attendance, those who experienced complications in previous pregnancies, and those who perceived hospital service to be good were more likely to attend ANC in the first trimester. Fear of Covid-19, lack of partner support, and sociocultural factors contribute to late ANC attendance.

Recommendations: Efforts to improve literacy on the timing of ANC attendance in health facilities should be enhanced. Health facilities should ensure and maintain service quality.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

World Health Organization (WHO) previously recommended that pregnant women attend four timely antenatal clinics (ANC) visits during their pregnancy. The first visit should be during the first trimester, the second at 28 weeks, the third at 32 weeks, and the final visit at 36 weeks. However, it is currently recommended that pregnant women initiate the first visit at less than twelve weeks of pregnancy and make an additional seven visits during her pregnancy, totalizing eight contacts (WHO, 2018).

ANC is the most fundamental strategy to ensure a healthy and safe pregnancy that culminates in good outcomes for the mother and fetus (Downe et al., 2016). Antenatal care refers to interventions meant to reduce maternal and infant mortality(McDonagh, 1996). It is a medical management program for pregnant women aiming at making pregnancy and labor safe (Zanconato et al., 2006). Antenatal care concerns the timely prevention, diagnosis, and treatment of pregnancy-associated complications (Choudhury & Chaube, 2022). It also provides an opportunity for a pregnant woman and a healthcare provider to discuss health concerns during pregnancy. Therefore, it recognizes imminent complications that may arise and plans for delivery (Dessau et al., 2018). Worldwide, maternal mortality and morbidity continue to be a significant challenge, particularly in low-resource-income countries(Lassi et al., 2016).

Globally, 303,000 women die yearly due to a lack of timely, adequate care during pregnancy, delivery, and postpartum. Ninety-nine percent (99%) of 303,000 occur in

developing countries (WHO, 2015). Sub-Saharan Africa had early (first trimester) ANC visit coverage of less than 50% in 2013 and, as a result, had high maternal mortality ratios of 546/ 100000 live birth and a neonatal mortality rate of 29/1000 live births (Gitonga, 2017).

Despite the widespread availability of free ANC services, most women mistime their first ANC attendance during pregnancy and fail to follow up (Gebresilassie et al. 2019). Sustainable Development Goals (SDG) target maternal mortality ratio of less than 70 maternal deaths per 100,000 live births(Bauserman et al. (2020). Also, timely ANC care can reduce newborn deaths to 12 per 1000 live birth by 2030 (Sarker et al., 2020). Several global initiatives and strategies support this reduction, such as Women's Children's Health 2016-2030(Brizuela & Tunçalp (2017). These global initiatives are aimed at ending preventable maternal and newborn mortality. (Moller, A. 2017). Unfortunately, these global initiative aims have not been attained in many countries, mostly in sub-Sahara Africa, which accounts for 99% of global maternal deaths (Jolivet et al., 2018). Survey data findings from the sub-Saharan continent showed that most pregnant mothers did not start ANC visits in the first trimester (WHO, 2015).

Pregnant women in developing countries should seek antenatal care within the first three months of pregnancy to allow enough time for optimal care and treatment. (WHO 2018). According to a study done in Nigeria, the role of community-owned resource persons (CORPS) increased ANC attendance by 36.7% (Apagu et al., 2014). The CORPS were trained to create awareness, mobilize pregnant women for antenatal services, and make necessary follow up for mothers with conditions and their families in the target communities through a community care networks model.

Mothers and fetuses who received prenatal care early during the first trimester had a lower risk of complications (Odwory et al., 2016). Regional findings can mask the variation between countries within the region. Still, the Kenya Demographic Health Survey (KDHS) 2014 revealed a maternal mortality ratio of 362 per 100,000 live births and a neonatal mortality rate of 29 deaths per 1000 live births in Kenya (KDHS 2014). This demonstrated that maternal mortality in Kenya remains a challenge (Odallo et al., 2018). The study by Ochako et al. found that women in rural areas of Kenya were two times less likely to attend ANC than urban women (Ochako et al., 2016). ANC is the most fundamental strategy to ensure healthy and safe pregnancies, culminating in good outcomes for the mother and fetus (Moller et al., 2017).

According to the KDHS 2014, most women in Kenya register late for ANC attendance on average at 5.5 months of pregnancy and did not complete the required visits (KDHS 2014). Kenya's government has put strategies to improve ANC visits and the quality of ANC by introducing focused antenatal care (FANC), but the uptake still needs to be higher (KDHS 2014). ANC has been shown by various authors to improve maternal health, thereby reducing maternal and infant morbidity and mortality (MOH 2010). The ANC uptake in Tharaka Nithi for example stands at 52% (Gitonga et al. 2016). According to KDHS 2014 report in Bungoma County, 19.4% of pregnant women attended one ANC visit (Berhan, 2014).

According to the District Health Information System (DHIS), from July 2015-June 2016 in Webuye County Hospital, women who attended one ANC visit were 1665, and those completing 4 ANC visits were 904. Evidence has shown that many barriers and factors contributed to the low uptake of early ANC visits, such as level of education, family

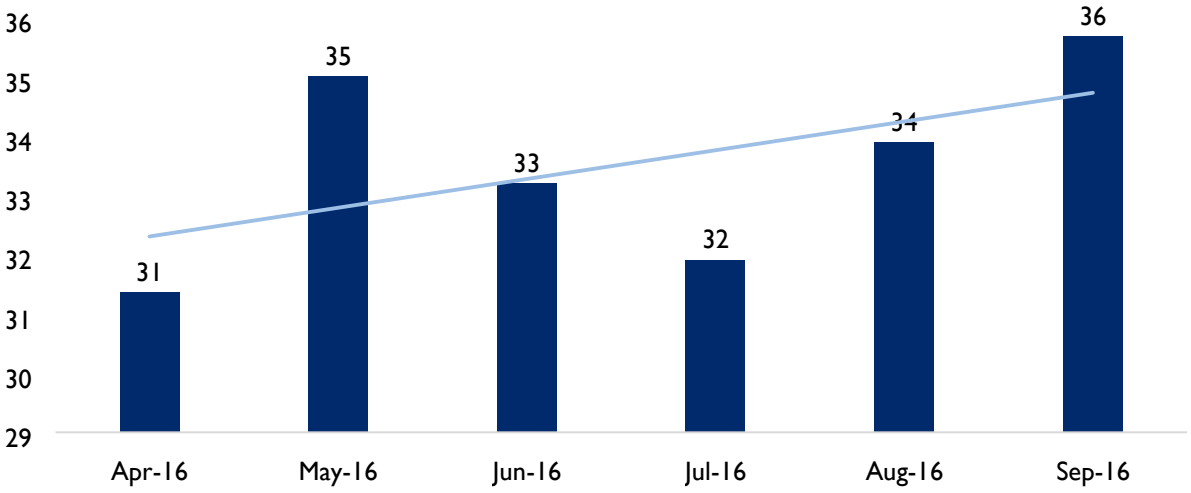
support, previous experience with the health system, and social and economic status. Availability and accessibility of the ANC (Ann et al. 2017). According to a qualitative research in Asembo, western Kenya, the reasons for medications given in ANC were vague. No studies have identified factors like knowledge of the importance of early utilization of chemoprophylaxis and operational time of Ante-natal clinic as some of the factors associated with delayed Antenatal care influence.

1.2 Problem Statement

The Ministry of Health and other stakeholders in health have invested heavily in providing antenatal services. The investment includes providing these services as close to the mother as possible (at levels 2 and 3) (Gitobu et al., 2018). Campaigns through media and public meetings have borne significant fruits, as reported in the KDHS of 2014 that six in ten women attend at least one visit. What was worrying is the record that less than 20% of these visits occurred during the first trimester in Bungoma County, Kenya (Lawrence, 2020).

First-trimester care can be beneficial through early identification of risk factors and provision of preventive and health promotion advice to encourage healthy lifestyles, treatment of medical conditions such as diabetes and pregnancy-induced hypertension, and referrals to services such as nutrition support and smoking cessation programs (Chimatiro et al., 2018). Prevention of some specific conditions that can affect the mother and her unborn baby is time-bound. For example, the administration of folic acid should be given as early as the preconception period or during the early first trimester to avert neural tube defects (WHO, 2016).

The prevalence of neural tube defects is estimated to be 20 cases per 10000 live births in Kenya, according to a 2009 cross-sectional study conducted in a maternity unit of Kenyatta National Hospital (Githuku et al., 2014). A study done in western Kenya on the adverse outcome of malaria and HIV infections during pregnancy found that the infections were associated with decreased birth weight (low birth weight and small for gestational age) and low hemoglobin (Ayisi et al., 2003)



The Y axis represents the percentage of pregnant women who attended their first ANC at less than 20 weeks of gestation.

Figure 1: Proportion of pregnant women in Bungoma County who attended their first antenatal care visit at ≤ 20 weeks of gestation in 2017

In Bungoma, a special report on health indicators of 2017 showed that antenatal mothers attended their first antenatal care visit at ≤ 20 weeks of gestation from April to September 2017 (Kipruto et al., 2017).

According to (Nguhiu et al., 2017), only 31% to 36% of pregnant women attended their first ANC at <_20 weeks gestation in Bungoma county. In a recent study by Ikamari et al., the majority {67%} of pregnant women initiated their ANC clinic visit during the second trimester (Ikamari et al., 2020). This study intended to determine and explore modifiable factors contributing to low first-trimester ANC attendance in Webuye hospital.

1.3 Justification

World Health Organization (WHO) recommends that a pregnant mother attend a timely antenatal clinic eight visits during her pregnancy, the first visit being in the first trimester or before 12 weeks, and then an additional seven visits throughout the pregnancy (WHO, 2018). Mothers and fetuses who receive prenatal care early during the first trimester have a lower risk of complications (Dowry et al., 2016). However, an infant whose mother did not attend an antenatal clinic is four times more likely to die during the first month after delivery compared to one whose mother sought prenatal services four or more times because of complications during pregnancy, inadequate preparation for delivery, and postnatal care (Arunda et al., 2017).

However, World Health Organization currently recommends antenatal care models with a minimum of eight contacts to reduce perinatal mortality and improve women's experience of care World Health Organization (WHO, 2016). Several quantitative studies have been done globally on the importance of timely antenatal care. They depict varied reasons for the timing of the first Antenatal visit from one region to another. This study sought to find the factors associated with the timing of ANC in Webuye County Hospital. The findings of this study will be shared with health workers in the county, and it is hoped that the results will influence change of practice positively.

The findings will also be shared with policymakers within the county and, hopefully, influence policy support on improving awareness of the need for first-trimester ANC visits and enhancing resources to support this crucial health-seeking behavior.

The study findings will be disseminated through presentations at local and international scientific conferences and also published in a peer-reviewed journal.

1.4 Significance of the Study

Women of childbearing age are informed of the importance of seeking antenatal care at an appropriate time, especially the good timing of the first ANC visit. However, the health care providers are enriched in the appropriate ways of enhancing timely antenatal care. Furthermore, the policymakers can formulate guidelines on how to increase uptake of first visit during the first trimester The findings form the basis for future studies in the same field of ANC. The new information generated in this study will be shared with the health stakeholders, hoping to influence policies positively on the timing of the first antenatal visit. The community-owned resource persons will be motivated by enriching them with relevant and evidence-based information on the importance of a timely first antenatal visit. They will be trained to relay messages to the pregnant women in the community.

1.5 Research Objectives

1.5.1 Broad Objective

To determine and explore factors associated with timing of first ANC visit among pregnant women aged 18-49 years attending ANC clinic at Webuye County hospital.

1.5.2 Specific Objectives

1. To determine factors that are associated with the timing of first ANC visit among pregnant women aged 18-49 years attending ANC clinic at Webuye County Hospital.

2. To explore facilitators and barriers to timing of first ANC visit among pregnant women aged 18-49 years attending ANC clinic at Webuye County hospital

1.6 Research Questions

1) What are the factors that determine the timing of the initial antenatal visit among women presenting for ANC?
2) What are the facilitators and barriers to timing of first antenatal visit among pregnant women?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Antenatal care is given to pregnant women during pregnancy (Ali, 2018). The antenatal services offered are scheduled according to the age of the pregnancy (Manyeh, A. K., Amu, A., Williams, J., & Gyapong, M. (2020). The care is meant to reduce or prevent maternal and infant mortality by instituting preventive, diagnosis, and treatment modalities. It provides an opportunity for the pregnant mother and the healthcare provider to discuss pregnancy, labor, and delivery plans (Boah, M., Mahama, A. B., & Ayamga, E. A. (2018).

Antenatal care is time bound, with the World Health Organization (WHO) recommending that a pregnant mother attend a timely antenatal clinic; the first visit should be at less than twelve weeks of gestation and an additional seven visits should follow during her pregnancy (WHO 2016). The quality of ANC can be monitored through the content of services received and the kind of information mothers are given during their timely visits (Arunda et al., 2017).

2.2 Antenatal Care

World Health Organization. (2018) recommendations showed that it is critical to monitor maternal,fetal and neonatal indicators when implementing antenatal care protocols in any setting.(*WHO 2018*). Pregnancy is a crucial time for both the mother and the baby. It is essential to promote healthy behaviors, prevent infections, premature deliveries, and stillbirths, and avoid some of the major causes of illness among newborns (Lincetto et al., 2006).

Antenatal care involves screening for health and socio-economic states likely to result in adverse pregnancy outcomes, providing effective and specific treatment interventions, and enriching pregnant women with information regarding planning for safe delivery, emergencies during pregnancy, and how to go about with them (Islam, M. M., & Masud, M. S. (2018).

Antenatal care (ANC) is a recommended global intervention to prevent neonatal and maternal mortality (Cumber et al., 2016).

Lack of antenatal care which enables pregnant women to be screened for pregnancy complications by a skilled health care giver and lack of tetanus injection, was found to be associated with neonatal mortality in Kenya (Arunda et al., 2017). Antenatal care has undergone a great transformation regarding access and quality of care.

Developmental History of Antenatal Care Visits.

Traditional Antenatal Care Model

The model was developed in the early 1900s, assuming that frequent visits and classifying pregnant mothers into low and high-risk were the best way of antenatal care rather than focusing on quality and timely care. Its impact on the financial burden the pregnant women incur in terms of transport led to its failure to curb or reduce maternal morbidity and mortality. In a study in Zaire in 1984, out of 3,614 pregnant women studied, 71% of them who developed obstructed labor were initially classified as ‘not at risk,’ whereas 90% of pregnant women who were categorized as ‘at risk’ did not end up in obstructed labor (Oshinyemi et al., 2018). This indicates that most pregnancy-related problems are

unpredictable and late phenomena. It also burdened the healthcare system, where infrastructure and human resources were required.

The hallmark of antenatal care is to ensure good maternal health, which is indirectly linked to the health status of the fetus throughout pregnancy.

Focused Ante-Natal Care (FANC) Model

Focused antenatal care is a model adopted by WHO whose aim is to reduce maternal morbidity and mortality, providing goal-oriented and targeted care aimed at increasing the detection and management of complications during pregnancy (Kareem, Y. O., Morhason-Bello, I. O., OlaOlorun, F. M., & Yaya, S. (2021).

It is preferred to the traditional model because of its effectiveness (Mchenga, M., Burger, R., & Von Fintel, D. (2019). The model recommends the first visit before 16 weeks of gestation (mainly the first trimester).

Pregnant women are categorized as those eligible to receive a basic component of care and those to receive specialized care because of preexisting conditions (Oshinyemi et al., 2018). During the first visit, the following are undertaken; Medical and obstetric history which are meant to collect evidence of her eligibility to follow the basic component of FANC or determine if she needs special care and/or referral to a higher health facility. Physical examination noting any abnormalities is done. If the pregnancy is thought to be beyond the first trimester, gestational age is determined using fundal height. However, counseling on the right nutrition and against food taboos is undertaken. HIV counseling service, urine testing for glucose to screen for Diabetes, and advice on saving money for other drugs or referral purposes are offered. The first visit is important if it happens during the first

trimester since screening diagnosis and treatment of the conditions and proper follow-up are made in the early stages of pregnancy (Johns, Jemma, Archana Vasireddy, and Kugajeevan Vigneswaran 2023).

Eight-Visits-Program

WHO adopted the eight ANC visit programs in 2016 upon realizing that FANC had failed and there was still high maternal mortality, which was 14 times higher in developing countries than in developed countries. The model advocates for a minimum of 8 contacts during pregnancy to ensure a continuum of care from pregnancy to postnatal (Ekholuenetale et al., 2022. The first visit is recommended at 12 weeks of gestation, with subsequent visits at 20, 24, 28, 32, 36, 38 and 40 weeks of gestation.The It is a step toward implementing the Sustainable Development Goals projected to reduce the maternal mortality ratio to less than 70/100000 live births and the perinatal mortality ratio to as low as 12/1000 live births by 2030 (Umar, B. U., Abdullah, A., Chowdhury, K., Ahmad, R., & Haque, M. 2022). Recommended ANC visits are a minimum of eight (first antenatal visit) to take place in early pregnancy, before 12 weeks. The World Health Organization recommends that pregnant women in developing countries seek ANC within the first 12 weeks of pregnancy (Tola, W., Negash, E., Sileshi, T., & Wakgari, N. (2021).

ANC Package

ANC package provides essential services during pregnancy (World Health Organization. (2018). These include;

Preventive Services – Anemia prophylaxis through supplementation of folate and iron. Neonatal tetanus prevention by tetanus toxoid immunization. Malaria prevention

through Intermittent preventive treatment in pregnancy (IPTp) and insecticide-treated bed nets (ITNs. Intestinal worm infestation through scheduled administration of either albendazole or mebendazole (Bou Amoak, D., Dhillon, S., Antabe, R., Sano, Y., & Luginaah, I. (2023).

Screening Services – hemoglobin estimation to rule out aneamia, Venereal disease research laboratory (VDRL) testing for syphilis, Human immunodeficiency virus infection (HIV) testing, and urinalysis for urinary tract infection. Also, screening for sexually transmitted infection such as trichomoniasis and high vaginal swabs for specific individuals to screen for gonorrhea. In addition, determination of blood grouping and rhesus to aid in identifying those at risk of exposing their fetus to incompatibility conditions (Ahinkorah et al., 2021).

Treatment Services; Sexually transmitted infections (STIs) including HIV and syphilis. Also, anemia, diabetes, hypertensive disorders commonly and any other emergent conditions during pregnancy (Workowski, K. A., & Bachmann, L. H. (2022).

Counseling Services; preparedness and counseling on maternal and new born danger signs as per (Azeze, G. A.,et al (2019)..

Ante-Natal Clinic Coverage

According to (Moller et al. 2017), the estimates suggest that the global coverage of ANC visits was 58.6% in 2013, with regional differences. Although progress in coverage has been achieved, it is much lower than required to meet one of the core recommendations of the WHO early antenatal care visit program. The recommendation that all pregnant women

initiate their first antenatal care visit in the first trimester of pregnancy is to allow enough time for optimal care and treatment (Ewunetie et al., 2018).

In settings where few women attend antenatal care, achieving four antenatal care visits with the full complement of targeted, evidence-based interventions at each visit is still meaningful.

These programs should be monitored, especially regarding the number of visits, actual care delivered, and clinically significant maternal and perinatal outcomes (Nwabueze, C. O., et al (2023). In the study in Nairobi, only 7.3% of women initiated ANC in the first trimester, with 52% making four or more visits. In the third trimester, 22% of women-initiated ANC. The timing of ANC determines the overall quality of ANC service and the content of ANC received. Therefore, it is necessary to analyze the levels and risk factors that influence the timing of ANC visits (Woldeamanuel, B. T., & Belachew, T. A. (2021).

Factors Associated with Timing of First Antenatal Visit

In Europe timing of initiation of prenatal care was associated with maternal ethnicity, place of birth, and ability to speak English. Other key predictors for late antenatal booking include high parity and indicators of potential social vulnerability, such as living in temporary accommodation (Grand-Guillaume-et al. (2022).

The report on global maternal mortality ratios (MMRs) suggested a substantial decline that fell short of meeting Millennium Development Goal 5 (MDG 5): which was meant to

reduce maternal mortality by 75% It is indicated that in many low- and middle-income countries (LMICs), especially in sub-Saharan Africa, the rate of decline in MMR is less than 1% per year (Liang et al (2019).

The WHO reports and experts in the field consistently highlight the lack of access to local adequately resourced health care facilities as an important reason for the relatively slow rate of progress towards achieving MDG 5. Access includes ensuring comprehensive antenatal care coverage for all pregnant women.

Recent estimates indicate that the number of women in LMICs attending at least one antenatal appointment increased and those attending four or more times rose from 35% to 51% over the same period. However, significant disparities exist between continents, countries, and urban and rural populations. As with the MMR figures, the rate of progress is slowest in sub-Saharan Africa, where antenatal coverage rates have improved slightly during the last two decades. Still, the number of women visiting four or more times has remained static, at about 44%.(Weyori, A. E.,et al 2022)

Global implementation of strategies designed to encourage antenatal attendance is based on the assumption that if high-quality services are provided, people will come to them. However, data from quantitative population-level studies suggest that this is not necessarily the case for some groups of pregnant women. Well-documented socio-demographic data indicate that women from relatively poor backgrounds, living in rural areas, and/or with low levels of education are less likely to access antenatal services, even if provided. Other factors, including having a husband with a low level of education, living a long distance from a clinic, and having high parity, have also been identified as barriers.

Similar factors emerge in reviews of barriers to antenatal care in developed countries, which suggests that the issues for women who remain marginalized at local, national, and global levels are much the same. (Singh, R.,et al 2019).

ANC coverage has not been successful in Africa for various reasons, including pregnancy preparedness, cost, level of education, and distance(Alem, A. Z.,et al 2022) In sub-Saharan Africa, an estimated 900,000 stillbirths occur in the last twelve weeks of pregnancy.

Most of these are associated with a lack of ANC visits and early recognition of problems (Skytte, T. B et al 2023).

It is estimated that babies who die before the onset of labor or antepartum stillbirths account for two third of all stillbirths in countries where the mortality rate is greater than 25 per 1000 births, of which nearly all African countries are affected. Stillbirth rates in these sites will not reach Every Newborn Action Plan goal of 12 per 1000 births by 2030. Several causes are attributed to this, including maternal infections and complications during pregnancy, social and family factors, and community context and beliefs. These affect health during pregnancy either positively or negatively. Such mortality would be easily avoided if mothers get timely ANC visits (Saleem et al., 2018). Some cultures promote special foods and rest for pregnant women, but in others, pregnancy is not respected, and traditional taboos may deprive them of essential nutrients adding to nutritional deficiencies, particularly iron, protein, and specific vitamins. (Blake et al 2023)

Kenya is among the top 10 countries in the world with the highest burden of maternal mortality, losing between 5000 to 6000 mothers yearly due to pregnancy and birth complications. However, Kenya's maternal mortality rate has reduced from over 590 in the

’90s to 362 per 100,000 (Gitobu et al 2018)Still, it did not attain MDG 4 and 5 by the end of 2015 (Ministry of Health, 2016).

Cost of Antenatal Care in Kenya

The financial status of individual pregnant women influences the timing of quality prenatal services. The wealthier one is, the more likely to access antenatal services, as reported in a study done in East Africa. Tessema, et al. (2021). Kenya’s government and the ministry of health have made significant strides in ensuring pregnant women and infants receive timely, quality, and affordable health services. The Government of Kenya abolished the user fee for maternity care. It declared free maternal care in June 2013 in all public health facilities making maternal services more accessible and affordable to reduce maternal and perinatal mortality. With this move, there was a significant increase of 89% in antenatal care visits two years post-implementation in an interrupted time series analysis done in 3 counties in Kenya (Lang’at, 2019). This shows that cost may significantly deter antenatal service utilization.

Linda Mama is a public health scheme aiming to achieve universal access to maternal and child health services. It provides a package of essential health services accessed by all in the targeted population based on need and not ability to pay, positioning Kenya on the pathway of Universal Health Care (UHC). It aimed to address the challenges of high maternal mortality and an increase in access to skilled delivery services hence improving maternal and child health. (Mbau et al 2020)All pregnant women are eligible for registration for this scheme regardless of their age. The National Health Insurance Fund (NHIF) cover enables all pregnant women who are fully registered -18.). to get

antennal care, delivery services, and postnatal and one-year child care in private and public accredited health facilities.

Suchman et al. (2020) found that social Health insurance made health service access more affordable, enabling pregnant women to seek antenatal services on time and more frequently. However, they were tended to by various professional healthcare providers in different health facilities. Kenya's maternity fee waiver is an excellent approach, but there are still gaps in maternity policies. There are side barriers to antenatal care such as transport costs to and fro health facilities**.** Seventy-five percent of Kenyans live in rural areas. The poorest women in rural areas may be unable to utilize the free available services in public facilities due to the cost of travel (Masaba, 2020). Although out-of-pocket expenditure during the antenatal visit has not been identified as one of the barriers to accessing ANC services, it may be a hindrance for the poorest women.

Poor Maternal and Neonatal Outcome due to Untimed or Irregular ANC

In a cross-sectional study done in a hospital in Egypt on the effects of irregular ANC, the rate of Preeclampsia was found to be significantly higher in the irregular ANC group (36.9%) (p=0.000) compared to the regular group (Abbas et al., 2017). Premature rupture of membranes was higher in the irregular ANC group (19.2 %) compared with (8.3%) in the regular ANC group. The percentage of preterm babies, stillbirths, Irregular antenatal care attendance, low birth weight babies, and the rate of admission to Progressive Care Unit **(**PCU) was higher in the irregular ANC group than the regular (Abbas et al., 2017). This means that the pregnant women mistimed ANC services as scheduled and were more prone to perinatal complications.

Despite increased and enhancement of ANC utilization services, there is a slow and minimal annual decline in the maternal mortality ratio. This might be because of the poor timing of the ANC services available. Atuoye et al. (2020). Worldwide maternal mortality and morbidity continue to be a significant challenge, especially in low-resource-income countries (Cabero-Roura & Rushwan, 2014.). Between 2000 and 2017, the global maternal mortality rate (MMR) was reduced by 38% Yearly. Three hundred three thousand mothers die due to lack of adequate care during pregnancy, delivery, and postpartum, and out of this, 99% occur in developing countries (WHO, 2015). The maternal mortality ratio is the number of maternal deaths occurring from pregnancy-related conditions during pregnancy and forty-two days after the termination of pregnancy per 100000 live births**.**

Approximately 70 Percent of All Maternal Deaths Occur in Sub-Saharan Africa. The United Nations Sustainable Development Goals (SDGs) target for maternal health is to lower the number of global maternal deaths to less than 70 per 100,000 live births by 2030 **.** Global maternal mortality estimates indicate that most of the countries in sub-Saharan Africa have maternal mortality rates that are greater than 550/100,000 live births . In contrast, Kenya's maternal mortality rate is 414/100,000 live births **(**Rafiq et al 2019)

Table 1: Ranking of counties by number of maternal deaths and maternal mortality ratio 2014

Rank	**Region**	**maternal deaths**	**Rank**	**Region**	**Maternal mortality ratio (deaths per 100,000 live birth**
	KENYA	6,623		KENYA	495
1	MANDERA	2,136	1	MANDERA	3795
2	WAJIR	581	2	WAJIR	1683
3	NAIROBI	533	3	TURKANA	1594
4	NAKURU	444	4	MARSABIT	1127
5	KAKAMEGA	364	5	ISIOLO	790
6	KILIFI	289	6	SIAYA	691
7	NANDI	266	7	LAMU	676
8	BUNGOMA	266	8	MIGORI	673
9	HOMABAY	262	9	GARISSA	646
10	MIGORI	257	10	TAITATAVETA	603
11	KISUMU	249	11	KISUMU	597
12	SIAYA	246	12	HOMABAY	583
13	TRANSNZOIA	234	13	VIHIGA	531

14	GARISSA	208	14	SAMBURU	472
15	KWALE	203	15	WESTPOKOT	434
	Other counties	85			
	Total	6,538			

According to the United Nations Statistics Division (UNSD) report of 2014, there was a total of 32,021 maternal deaths in Kenya, of whom 6,632 died of pregnancy-related causes. This is 21 percent of the women who died during their reproductive ages. Fifteen out of forty-seven counties accounted for 98.7% of the total maternal deaths in Kenya in 2014. Bungoma county was ranked number eight as far as the maternal mortality ratio was concerned. This shows that there are still gaps in the timely utility of antenatal services in Kenya.

However, 2022 report shows Mandera County has 3,800 deaths per 100,000 live , Nakuru (100), Kakamega (316), Kwale (35).These show reduction as compared to KDHS report of 2014.The rest of the counties has shown no changes.

Social support to pregnant women

Research done on the relationship and antenatal service by Alburuda and his colleagues in 2019 Indonesia indicated a statistically significant relationship between family support function and compliance with ANC service by pregnant women. It depicts that the more a family actively supports and motivates a pregnant woman, the more they will adhere to timely ANC visits.

Families are two or more individuals who join due to blood relations, marriage, and adoption in one household, interact with each other in specified family roles or assignments and initiate and sustain a culture and tradition. Family support can be felt if the family

function runs as expected. There are five significant aspects of family function: adaptation, partnership, growth, affection, and togetherness.

With the implementation of these functions, a prosperous family is formed with members who give each other support even in the uptake of antenatal services as scheduled. Family support is essential in the realization of a positive thing.

The nuclear and the extended family function as support systems for their members. Family support comes from the husband, family or other relatives, parents, and in-laws. Husband support is key because the husband is the closest member who can recognize and alleviate anxiety in pregnant women.(Audet et al 2023).in their study, found a significant relationship between the husband's role and the pregnant woman's behavior in ANC service uptake. Also, a study done by Istafa and is colleagues in 2021 in Indonisia, shows a link between family support and the utilization of ANC services. The lower the family supports the possibility of noncompliance in carrying out timely and higher ANC visits.

Husbands are the most intimate to pregnant women. In the prospective cohort study on 709 pregnant women for six months, husband involvement and the associated use of professional birth attendants at birth yielded statistically significant results. The women who were accompanied by their husbands at least once for an ANC visit were 6.27 more likely to use professional birth attendance during delivery than women who attended ANC without their life partners. This means that husband can motivate their spouse in the actual timing of ANC services (Teklesilasie & Deressa, 2018).

Community Health Workers and ANC

There is no appreciation by a community that early initiation of ANC is necessary if a pregnant woman is to take full advantage of maternal health care. Seven percent of women did not visit a clinic to obtain ANC services (Alburuda et al 2019.) The priority action to implement the SDG acceleration framework was to raise awareness and educate the public by upscaling the implementation of the community health strategy. (Perryet al 2021). However, community health workers can play a major role in identifying pregnant women who have not attended the clinic and motivating them.

In the cluster randomized controlled trial study in Tanzania to quantitatively evaluate CHW performance in improving ANC service uptake, 75% of pregnant women identified who had not started ANC visits, of whom 40% were in their first trimester. There was a significant decrease in the mean gestational age at the first ANC visit from 21 weeks to 16 weeks after eleven months from when the CHWS intervened in the community.

ANC Service Provision

Ninety-two percent of women received antenatal care from a skilled provider. According to the proportion of women with four or more recommended visits decreased dramatically to 47%.(Ousman et al 2019),.

Misconception of ANC Visit by the Pregnant Women

Many women visited the clinics to obtain a card for future health visits for the mother and the baby. Fifty-eight percent of women reported having four or more antenatal visits for their most recent birth. The percentage of women attending four or more ANC visits ranges

from a low of 18 percent in West Pokot to a high of 73 percent in Nairobi. In 12 counties, less than 50 percent of women attend the recommended ANC visits (Garissa, Wajir, Mandera, Meru, Bomet, Marsabit, Turkana, West Pokot, Trans-Nzoia, and Elgeyo Marakwet, Narok Bungoma, and Kakamega) (KDHS-2022). A prospective, population-based observational study done in Argentina, Guatemala, India, Kenya, Pakistan, and Zambia contributed important insight into regional and site-specific patterns for antenatal care access and coverage. Overall, 96% of women reported at least one antenatal care visit. Indian sites demonstrated the highest percentage of women who initiated antenatal care during the first trimester (Bucher et al., 2015).

The overall goal of the Kenya health strategic plan NHSSP II was to address the downward spiral of Kenya's health status firmly. The purpose of the NHSSP II, therefore, was to contribute to the reduction of health inequalities and to reverse the decline in the impact and outcome indicators of Kenya's second national health sector strategic plan (NHSSP II-2005-2010). The plan defined a new approach to how the sector will deliver health care services to Kenyans- the Kenya essential package for health (KEPH). Level 1, the community level, is the foundation of the service delivery priorities because it allows the community to define its priorities to develop ownership and commitment to health services. Communities will be empowered with information and skills.

Community Health Workers (CHWs) though not considered part of the mainstream health workforce, play a significant role in reaching households with health information and linking them to health facilities. They also aim to empower Kenyan homes and communities to take charge of improving their health(Ahmed et al 2022). Community-owned resource persons live in a given community and are recognized and trusted by their

community in health matters. They include CHWs etc. The suggested roles of CORPs involve providing information and referral, encouraging pregnant mothers in the neighborhood to utilize ANC, delivery and postpartum services, and accompanying expectant mothers to the health facility. (Sheffel et al 2023), The key strategies proposed to accelerate the attainment of MDG 4 & 5 include: strengthening community-based maternal and newborn health care approach (Sorre et al., 2016).

2.3 Conceptual Framework

As a conceptual framework, the Health Belief Model (HBM) explores why some people who may not be ill take specific actions to prevent illness while others do not. The framework helps identify those pregnant women susceptible to several inhibiting factors and unlikely to initiate early initial ANC, thereby exposing themselves and their babies to health complications that could have been prevented. The premise of the Health Belief Model (HBM) is that individual pregnant women's health beliefs are associated with their perceptions of the ANC services. It is based on the assumption that the socio-demographic factors (age, gender, marital status), social-cultural (ethnicity) and socio-economic (educational status, income level), and reproductive factors (parity) may be associated with the timing of the first antenatal visit.

Antenatal care (ANC) provides opportunities to recognize and treat obstetric complications, enhancing good pregnancy outcomes for mothers and babies. Variables related to perceived benefits might motivate pregnant women to utilize ANC services promptly. If pregnant women perceive that they are susceptible to the adverse outcome of pregnancy, they can timely attend antenatal clinics (self-efficacy). However, Perceived

barriers (workers' negative attitudes and the lack of accessibility, acceptability, and availability of the ANC services) may be associated with the mistiming of the ANC services.

The HBM motivates pregnant women to take positive health actions by attending ANC on time and minimizing obstetric complications. Health education, counselling and effective social support systems are likely to initiate cues for action.

The Figure below illustrates the variables identified in this study to address factors associated with the timing of first ANC visit among pregnant women attending ANC in Webuye Hospital. Predicting readiness to act using a theoretical framework. The HBM was used to assess the study participants 'readiness to act' in terms of attending a health facility in time.

2.4 CONCEPTUAL FRAMEWORK

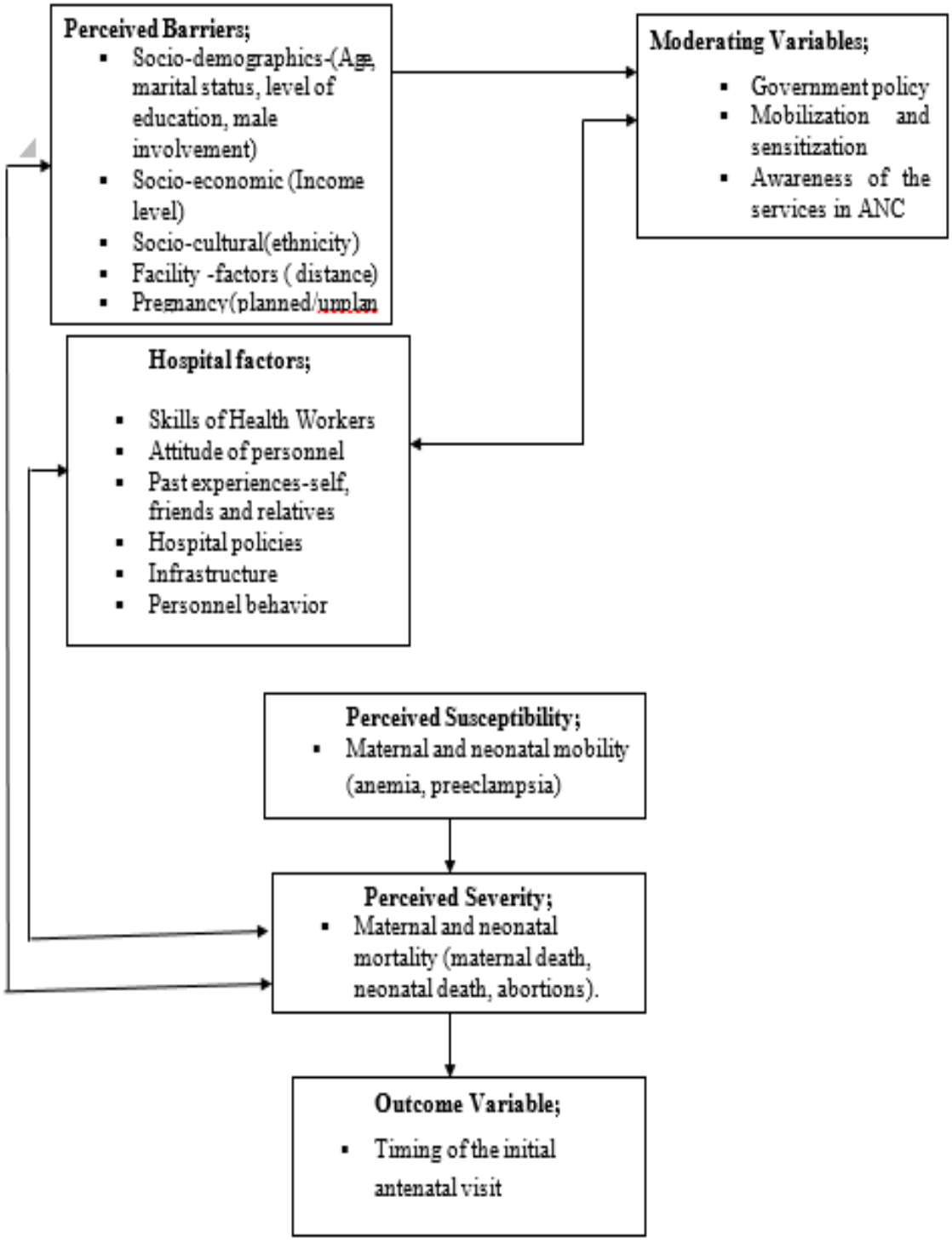


Figure 2: Health Belief Model (Adapted from Pender 2009 and modified)

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Setting

The study was conducted in Webuye County hospital, which is in the western region of Kenya. The hospital has a medical training college offering nursing and clinical medicine studies. It has both medical and nonmedical departments. They include inpatient and outpatient departments. It has a catchment population of 98 494 people and 21 669 women of reproductive age (15–49 years), as stated in the annual operating plan for the 2015–2016 financial year.

The study area is home to roughly 80,000 residents and has a total area of 130 square km. The site sits at an elevation of 1523 m (4997ft) with a range of 1477–1733 and lies at 0.617° latitude and 34.767° longitude. The area includes urban and semi–urban areas and cash economy activity within the region. The Luhya community mainly inhabits the area and speaks Bukusu and Kiswahili languages. They practice dairy farming as well as poultry keeping. They grow maize as subsistence alongside millet, cassava, beans,and sorghum. The living standard is generally low and social amenities like electricity, clean water, and sanitation are available to a few people. A chemical processing plant and a paper factory are in the adjacent area.

3.2 Methods

This was a hospital-based cross-sectional study design with a mixed methods approach which involved 354 randomly and systematically sampled first ANC attendees for the quantitative arm. Qualitatively, 22 purposively selected first time comers to ANC clinic

regardless of their parity and gestational age antenata participated. Pretested structured, interviewer-guided questionnaires and tape recordings of in-depth interviews were used to collect data for quantitative and qualitative consecutively.

3.3 Study Population

This study was conducted amongst pregnant women attending ANC services in Webuye County hospital.

Quantitative

For the quantitative arm, pregnant women aged 18 – 49 years attending ANC clinic for the first time were targeted regardless of the previous pregnancy.

Qualitative

Pregnant women aged 18-49 years who did not participate in quantitative and were willing and consenting for in-depth interview were interviewed.

3.4 Eligibility Criteria

3.4.1 Inclusion Criteria

Consenting pregnant women aged 18-49 years coming for the first ANC visit in the Webuye Maternal Child Health Clinic.

3.4.2 Exclusion Criteria

Pregnant women aged 18-49 years who were critically ill.

Pregnant women coming for subsequent visit.

3.5 Sampling Method

Quantitative sampling

As routine in the Maternal and Child Health Clinic (MCH clinic), the pregnant women were registered in the register book in order of their arrival time. The register helped to remove sampling bias. Purposively, the first time comers were identified in the register in the order of their arrival time and requested to participate. The study employed a systematic sampling method for the quantitative arm since the mothers came randomly to the clinic without being booked. This required a random start and selection after every K. case where K=N/n, N=720 which is the population size and n=354 which is the sample size.

According to the Local data from Webuye MCH statistics findings at the time of the study, Webuye County Hospital attends to an average of six new pregnant women every day during working hours. From a single population proportion formula for calculating the sample size, 354 pregnant women were sampled. The total population estimated for six months was divided by sample size to get the order of sampling (720/354) =2. The systematic sampling method took every second in the list until 354 participants were obtained.

Qualitative Sample

The pregnant mothers who met the criteria and had not participated in the quantitative arm, were requested to participate in the qualitative arm of the interview. Upon consenting, they were interviewed. The saturation of the reasons for the timing of first ANC clinic was

attained after interviewing twenty two participants.The factors that were repeatedly mentioned were fear of hiv testing and Covid 19 infection, poverty and cultural beliefs.

3.6 Sample Size

Quantitative

The study population consisted of all pregnant women attending ANC services in Webuye County Hospital. A single population proportion formula, [n = (Z α/2)2 p (1-p) / d2], was used to estimate the sample size. The following assumptions had been made (proportion of early ANC visit among pregnant women to be 36%, 95% confidence interval, a margin of error of 5% (d = 0.05), and an expected nonresponse rate of 10%). Well-documented registration books were used to sample the study participants since the total number of pregnant mothers who visited the hospital during the last six months was easily determined (720–960) new pregnant women. Therefore, the total number of 354 respondents was the sample size.

Qualitative Arm

For an in-depth interview, the sample size for the qualitative study was found to be 22 participants after the achievement of the saturation point. The researcher used a homogenous purposive sampling method to select the potential participants of this study (only pregnant women who had come for the first visit and had agreed to participate in the qualitative arm regardless of their gestational age and parity). Four participants were sampled for that material day interview. This formed two groups in the ratio of 1:1, stratified by early and late attendance. Eight individual in-depth interview sessions were conducted with research investigators.

3.7 Data Collection Instruments

A structured questionnaire for the quantitative arm and interview guide for in-depth interviews in the qualitative arm were used to collect the data.

Interviewer-administered questionnaire

Quantitative Arm

A structured questionnaire included closed-ended questions. The questionnaire was designed in English, translated into Swahili, and pre-tested outside the study area (Webuye health center). The researcher determined the design of the questionnaire by insights from the conceptual framework for this study. Socio-demographic characteristics (age, marital status, women's educational level), socio-economic (wealth level, income), and sociocultural factors(ethnicity) were the main constructs. The factors were the perceptions of the pregnant women towards the quality of ANC services offerred, distance to the health facility, and perception (the quality of ANC services views/thoughts, experiences). Ethical issues included male health providers and husband involvement.

Qualitative arm

Interviewer Guide

The interviewer guide questionnaire was in English and translated verbally to Kiswahili where necessary to enhance the validity and consistency of the research findings. In-depth interviews took 45 minutes for each participant and comprised open-ended questions with specific probes. The responses were audio-taped. The concepts in the interviewer guide

were guided by the objectives and conceptual model about the factors associated with the timing of the first antenatal visit. The factors that enhanced and those that inhibited timely antenatal first visits were explored. Data were collected until saturation was achieved. This was when themes had been mentioned several times, and there was no more emergence of new ones.

Pre-testing Data Collection Tools

Quantitative

The quantitative data collection instrument was pre-tested among pregnant women 4 (2 who initiated antenatal visits on time and two who had started the first visit late) coming for the first visit at the nearby health Centre (Webuye Health Centre). It took about 45 minutes per participant.

Qualitative

The interview guide and audio tape instruments were pre-tested among four pregnant women meeting the criteria in the Webuye Health Centre**.**

Two of the participants were the ones who came early and those who came late. It took an average of forty-five minutes to finish the interview.

3.8 Recruitment and Data Collection Procedure

3.8.1 Recruitment

Data collection was done in a quiet private room in one of the selected rooms in MCH. The quantitative data collection targeted all the pregnant women who were coming for the first

visit during that current pregnancy and had not attended elsewhere for antenatal services. The research assistants and principal investigator gave full information about the purpose of the study. The participants who met inclusive criteria were supplied with well-prepared and self-explanatory brochures containing all relevant information to aid in understanding. Willing participants were then referred to the quiet room within the hospital MCH, where they were enrolled in the study once consent was duly given.

Qualitative

At the end of the quantitative session, the principal investigator requested those who did not participate in the quantitative arm to participate in the in-depth interview at their convenient date and time. Once they agreed, they were directed to the private room for enrollment and interview**.**

3.8.2 Data Collection Procedures

3.8.2.1 Quantitative

The consenting participants were directed to the selected private room in MCH. The investigator would read the question clearly to the participants, and where more understanding was required, it would be explained in the simplest terms possible. The responses would be ticked accordingly. All processes for individual participants took an average of 45 minutes.

3.8.2.2 Qualitative

The participants for in-depth interviews and audio recordings of their responses were drawn from those who did not participate in the quantitative interview. The purpose of the study was subsequently explained to the consenting participants. Those who signed the

written consent would be invited for a one-on-one in-depth interview. The interview took place in the selected quiet room in MCH to ensure confidentiality. The participants were thanked after the interview for taking part in the interview. A reimbursement of 200 ksh to cover transport was given to each participant in the study.

3.9 Data Management and Analysis

For the quantitative survey, data were coded into Statistical Package for the Social Sciences (SPSS) software. Coding and cleaning of data were done before analysis. Descriptive statistics such as Mean, Median, and standard deviation were obtained, and correlations among variables were established. Chi-squared test for nominal (categorical) data was used to determine associations between categorical variables. Association was measured using binary logistic regression.

Bivariate analysis variables which showed significant association at p-value <0.2 would be entered into multivariate analysis to select predictor variables of factors associated with the timing of the first antenatal visit. Statistical significance was considered at p value<0.05. The presentation of analyzed data was displayed in the form of frequency tables.

Qualitative

Digital recordings were downloaded to the password-protected computer. Transcription was done in English. All translated interviews were double-checked for accuracy by the principal investigator and trained qualified research assistants to ensure accuracy and homogeneity. Transcribed interviews were entered into a text organization software program called N*Vivo to enable analysis. The text was coded into a categorized branching arrangement in which broad concepts were first identified, and then themes and variations within those constructs were marked and labeled. We applied the grounded theory

approach, in which theory was derived from the data. New theoretical categories were derived until they were saturated and no new themes could emerge. Coding involved labeling and organizing sections of the text based on emerging themes and domains and was synthesized using matrices structured by the main themes of the analysis. Coded data were compared across variations in delayed (those coming beyond 12 weeks of gestation and timely attendance(those coming within 12 weeks of gestation) characteristics. Results were summarized and presented under the main study thematic categories after repetitive reading and data coding.. Descriptions and illustrations were made.

3.10 Limitations

This study adopted a mixed methods design that only focused on the factors and reasons for the timing of first ANC contact by the pregnant women attending the Webuye County hospital.

For the qualitative aspect, the findings of the reasons for the timing of the first ANC cannot be generalized since the sampling method was purposive. For quantitative and qualitative studies done for academic processes, time and money were the main limitations. Since the study was a hospital-based cross-sectional design, the findings may not be generalized to the general population.

3.11 Ethical Considerations

Approval was sought and approved by Moi University Institutional Research Ethics Committee (IREC) (APPROVAL NUMBER FAN;0003444). Permission to conduct the study was sought and approved by the Webuye County Hospital management team. All the study participants were given adequate information about the study objectives, procedures, risks, and benefits, and individual written informed consent was sought before the

interview. Respondents were continuously given assurance about ethical principles such as anonymity and confidentiality. The transcribed data was entered into a password-protected computer, and the printed copies were kept in a locked cabinet. Any participant who would want to withdraw from the study was allowed and reassured that care would not be withdrawn from them. Data will be stored safely for a minimum of 3 and 5 years before destruction/disposal.

3.12 Data Dissemination

The study findings will be disseminated to all health care providers in the facility so as to enable them plan and institute education on early ANC visit.

CHAPTER FOUR

4.0 RESULTS

4.1 Overview

This chapter highlights the key findings on the factors associated with the timing of the first antenatal visit among pregnant women attending Webuye Hospital, Bungoma County, Kenya**.** Three hundred and fifty-four mothers met the inclusion criteria and were enrolled in the quantitative arm. However, twenty-two participants attained the saturation point in the qualitative arm.

4.2 Socio-demographic characteristics of the participants

A total of 354 participants were included in the Analysis of factors associated with the timing of antenatal visits for the study's quantitative arm. Table 1 shows their socio-demographic characteristics. We observed that majority were aged between 18 and 24years, 198 (55.9%) married 298 (84.2%). Regarding education, 262 (74.1%) had post-primary education and very few, 68(19.2%), had an income greater than Ksh. 20,000. The travel time to the hospital for most of the participants was less than 30 minutes, 281(79.4%), and the motorbike was the main mode of transport 258(72.9%), and very few participants, 46 (13%) spent more than Ksh. 200 as transport charges.

Table 2: Socio demographic characteristics of the participants

Variable	**Freq (%)**
Age (yrs.)	
18—24	55.9%
25-34 years	137 (38.7%)
35-44 years	19 (5.4%)
Marital status	
Single	53 (15.0%)
Married	298 (84.2%)
Divorced/separated	3 (0.8%)
Education level	
Primary and below	92 (26.0%)
Secondary education	185 (52.3%)
College/University	77 (21.8%)
Income (Ksh.)	
Less than 10000	66 (18.6%)
10000 to 20000	110 (31.1%)
20000 to 40000	52 (14.7%)
40000 to 60000	12 (3.4%)
Above 60000	4 (1.1%)
None	110 (31.1%)
Travel time to hospital	
Less than 30minutes	281 (79.4%)

1-2 hours	73 (20.6%)
Mode of transport	
On foot	48 (13.6%)
Motorbike	258 (72.9%)
Vehicles	48 (13.6%)
Travel cost	
50 Shs	111 (31.4%)
100 Shs	172 (48.6%)
More than 200 Shs	46 (13.0%)
On foot	25 (7.1%)

Obstetric History

There were 226 (63.8%) women who were multigravidas, and of these majority had had at least two pregnancies. There were 37 (10.5%) of the women who reported having ever had an unplanned pregnancy, 75(21.2%) reported having a problem during pregnancy, and 71(20.1%) reported having lost a pregnancy. Of those who had been pregnant, almost all 217 (96%) had ever attended ANC in the previous pregnancies, and of these, 150(69.1%) attended the first ANC visit for the last pregnancy in the first trimester.

Table 3: Obstetric history

Variable	**Frequency (%)**
Pregnant before	
Yes	226 (63.8%)
No	128 (36.2%)
Number of previous pregnancies	
1----------4	209 (59.0)
5----------7	17(4.8 %)
primigravidas	128 (36.2 %)
Have had an unplanned pregnancy	
Yes	37 (10.5%)
No	317 (89.5%)
Ever encountered problems during previous pregnancy	
Yes	75 (21.2%)
No	279 (78.8%)
Ever Lost any pregnancy	
Yes	71 (20.1%)
No	283 (79.9%)
Number of lost pregnancy	
One	18 (25.4%)
Two	36 (50.7%)

Three	16 (22.5%)
Six	1 (1.4%)
Never lost pregnancy	283
Attended ANC previous pregnancies	
Yes	217 (96.0%)
No	9 (4.0%)
Primigravidas	128
ANC timing last pregnancy	
0-3 months	150 (69.1%)
4-6 months	64 (29.5%)
7-9 months	3 (1.4%)
Never been pregnant before	137
Number of ANC visits last pregnancy	
One	19 (8.8%)
Two	11 (5.1%)
Three	45 (20.7%)
Four	73 (33.6%)
Five	29 (13.4%)
Six	27 (12.4%)
Seven	9 (4.1%)
Eight	3 (1.4%)
Nine	1 (0.5%)
Primi gravidas	137

Perceptions towards ANC

The majority of the women, 298 (92.6%), agreed that optimal ANC timing is beneficial. Fifty-six (15.8%) reported being aware of alternative ANC care providers; however, only 23(6.5%) reported having consulted an alternative ANC care provider. Almost all the women, 343(96.9%), reported adequate ANC services. There were 61(17.2%) of the women indicated that there are situations that prevent women from attending ANC. More than half of the women, 213 (60.2%), reported the waiting time during an ANC visit was less than an hour. Most of the women, 337 (95.2%), indicated that they received support to seek ANC services from their family or spouse. Almost all the women, 328 (92.7%), rated the ANC services as good, and they also indicated that they would seek the ANC services in the future 350 (98.9%) and recommend to others 349 (98.6%).

Table 4: Perception towards ANC

Variable	**Frequency (%)**
Optimal ANC timing beneficial	
Strongly disagree	19 (5.4%)
Disagree	1 (0.3%)
Agree	199 (56.2%)
Strongly agree	129 (36.4%)
No opinion/doesn't know	6 (1.7%)
Know alternative ANC care providers	
Yes	56 (15.8%)
No	298 (84.2%)
Consulted alternative care providers	

Yes	23 (6.5%)
No	331 (93.5%)
ANC services adequate	
Yes	343 (96.9%)
No	11 (3.1%)
Situations preventing ANC attendance	
Yes	61 (17.2%)
No	293 (82.8%)
Waiting time	
Less than one hour	213 (60.2%)
2-3 hours	106 (29.9%)
More than 3 hours	35 (9.9%)
Long waiting time	
Yes	59 (16.7%)
No	295 (83.3%)
Family support	
Yes	337 (95.2%)
No	17 (4.8%)
ANC rating	
Good	328 (92.7%)
Fair	25 (7.1%)
Bad	1 (0.3%)
Future use	

Yes	350 (98.9%)
No	4 (1.1%)
Recommend	
Yes	349 (98.6%)
No	5 (1.4%)

Objective 1: Factors Associated with Timing of First ANC visit

We observed that 125 (35.3%) of the women attended the first ANC visit in the first trimester.

Table 5: Timing of first ANC visit

Variable	**Frequency (%)**
Age of pregnancy	
0-3 months	125 (35.3%)
4-6 months	195 (55.1%)
7-9 months	34 (9.6%)

Bivariate Analysis

Socio demographic Factors associated with timing of first ANC

Table 5 shows the bivariate analysis results assessing the association between the socio-demographic characteristics and the timing of the first ANC. We observed that the only variable associated with the first ANC timing was education level.

A higher proportion of women in primary school attended ANC in the second trimester compared to those in secondary and higher.

Table 6: Bivariate analysis results timing of first ANC versus socio demographic characteristics

	Timing of first ANC		
Variable	**Second/ Third trimester (N=229) Freq (Row %)**	**First trimester (N=125) Freq (Row %)**	**p value**
Age (yrs.)			0.144[1]
13-18 years	13 (48.1%)	14 (51.9%)	
19-25 years	112 (65.5%)	59 (34.5%)	
26-35 years	94 (68.6%)	43 (31.4%)	
36-45 years	10 (52.6%)	9 (47.4%)	
Marital status			0.326[1]
Married	196 (65.8%)	102 (34.2%)	
Not married	33 (58.9%)	23 (41.1%)	
Education level			0.006[1]
Primary and below	72 (78.3%)	20 (21.7%)	
Secondary education	109 (58.9%)	76 (41.1%)	
College/University	48 (62.3%)	29 (37.7%)	
Income (KS)			0.397[1]
10000 to 20000	70 (63.6%)	40 (36.4%)	
20000 to 40000	39 (75.0%)	13 (25.0%)	
Above 40000	8 (50.0%)	8 (50.0%)	

Less than 10000	42 (63.6%)	24 (36.4%)	
None	70 (63.6%)	40 (36.4%)	
Travel time to hospital			0.189[1]
Less than 30minutes	177 (63.0%)	104 (37.0%)	
1-2 hours	52 (71.2%)	21 (28.8%)	
Mode of transport			0.953[1]
On foot	31 (64.6%)	17 (35.4%)	
Motorbike	166 (64.3%)	92 (35.7%)	
Vehicles	32 (66.7%)	16 (33.3%)	
Travel cost			0.828[1]
50 Shs	69 (62.2%)	42 (37.8%)	
100 Shs	114 (66.3%)	58 (33.7%)	
More than 200 Shs	31 (67.4%)	15 (32.6%)	
N/A	15 (60.0%)	10 (40.0%)	

- Pearson's Chi-squared test

This quantitative result is in agreement with qualitative findings where participant number 006 gravida 3 para 2 at 10 weeks gestation, who was a primary school teacher, said, “it is known that once you know you are pregnant, you should start clinic without waiting…because pregnancy some time can be problematic.”

Obstetric History Factors Associated with Timing of First ANC

Two obstetric characteristics were statistically significantly associated with the timing of ANC . We observed that having experienced problems or lost a previous pregnancy was statistically significantly associated with the timing of the first ANC visit, with a higher proportion of those who had experienced optimal timing (48%) compared to those who had not experienced a problem (31.5), p-value = 0.05. Also, women who had an optimal time in the previous pregnancy were more likely to maintain the optimal timing (41.3% versus 13.4%), and the difference was statistically significant p-value<0.001. The other factors were not statistically significant since the p-value>0.005.

Table 7: Bivariate Analysis Results Timing of first ANC Versus Obstetric history

	Timing of first ANC		
Variable	**Second/ Third trimester (N=229) Freq (Row %)**	**First trimester (N=125) Freq (Row %)**	**p value**
Pregnant before			0.266[1]
Yes	151 (66.8%)	75 (33.2%)	
No	78 (60.9%)	50 (39.1%)	
Unplanned pregnancy			0.699[1]
Yes	25 (67.6%)	12 (32.4%)	
No	204 (64.4%)	113 (35.6%)	
Problems in pregnancy			0.006[1]
No	187 (68.5%)	86 (31.5%)	
Yes	42 (51.9%)	39 (48.1%)	
ANC attendance			0.396[2]
Yes	146 (67.3%)	71 (32.7%)	
No	5 (55.6%)	4 (44.4%)	
Not applicable	78 (60.9%)	50 (39.1%)	
First ANC timing last pregnancy			< 0.001[1]
First trimester	88 (58.7%)	62 (41.3%)	

Second/third trimester	58 (86.6%)	9 (13.4%)	
N/A	83 (60.6%)	54 (39.4%)	

- Pearson's Chi-squared test
- Fisher's Exact Test for Count Data

This finding is consistent with the qualitative findings from a Gravida 2 +1 at 8 weeks gestation who was participant number 009 who said, "sister… I lost my first pregnancy at 5 months. I had not started my clinic visit. I visited the hospital and was told to come as soon as I miss my periods so I have come."

Perception Factors Associated with First ANC

At the bivariate level, none of the perception factors was statistically significantly associated with timing of ANC (table 3).

Table 8:Bivariate analysis results timing of first ANC versus perception to ANC

	0 (N=229)	1 (N=125)	p value
Optimal ANC timing beneficial			0.939[1]
Agree	212 (92.6%)	116 (92.8%)	
Disagree	17 (7.4%)	9 (7.2%)	
Consulted alternative care providers			0.397[1]
Yes	13 (5.7%)	10 (8.0%)	
No	216 (94.3%)	115 (92.0%)	
ANC services adequate			0.057[2]

Yes	225 (98.3%)	118 (94.4%)	
No	4 (1.7%)	7 (5.6%)	
Situations preventing ANC attendance			0.108[1]
Yes	34 (14.8%)	27 (21.6%)	
No	195 (85.2%)	98 (78.4%)	
Waiting time			0.345[1]
Less than one hour	144 (62.9%)	69 (55.2%)	
2-3 hours	63 (27.5%)	43 (34.4%)	
More than 3 hours	22 (9.6%)	13 (10.4%)	
Family support			0.796[2]
Yes	217 (94.8%)	120 (96.0%)	
No	12 (5.2%)	5 (4.0%)	

- Pearson's Chi-squared test
- Fisher's Exact Test for Count Data

Multivariate Analysis Results

In this analysis, we considered significant variables at a 0.20 level of significance. We observed that adjusting for other factors, women aged 19-25 had a statistically significant lower odd (OR=0.39, [95%CI:0.15,0.98]) of attending the first ANC clinic in the first trimester compared to those aged 13-18 years.

In terms of education adjusting for other factors, the odds of optimal first ANC timing increased with an increase in the level of education. For women with secondary education

levels, their odds of optimal first ANC timing was 3.2 times that of women with primary education (OR=3.21, [95%CI: 1.73, 6.22]). While women with tertiary level of education their odds of optimal first ANC timing was 2.5 times that of women with primary education (OR=2.49, [95%CI: 1.17, 5.39]). Adjusting for other factors, women who had previously experienced problems or lost a pregnancy, their odds of having an optimal first ANC timing was 2.6 times that of women who had never experienced a problem (OR=2.56, [95%CI: 1.43, 4.67]). Also, those who attended previous ANC in the second or third semester had reduced odds of having an optimal time in the current pregnancy, adjusting for other factors (OR=0.19, [95%CI:0.08,0.41]).

Table 4.8: Logistic regression results on factors associated with optimal timing of first ANC

Table 9: Logistic regression results on factors associated with optimal timing of first ANC

Characteristic	**OR**	**95% CI**	**p-value**
Age in years			
18-24years	0.39	0.15, 0.98	0.047
25-34 years	0.39	0.14, 1.08	0.071
35-44 years	0.80	0.19, 3.30	0.800
Education level			
Primary and below	1		
Secondary education	3.21	1.73, 6.22	<0.001
College/University	2.49	1.17, 5.39	0.019
Travel time to hospital			
Less than 30minutes	1		
1-2 hours	0.61	0.32, 1.13	0.120
Experienced problem in previous pregnancy			
No	1		
Yes	2.56	1.43, 4.67	0.002
ANC timing in the last pregnancy			
First trimester	1.		
Second/ third trimester	0.19	0.08, 0.41	<0.001

N/A	0.94	0.52, 1.70	0.800
Existing situations preventing pregnant women from attending ANC			
Yes	1		
No	0.57	0.30, 1.08	0.082
ANC services in hospital adequate			
Yes	1		
No	3.02	0.75, 14.1	0.130

Qualitative Results

A total of 22 pregnant women were interviewed with an end point of saturation point. The following themes emerged: Qualitative part Participants 012,015 and 019 attested that "the right time for the first antenatal visit should be as soon as I miss my period… sister I attended during last visit and I was congratulated and so I have come again. I have missed my period once now'. 'I have come to clinic for the first time because I have felt something moving in my stomach. I believe the baby is mature enough for examination here," said participant 004 aged 25 years at 30 weeks gestation.

General Characteristics of Participants in In-depth Individual Interviews.

The women who participated in in-depth individual interviews (n = 22) were primigravidas and multiparous and had not attended ANC clinics during the current pregnancy at Webuye or elsewhere. Eight of the 22 pregnant women interviewed were primigravidas, and the rest

were multiparous. “I am a single parent, I have three children who are currently in school and staying in town. All this need money.

I consider coming to clinic towards the time of delivery so that I do not have to come several times to clinic,” Participant 1 G4p3+0 in second trimester of pregnancy responded.

“My small business of selling vegetables has gone down due to covid 19.Most people are no longer buying from. Whatever small I get is enough for my children and me to buy basic food stuff. Attending clinic has not been an urgent thing. I feel my baby kicking,” Participant 2:G3p2+0 at 36 weeks gestational age commented. Also, recognition of lack of interest, understanding, and support by male partner to participate during pregnancy, resulted in some women not attending ANC clinics in a timely pattern. “All this long, I have been waiting for my husband to permit me to come to clinic. He tends to think coming to clinic in early pregnancy is waste of time and money. He usually wants me to attend to customers in the shop. Today, I have been relieved by my sister and he has permitted me to come,” Participant 3:G2p1+0 at 30 weeks gestation responded. For HIV prevention of mother-to-child transmission, pregnant women must be tested to aid in the subsequent management, but some women fear being told their HIV status. They opt to come at the last minute when they are ready for delivery because of going together to the first antenatal visit. Fear of HIV testing by pregnant women was also perceived to be a barrier to early timely ANC visits. G1p0+0 responded: “I have been gathering courage to come to clinic since HIV testing is mandatory to every pregnant woman.” Participant 3. “It has not been easy for me to start my clinic. My husband has not been paid for several months. He works as a watchman and even if he is paid, it is very little money. I wanted to start clinic last month but I had no money for transport and out-of-pocket. I was told to start clinic as early

as i miss periods because i lost the last pregnancy." Said participant 4, G2p0+1 at eleven weeks of gestational age.

In rural areas, parents or in-laws to pregnant women, make decisions for couples who live with them. Decisions related to health care seeking may entirely depend upon the attitudes of parents in-laws towards ANC services, and their experiences with the health care system. Men who escort their wives are considered weak in this dominant male society. "I currently stay with my mother-in-law. I have been depending on her to guide me on when to start clinic. I know clinic should be started as soon as you recognize you are pregnant, but she has been telling me to wait until the pregnancy is mature enough. My husband also has been looking for an opportunity to escort me here since this is my first pregnancy," Participant 5, G1at 20 weeks of gestation responded.

Mothers' pregnancy outcome experiences are associated with factors that influence the timing of the first antenatal visit in some communities. Men do think "if my mother did not attend clinic at all or attended only once and gave birth without any problem, why bother now." Couples who stay with their parents are mostly affected by this notion. G1p0 attended clinic at 10 weeks of the pregnancy and said. "I stay with my mother in law. My husband is away and I have tried calling him to finance my visit but he claims that there is no need for the visit. He said his mother had no problem with all her pregnancies and did not attend clinic. My brother assists me with transport costs." Participant 6.

"I lost my husband. I have 2 children who are in school and are depending on me. I work as a cleaner in an office in town but whatever I get is not enough. I come from far and need fare to come to clinic." Participant 7, G5p3+2 at 37 weeks responded.

For those families that stay with their in-laws, since the mother-in-law did not attend clinic, a pregnant woman will find it difficult to attend ANC clinic. Her mother-in-law will discourage her saying, “We did not go to ANC clinic during our time, why do you feel the need to go?” It becomes even more difficult when the husband depends on his parent financially. Participant 8.

Challenges faced by women in visiting ANC clinics

This section highlights the challenges faced by pregnant women who attended an ANC clinic for the first time during the second and third trimesters. These challenges included poverty, perceived poor quality of ANC services, and lack of male involvement that hindered pregnant women’s timely utilization of ANC services.

Participants clearly stated that poverty delayed pregnant women from accessing ANC services on time. Due to the distance to health facilities and lack of transportation, many pregnant women decided to wait until their third trimester to initiate visits to an ANC clinic. Early ANC initiation meant spending a lot of money on transport, and many women had no source of regular income and lacked a bicycle or motorcycle for transportation.

Factors such as distance act as both a barrier as well as a challenge to the utilization of ANC services. For some women, distance to the ANC clinic could delay their attendance until the third trimester.

As a result, they would only make a single visit during their pregnancy for a general check-up. Participant 9 said, “Due to distance and other issues, instead of visiting the clinic every

month, I opt to attend only once to avoid the frequency of going to the clinic every month by attending in the last months of the pregnancy from the seventh month."

Participant 10, G4p3+0 added, "Sometimes you may feel weak and lazy to walk to hospital every month. Since one cannot afford paying for boda boda because they lack money, they'll decide to wait till they are close to the 9th month and attend just one visit and get an ANC book."

Far distances from some villages to hospitals prevent pregnant women from making their first ANC clinics early. Some villages are far away from Webuye hospital, approximately more than 7 kilometers, making it difficult for pregnant women to walk that long. This is even worse when the household lacks the means of transport, such as a bicycle or a motorcycle, or money for the fare. Even if they value ANC services, they may still be unable to attend early. Participant 11 at 38 weeks of pregnancy said: "I come far away from here, have no money and we do not own even a bicycle or motorcycle in our family. I have come today because I was told to deliver in the hospital since I had complications during my last pregnancy."

Women appeared to have some knowledge of the benefits of initiating early ANC services; however, perceived long queues to receive ANC services in this hospital discouraged timely initiation of care.

'Pregnant women are supposed to receive comprehensive ANC care when attending clinics. Still, in this hospital, the shortages of healthcare providers and many pregnant women were identified as common challenges. Participant 12, G5p4+0 at 39 weeks 6 days responded: "When you go for ANC, they make you queue for several hours because health

providers are few, or some have gone for seminars or leave. You may stay in the clinic for several hours till you feel like going home and come back any other day.

'So I instead come towards the end of nine months. One visit is enough for me before I deliver." Participant 13, G4p2+1 added: "Webuye hospital has a good reputation for good services, which attracts many women. As such, you must wait a long time to be served. I attended the clinic three times during my last pregnancy and witnessed this. So this time, I decided to come during the middle of my pregnancy." Participant 14, G4p2+1 also responded, saying: "At least I no longer fear COVID-19 since masks have been provided and I know I can be protected. I was to come last week but I had to spend that time to look for money for fare to and from the hospital. Am a single mother, taking care of my children."

Lack of male involvement and participation during pregnancy was also challenging for women who attended ANC clinics in rural communities. Participants noted that the lack of men's involvement or interest was associated with cultural beliefs, the influence of in-laws, and the environment at the health facilities, which was not male-friendly. HIV testing is crucial for both partners; however, both partners need to agree to HIV testing after proper counselling and health education. In this community, HIV testing was associated with fear by the women. Furthermore, the existing health facilities provided no privacy for the couple during the counseling or HIV testing.

Participant 15 commented: "Actually, most women in this community go late for antenatal services because of the fear of HIV testing. We do not have a friendly environment. For example, with our health facility there is no infrastructure for a reproductive and child

health unit. Currently, all patients who come for Tuberculosis (TB) and HIV drugs, out patients, and pregnant women and under-five children are gathered in one place. There is no privacy and friendly environment for the people."

Some cultural beliefs concerning pregnancy were perceived as causing delays in visiting ANC clinics. For example, in the first trimester, women do not disclose their "invisible" pregnancy to people, including health providers, for fear of being bewitched. In addition, there were misconceptions about the use of hematinic as many women thought that iron supplements exaggerate morning sickness symptoms and sometimes even cause peptic ulcer disease. To avoid prolonged use of hematinic for an extended period during pregnancy, they delay making the first antenatal visit. Participant 16 said, "I wait until my pregnancy is very obvious to start attending the clinic. You cannot begin attending the clinic with an invisible pregnancy; my fellow women may scold me when I go to fetch water or when we are in the marketplace. I do not disclose my pregnancy to everyone, therefore, I do this because I fear being bewitched since you cannot know who your enemy is. Also, I'm not too fond of the medicine we are given throughout pregnancy to build up blood. It causes discomfort in my stomach and sometimes vomiting. I think these medications can even prolong pregnancy."

Misconceptions about hematinic are also a challenge because pregnant women think when they use iron or folate, they may experience abortion, fetus progress delay, and annoying side effects.

Partiipant 18 noted that, "Misconception regarding the use of iron tablets/syrup exists among women. They think that when you use these drugs, you delay the growth of the

pregnancy, while others complain about the side effects of the drugs, such as nausea. So, they prefer to visit the clinic late to avoid continued use of these drugs."

How women cope with existing ANC requirements

Participant 19, G1p0+0 at 25weeks gestation noted: "I have come to the clinic today to seek confirmation of pregnancy. I have missed my periods for the last two months and feel unwell, which I think can be because of pregnancy. I was to come last month but feared COVID-19. Also, I did not have enough money for transport expenses. I tried asking for help from my husband, but he said it was too early to start coming to the clinic." Participant 20, G4p3+0 at 18 weeks of pregnancy also commented: "Despite the long queues in this hospital, I prefer coming here to the rest of the hospitals around since there is good care. COVID-19 has messed up my visit. I usually start my clinic as soon as I miss periods."

Participant 21, G1P0+0 said: "I contemplated starting an ANC clinic but was informed that HIV testing should be done on the first visit. I feel afraid of the results and the effects on my baby. I am forced to come today since I need a mosquito net and tetanus injection. I come from far away, and money has been a problem since the beginning of Corona Virus. I am a single lady." Participant 22, G1p0+0 also commented: "I prefer coming to Webuye hospital for service because it is organized compared to other health facilities. The COVID-19 pandemic has become a significant threat to our lives. I am told I am at risk of getting infected because of pregnancy. I feared coming as early as when I missed my periods three months ago.

I come from far, and I have to use boda boda or matatu to and from the hospital. I feared interacting with many people on my way to the hospital. My husband lost his job due to

COVID-19, and money has become a challenge. However, I felt okay; so there was no need for me to attend clinic.'

From: Factors associated with first ANC visit among pregnant women attending Webuye county hospital in Kenya.

Table 10: major themes and subthemes from in depth individual interviews in qualitative arm.

Key issues	**Themes**	**Sub themes**
Perceived barriers to utilization of ANC services	Poverty	• Health facility was far from home and pregnant women feeling tied to walking long distances
		• Women or family not having income to afford transport
		• Having no fare for hiring a bicycle or paying for a boda boda
	Fear of HIV testing	• Pregnant women's fear of HIV testing
		• Male partner fear of HIV testing results
		• Misconception regarding HIV testing
		• Self stigmization arising from HIV results
	Socio-cultural beliefs	• Men's refusal to escort women/men feel no need to be involved
		• Normal practices or habits because no history of pregnancy related complications
		• Parental influence especially among those couples who live with their parents

Challenges faced by women when utilizing the ANC services	Lack of male involvement	• Unfriendly male environment
		• Men unwilling to escort women/give financial support
	Perceived poor quality of care	• Services available but few staff to attend to many women.
		.long queue in the lab and ultrasound area
		• Long waiting times for services
		• Frequent shortages of health providers
	Informal regulation	• HIV testing is no longer voluntarily
		• Men will not accept escorting their wives
	Health facility	• Attend a health facility that is far away from your home

CHAPTER FIVE

5.0 DISUSSION

The World Health Organization and the National Institute for Health and Clinical Excellence recommend starting ANC visits during the first trimester for every pregnant mother. However, a vast majority of women in developing countries do not adhere to this recommendation, and most do not have an appropriate time for their first antenatal care visit. This study points out several factors, some with more or less significance, associated with the tendency of expectant mothers to time and book their first antenatal visits. Similarly, this found that 125 (35.3%) women attended the first ANC visit in the first trimester. 195 (55.1%) attended their first visit during the second trimester, while 34 (9.6%) paid their first visit during the third trimester. The proportion of pregnant mothers who attended the ANC visit within the recommended time was higher in this study compared to with the finding from Tanzania (29%) (Kisaka & Leshabari, 2020). The variations in these outcomes could be attributed to respondents' socio-economic and demographic characteristics and time disparities. Recent efforts enacted to counteract maternal mortality in different countries in sub-Saharan Africa could be another cause of the underlying differences.

On the other hand, the findings in this study were higher than the national findings since most of the participants in the national study were inhabitants of rural areas with late-trimester or no attendance to ANC. In some other African countries, timely entry to ANC was higher than in the current study.

In Ethiopia, for instance, a study by (Gudayu et al. 2014) found that 59.8% of the respondents began their ANC visits in the early trimester. The time gap between the studies and the socio-economic variations among the populations studied could explain this phenomenon.

The average gestational age at which the study participants attended the first ANC in this study was 17 weeks (approximately 4.5 months). This coincides with a previous study in Addis Ababa in which the mean gestational age at first was four months (Gudayu et al., 2014). This outcome could be attributed to the current practice of starting ANC at the fourth month of pregnancy, which has been practiced widely since the implementation of the Basic Emergency Obstetric and Newborn Care (BEmONC) manual and HMIS guideline (Tola et al., 2021). These guidelines recommend beginning the first ANC visit before the first sixteen weeks of gestation. Also, the study revealed that most of the respondents attained high school education which is consistent with the findings (Kisaka & Leshabari, 2020) but lower than what was found in a related study in Ghana by (Manyeh et al. 2020). This could be due to the higher prevalence of reported pregnancies across West Africa.

In this study, first-time mothers between 18 and 24 years were less likely to begin their ANC visit within the first trimester. This finding supports a study in Kenya in which Pell et al. (2013) suggested that the ramification of teenage pregnancy, which includes dismissal from school and stigma, adolescents are at risk of hesitating pregnancy disclosure and, therefore, ANC attendance. It could be because a higher proportion of women in primary school attended ANC in the second trimester compared to those in secondary and higher education.

Similarly, there is a strong correlation between this study and another study done in Ethiopia which suggested that mothers with planned pregnancies were likely to attend ANC visits earlier than the unintended ones (Manyeh et al., 2020). The current study shows that women with planned pregnancies are ready to make preparations to begin ANC early. According to Pell et al. (2013), intended pregnancies are more cared for by pregnant women and their partners. This enables women to initiate ANC timely. In Kenya as a whole, very few studies have been conducted around unplanned pregnancies, so there is a need for further investigation in the Kenyan context.

The mothers' perception regarding timing had statistically significant correlations with in-time entry to ANC. Mothers who perceived the right time to be in the first trimester were nearly four times more likely to commence ANC timely than those who perceived the right time beyond 12 weeks of pregnancy. 92.6% (298) of the respondents agreed that optimal ANC timing is highly beneficial, and 96.9% (343) reported the adequacy of ANC services providers. 95.2% (337) of them indicated receiving sufficient support and care from ANC service providers and their families. 98.9% (350) of the participants indicated they would seek ANC services. Mothers who perceived the correct timing of the ANC initiation as 12 weeks of gestational age are more likely to bring their ANC visits in the first trimester than those with inappropriate perceptions. This finding was in agreement with a study from Addis Ababa (Tola et al., 2021). The study is also in line with Nigerian research suggesting that pregnant mothers with appropriate knowledge began timely ANC booking (Fagbamigbe et al., 2019). These outcomes imply that providing proper information and advice on the patterns of ANC utilization from service providers improves the timely initiation of ANC visits.

The current study shows that women with planned pregnancies are ready to make preparations to begin ANC early. According to Pell et al. (2013), intended pregnancies are more cared for by pregnant women and their partners. This enables women to initiate ANC timely. In Kenya as a whole, very few studies have been conducted around unplanned pregnancies, so there is a need for further investigation in the Kenyan context.

The study findings show that having experienced problems or lost a previous pregnancy was statistically significant and associated with the timing of the first ANC visit, with a higher proportion of those who had experienced optimal timing (48%) compared to those who had not experienced any challenge. Similarly, women who had optimal timing in the previous pregnancy are likely to uphold optimal timing in the present pregnancy. This study finding is comparable to study results from Ghana (Manyeh et al. 2020). This could be because most mothers perceive antenatal care as curative rather than preventive practices. Most of them only make antenatal visits whenever they get a pregnancy-related illness.

Besides the determinants of ANC timing among many pregnant women, the study identified some barriers to early ANC initiation. Most participants confirmed not knowing when to book the first ANC and relying on fetal movement to recognize pregnancy. By the time they notice these signs, they are already past the first trimester, which the WHO recommends. Another barrier was a lack of knowledge of the recommended time to book the first trimester. This was consistent with other studies in low-income countries that recognized a lack of the right information to begin ANC visits (Tufa et al., 2020). This finding agrees with the qualitative results: **“**Lack of money is the main problem and if no

one bothers to take you to the hospital despite knowing that you are not feeling well is a big problem'.

'I think there are a lot of ignorance about the importance of timing first ANC; not knowing the right time and what other women outside say" Participant 004.

Generally, this study used qualitative and quantitative techniques to extract reliable information and substantiate it with qualitative findings. The exercise was carried out exclusively in a public hospital (Webuye County hospital), excluding private clinics. Even so, possible differences between the mothers who attend ANC in public health institutions and those who attend private clinics were not observed. Similarly, this was a cross-sectional study, and the time of occurrence of the cause and effect could not be established.

QUALITATIVE DISCUSSION

Economic Reasons

Perceived barriers for antenatal care services

This section discusses the perceived barriers the pregnant women found in the timing of their first ANC services. It focuses on the issues women perceived to hinder their first utilization of scheduled ANC services. The pregnant women's responses were used to identify themes related to perceived barriers to the timely utilization of ANC services in Webuye county hospital. Women indicated that they did not initiate ANC during the first trimester of their current pregnancies due to the following reasons: poverty, fear of HIV testing, fear of COVID-19 and socio-cultural beliefs.

Poverty may influence the healthcare-seeking behavior of pregnant women negatively. Many women have no source of income in the family; therefore, any cost related to health care is a financial burden for the entire family. Fares for transport to ANC clinics or other hidden costs can be a barrier for some women in rural communities, especially in the Webuye region.

Having no income in the family and the fact that the health facility is far may lead to women not attending ANC services, considering the family does not even have a bicycle.

Transport to and from facilities and hospital bills are significant factors. The economic status of the women (participants) is similar to those of the targeted population. The majority have an unstable source of income. This is in line with research conducted by Odwory at Longisa county referral hospital, as it was evident in this study that women delayed going for their first time at ANC because of financial reasons. This included transport expenses, services, hospital medication bills, and NHIF subscriptions. In our study, one of the research participants did not have an NHIF card. Further, eight participants alluded to the fact that lack of transport affected the timing of their ANC visits.

Fear

ANC services are found in the hospital setting where other health services are rendered. Unfortunately, Webuye County Hospital was selected for detection and management of Coronavirus Disease in 2019.

This arrangement made some of the mothers to mistime first ANC visit due to fear of being tended to together potential COVID-19 patients and catching the virus in the process. Participant 16 who was Gravida 4 p3 said,"Sister, I know the right time for starting clinic should be as soon as I recognize that I am pregnant, but this time round, I fear coming because of COVID-19 as I was told that the victims are treated at the Webuye health Centre. This is why I have come today."

However, some participants do not like intergraded services at the MCH, whereby screening for sexually transmitted diseases such as HIV and syphilis is done. Six patients in this study were affected by the fear associated with various aspects.

Cultural factors

In this study, cultural factors have been manifested in the form of cultural beliefs, superstitions, and preferences for herbal treatment over hospital medicine.

Some participants also alluded that it was uncommon to start ANC early as they believed that concealing the pregnancy from the public would protect them against people with evil intentions.

Billotte et al 2022).in Congo revealed that women were afraid to announce pregnancy status and to start ANC being afraid of witchcraft that can terminate pregnancy prematurely. Mathole et al. (2013) in Zimbabwe found that pregnant women feared attending ANC during the first trimester due to the local belief that the early pregnancy period was most vulnerable to witchcraft.

Service Provision

In this study, service provision has been assessed in terms of the customer-satisfaction, medical staff competency, attitudes as perceived by the patients, patient communication, and availability of drugs as well as long queues. Most participants alluded to the fact that they were satisfied with the services offered at the hospital. They also attested that the doctors were competent and served them well.(Geleto et al 2018) determined that the absence of medical equipment and utilities such as water and electricity were barriers to service provision.(Everall et al 2019) advocates that patients often are affected by the attitudes from the medical staff in the hospital facility.

CHAPTER SIX

6.1 Conclusion

Women with higher education levels, those with previous early ANC attendance, those who experienced complications in previous pregnancies, and those who perceived hospital service to be good were the main facilitators of timely first ANC visit in the study. Fear of Covid-19, lack of partner support, and sociocultural factors were the barriers to optimal ANC visit.

6.2 Recommendation

Efforts to improve literacy on the timing of ANC attendance in health facilities should be enhanced to maintain the facilitators of optimal timing of first ANC clinic services. Health facilities should ensure and maintain service quality to minimize barriers to timing of ANC services.

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APPENDICES

Appendix I: BUDGET

Budget category		**KSHS**
Personnel	Research Assistants,	7500
Services	(pen, papers) Printing, Transcription, Translation Ethic review	1000 500 3000 1000 2000
Reusable	Recorder rental	3000
Non reusable **Participants**	Airtime for the participant. Snacks during the interview. Transport reimbursements for the participants	2000 1500 200
Total		**21700**

Appendix II: STUDY PLAN

Year	**2018/2019**	**2019**	**2019 /2020**	**2019/2020**	**2020**	**2020 /2022**	**2021/2022**
Month	**Aug-April**	**May-Aug**	**April-July**	**Aug-Mar**	**April-June**	**July-Sept**	
Proposal writing with the supervisors							
Approval of research proposal by IREC							
Data collection							
Data analysis							
Report writing							

Publication of manuscript							
Thesis defence							

APPENDIX III: INFORMED CONSENT

Study Number ……

Study title factors influencing first antenatal clinic visit among women in Webuye hospital, in Bungoma county, Kenya; a qualitative study.

Invitation to participate

You are invited to participate in this study on factors influencing first antenatal clinic visit among women in Webuye hospital, in Bungoma county, Kenya; a qualitative study

Basis for selection

You are eligible to participate in this study since you are attending Antenatal care clinic at Webuye hospital

Purpose of the study

To determine and explore the factors that are associated with timing of first Antenatal care visit among pregnant mothers 18 to 49 years old at Webuye hospital.

Procedures

You will be asked some questions about your personal details and specific questions about your antenatal visit to clinic. It may take you an average of 45 minutes to participate in the interview.

Potential benefits

There is benefits to you and the unborn baby in the present and subsequent pregnancies if know the importance of timely Antenatal care visit. The findings of this study will inform

you, health care providers and policy makers thereby improving quality care to pregnant mothers.

Potential risks

There are no risks in this study as no invasive procedures will be used.

Guarantee of confidentiality

To ensure confidentiality, your name will not appear on any materials or reports of the research findings (including web site postings of the results, conference presentations or publications). Materials associated with this study will be kept under lock and key in a cabinet. The signed consent form will be stored separately from your data to ensure complete confidentiality.

Withdrawal from participation

Participation in this study is voluntary and your decision to or not to participate will not affect your care at Webuye County Hospital. If you decide not to participate, you are free to withdraw your consent and to discontinue your participation at any time.

Offer to answer any questions

If you have any questions about the procedures at any time, please do not hesitate to ask. All questions about the procedures and the study in general will be answered. However, some questions may not be answered until after you have completed the procedures to ensure that the answers will not affect your responses.

Participant's statement

I am voluntarily making the decision to participate and my signature certifies that I have heard and understand the aforementioned information. Also my questions have all been answered to my satisfaction and signing this document doesn't mean I waive any legal rights.

Participant's signature

……..Date…….

Researcher's statement

In my judgment, the aforementioned participant is voluntarily and knowingly giving informed consent and possesses the legal capacity to do so.

Researcher's

name……

Researcher's signature

……..Date……...……0720870735

Pkoskei00@gmail.com

Appendix IV: Questionnaire

Section A: ANC Questions in English and swahili

ANC History

- Have you been pregnant before?

  Yes

  No

Umewahi kuwa mja mzito?

  Ndio

  La

Have you ever lost pregnancy?

  Yes

  No

Mimba aina gani?

  Imepangwa

  Haijapangwa

- How many times? _____

  Mara ngapi? _____

ANC Timing

- Is this your first ANC visit?

  Yes

  No

  Je, hii ni ziara yako ya kwanza hapa kliniki?

  Ndio

  La

- With regard to your previous pregnancies, did you attend ANC?

  Yes

  No

  Not applicable

  Kwa kuzingatia mimba zako zilizopita, umewahi kuhudhuria hapa kliniki?

  Ndio

  La

- At which month of your pregnancy did you start ANC?

  0-3 months

  4-6 months

  7-9 months

  don’t know

  Ni mwezi gani wa mimba ulianza kuhudhuria hapa kliniki?

  Chini ya miezi tatu

  miezi 4-6

  miezi 7-9

Sijui

Reasons for ANC Services

- Do you think attending ANC on time is beneficial?

  Yes

  No

  Je, unafikiri kuhudhuria ANC kwa wakati ni manufaa?

  Ndio

  La

- Are there alternative care providers in pregnancy that you know other than this healthcare facility?

  Yes

  No

  Je, kuna watoa huduma wa misaada katika ujauzito ambao unajua Zaidi ya kituo hiki cha afya?

  Ndio

  La

- Have you ever consulted them?

  Yes

  No

Umewahi kushauriana nao?

Ndio

La

- Are you always motivated when pregnant to come to this hospital?

Yes

No

Je, unahisi kuhamasishwa ukiwa mja mzito kuja hospitali hii?

Ndio

La

- Do you think the ANC services in this hospital are adequate?

Yes

No

Je, unadhani huduma za ANC katika hii hospitali ni za kutosha?

Ndio

La

<u>Barriers</u>

- Does the distance from your household to this hospital influence your ANC attendance?

Yes

No

Je, umbali kutoka kwako hadi hospitali hii huathiri mahudhurio yako ya ANC?

Ndio

La

- Do you think there are situations that prevent pregnant women from attending ANC?

  Yes

  No

  Je, unadhani kuna hali ambazo zinazuia wanawake wajawazito kuhudhuria ANC?

  Ndio

  La

- Do you think pregnant women feel comfortable receiving ANC services in this hospital?

  Yes

  No

  Unafikiri wanawake wajawazito wanahisi kupokea huduma za ANC katika hospitali hii?

  Ndio

  La

- How long did it take you to be served in your current ANC visit?

  Less than 5 minute

  6-10 minutes

  More than 15 minutes

  Ilikuchukua muda gani kupata huduma za ANC ya leo?

Chini ya dakika tano

dakika 6-10

Zaidi ya dakika 15

- Do you think waiting time in this hospital influence your ANC services?

  Yes

  No

  Je, unadhani wakati wa kusubiri katika hospitali hii unaathiri huduma zako za ANC?

  Ndio

  La

- Does your partner/family influence your ANC?

  Yes

  No

  Je, mwenzako au familia wanaathiri huduma yako ya ANC?

  Ndio

  La

- How would you rate your healthcare provider (HCP) services in your ANC visit?

  Good

  Fair

  Bad

Je, unawezasemaje kuhusu huduma ya watoa huduma ya ANC katika hii hospitali?

Nzuri

Hajambo

Mbaya

- Would you prefer to use ANC services in this hospital in the future?

  Yes

  No

Je, ungependa kutumia huduma za ANC katika hospitali hii baadaye?

Ndio

La

- Would you recommend the ANC services of this hospital to others?

  Yes

  No

Je, unapendekeza huduma za ANC za hospitali hii kwa wengine?

Ndio

La

Participant Demographics (Idadi ya Washiriki)

Age (in years) _____

Miaka _____

Marital Status

Single

Married

Divorced/Separated

Widowed

Hali ya ndoa#

Bila ndoa

Katika ndoa

Talaka/Kutenganishwa

Mjane

Level of Education

Primary and below

Secondary education

College/University

Kiwango cha elimu

Msingi au chini ya msingi

Elimu ya sekondari

Chuo/chuo kikuu

Income (specify) _____

Mapato _____

Ethnicity (specify) _____

Ukabila _____

Travel time to the hospital

Less than 30 minutes

1-2 hours

More than 3 hours

Muda wa kusafiri hadi hospitali

Chini ya dakika 30

Masaa 1-2

Zaidi ya masaa tatu

Mode of transport to the health facility

On foot

Motorbike

Vehicles

Njia za usafiri hadi kituo cha afya

kwa miguu

Baiskeli

Magari

How much did it cost to travel to the health facility

50 shs

100 shs

more than 200

Ulilipa nauli kiasi gani kusafiri kwenda hospitali?

shilingi hamsini

shilingi mia moja

Zaidi ya shilingi mia mbili

Appendix V: Interviewer Guide

ANC History (Historia ya ANC)

- Tell me if you been pregnant before
- When and how do you know when you are pregnant
- Tell me the number of children you have delivered
- Are there instances you have lost pregnancy, how old was the pregnancy and what were the reasons

ANC Timing

- Tell me why you are here today
- Is this your first ANC visit
- For your previous pregnancies, when did you go for ANC
- In your opinion, when is the best time pregnant women should start ANC

Reasons for ANC

- Tell me the benefits of attending ANC on time
- Are there alternative care providers you may know that women consult, please cite some examples
- What motivates you to come to Webuye facility for ANC services
- Did you have other options and why you did not choose those options for ANC services
- Tell me how long it took you to be served at Webuye ANC department

Barriers to ANC Services

- Tell me of some situations that discourage women from seeking ANC services
- Tell me if your partner/family would influence your ANC attendance
- Why do you think some pregnant women present late at the ANC
- Tell me how you would rate the ANC services in this hospital

Recommendations

- What recommendations might you have for other pregnant women regarding ANC services in this hospital

ANC History (Historia ya ANC)

- Niambie kama umewahi kuwa mjamzito
- Unajua wakati unapokuwa mjamzito na wakati gani
- Una idadi ya watoto wangapi
- Kuna matukio yeyote umewahi kupoteza ujauzito, ya miezi ngapi na sababu gani

ANC Timing (Muda wa ANC)

- Niambie ni kwa nini uko hapa leo
- Je, hii ndio ziara yako ya kwanza ya ANC
- Kwa ujauzito yako ya kwanza, ulipewa huduma ya ANC wapi
- Kwa maoni yako, wakati upi ndio bora kwa wamama wajawazito kuanza ANC

Reasons for ANC (Sababu za kupata huduma ANC)

- Niambie faidha za kuhudhuria ANC kwa wakati/mapema
- Je, niambie kama unafahamu wahuduma wengine mbadala ambao wamama wajawazito wanawezapata huduma ya ANC, toa mifano
- Ni nini inakuhamazisha kuja kwa kituo hiki cha Webuye kupata huduma ya ANC
- Je, umekuwa na chaguo linguine mbadala ya kupata huduma ya ANC
- Ulichukua muda gani kupata huduma ya ANC katika hospitali hii ya Webuye

Barriers to ANC Services (Vizuizi za ANC)

- Niambie baadhi ya vizuizi vinavyozuia wajawazito kutafuta huduma za ANC
- Niambie kama kuna namba ambavyo mpenzi wako au familia wanawezaadhiri huduma zako za ANC
- Ni mambo yapi yanaweza kuzuia wanawake wajawazito kutafuta huduma ya ANC mapema
- Niambie jinsi ungeweza kupima huduma za ANC katika hospitali hii

Recommendations

- Mapendekezo gani unaweza kuwapa wanawake wengine wajawazito kuhusu huduma za ANC katika hospitali hii ya Webuye

Appendix VI: IREC approval Letter

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

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

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

Reference: IREC/2019/168
Approval Number: 0003444

26th September, 2019

Dr. Koskey Philip Kipkoech,
Moi University,
School of Medicine,
Department of Family Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
26 SEP 2019
APPROVED
P. O. Box 4606-30100 ELDORET

Dear Dr. Kipkoech,

FACTORS ASSOCIATED WITH TIMING OF FIRST ANTENATAL VISIT AMONG PREGNANT WOMEN ATTENDING WEBUYE HOSPITAL, BUNGOMA COUNTY, KENYA

This is to inform you that ***MU/MTRH-IREC*** has reviewed and approved your above research proposal. Your application approval number is ***FAN:0003444.*** The approval period is **26th September, *2019 – 25th September, 2020.***

This approval is subject to compliance with the following requirements;

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

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

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

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