

**DETERMINANTS OF LATE ANTENATAL CLINIC ATTENDANCE AMONG
WOMEN OF REPRODUCTIVE AGE (15-49) IN MAMA LUCY KIBAKI HOSPITAL**

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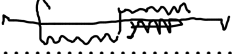
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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS
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DECLARATION

This research project is my original work and to the best of my knowledge, has not been presented for a degree award in any other University.

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DEDICATION

It is with deep gratitude that I dedicate this work to my parents and siblings who have been of great support and inspiration throughout my life.

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I would like to thank the almighty God for guiding me through this stage of my education, during my course work and project. My sincere thanks go to my supervisor Prof Tabitha Kiriti Nganga for her professional guidance, tolerance and cooperation. I am indebted to her for her great insight and guidance that aided in writing and completion of this work in innumerable ways. A special thanks to my wonderful parents for instilling responsibility in me. I will forever be grateful my family commitment and investment in pursuit of highest education levels possible.

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LIST OF ABBREVIATION

| | |
|---------------|--|
| KDHIS | Kenya District Health Information |
| ANC | Antenatal Care |
| WHO | World Health Organization |
| UK | United Kingdom |
| LMIC's | Low and Middle-income Countries |
| TDHS | Tanzania Demographic and health survey |
| MIS | Malaria Indicator survey |
| MMR | Maternal Mortality Rate |
| HBM | Health Belief Model |
| TB | Tuberculosis |
| NHIF | National Hospital Insurance Fund |
| UAP | Union des Assurances de Paris |
| KHIS | Kenya Health Information System |
| UN | United Nation |

ABSTRACT

The decreasing number of expectant women seeking ANC services at twenty weeks and after is concerning, because this is the time when the expectant women should be getting the most out of their antenatal care to ensure a safe delivery. The percentage of expectant women who visit ANC clinic appointments at 10 weeks or less in Mama Lucy Kibaki Hospital has risen from 24 percent in 2015 to 42 percent in 2021 on average. The percentage of expectant mothers who showed up for their 20-week check-up appointment declined from 11% to 8 percent during the same period. This study sought to establish the predictors of late ANC clinic attendance among women of child bearing age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

The specific objectives are: to determine the accessibility of the ANC services among women of child bearing age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County. Also to establish the socio-economic determinants for late antenatal clinic attendance among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County, Kenya. The study utilized secondary data obtained from Kenya District Health Information System (KDHS-II) database. Binary regression model (probit) was used in estimation. Data collected was analyzed using STATA version 15. The findings revealed that approximately 76 percent of women aged between 15 and 49 years in Mama Lucy Kibaki hospital were recorded attending ANC clinic late. Majority of the clients that is 73 percent are located less than 5 kilometres (5kms) away from the nearby health facility implying ease of accessibility. Further, age of the woman, education levels, employment status as well as awareness on ANC services were statistically significantly and negatively associated with reduced likelihood of late ANC attendance. On the other hand, age squared and marital status had a significant but positively related with increased probability of late antenatal care clinic visit among women of reproductive age in Mama Lucy Kibaki hospital. Based on the results, the research suggests increased sensitization on timely ANC attendance across all age groups. Also there is need for women empowerment and further training or coaching through adhoc support groups or seminars and workshops on the importance of ANC attendance in time. Lastly, there is need for empowerment via public - private partnerships to promote timely adherence to ANC clinics among women of all age set.

CHAPTER ONE: INTRODUCTION

1.1 Background

Antenatal care is the reproductive care women get from medical professionals during pregnancy. ANC is the most basic treatment that should be provided to pregnant women to have successful delivery of healthy babies (World Health Organization, 2016). Prenatal care encompasses checking for both social and health issues which have a likelihood of increasing the possibility of certain bad adverse pregnancy consequences and offering appropriate treatment therapies. In addition, expectant women learn about making a birth plan, dealing with complications, and other potential dangers they may face (EBCOG, 2015). An increase in prenatal care reduces maternal and neonatal mortality. A doctor or midwife can detect a pregnant woman's health concern early and intervene, allowing the lady to deliver safely.

The majority of maternal fatalities may be averted by ensuring maternal health packages are available throughout pregnancy through delivery and into the postnatal period. As part of reproductive care, ANC promotes health, prevents sickness, and provides early detection and treatment of ailments. (Say et al., 2014). In 2015, the UN approved the 2030 Agenda for Sustainable Development. This was done in order to lower maternal mortality rates to fewer than 70 per 100,000 live births by 2030. (Desa, 2016). The most recent WHO ANC model suggests that the first ANC visit be made during the first trimester, or the first 12 weeks of gestation. Following the initial appointment, a further seven visits were advised at 20, 26, 30, 34, 36, 38, and 40 weeks gestation.

Late ANC clinic attendance among expectant women is a major problem in the world today. This is influenced by factors that can be prevented to allow early or timely antenatal clinic attendance among pregnant women. Late ANC clinics attendance varies by area around the world. An estimated 97 percent of pregnant women have prenatal consultations, though 35.2 percent begin in the first trimester (Ebu & Gross, 2015). A study by Haddrill et al. (2014) found that certain ethnic groups are more likely than others to attend their first prenatal clinic appointment after 13 weeks of gestation, despite the fact that Irish and UK regulations state that all pregnant women should go before 13 weeks. Haddrill et al. (2014) study in the United Kingdom explains why some women delay seeking antenatal care and how access can enhance outcomes. The study by Ren (2011) indicated that most pregnant women in China's Ningxia region started attending ANC clinic in the 2nd and 3rd trimesters of their gestation.

According to the statistics, 35 percent started attending ANC clinic between 1-3 months, 44 percent between 3-6 months, and 20.6 percent between 6-9 months. According to Ren (2011), ANC delivered to expectant mothers was of inadequate quality. The current antenatal care method has to be rethought and a new antenatal care model has to be developed.

In Malaysia's ANC policy, studies done in several parts show that delayed antenatal booking remains a concern for the Ministry of Health. Jiee (2018), noted that the occurrence of delayed ANC booking in the Lundu District of Sarawak in Malaysia was 28.2 percent. The number was less than most developing countries but however, higher than in developed countries such as Italy. Although age was not a major factor for late initiation of ANC. Unplanned gestation, on the other hand, was demonstrated to be the strongest predictor of late beginning of ANC with 2.7 times compared to those who planned for their pregnancy.

Yemen is regarded as the poorest nation in the Arab World, and it is also one of the ten nations in the area with the worst rates of neonatal, maternal and child death (Yemen-MoHP, 2022). The maternal mortality rate owing to pregnancy and delivery problems was 385 per 100,000 live births in 2015. (WHO, 2015). According to a survey conducted by (Al-Ankoshy & Al-Hadad, 2022) in Sana'a City, Yemen, 52.7% of respondents reported having underutilised ANC services. The participants' average age was 31 years, with the majority (63.1%) between the ages of 20 and 34.

Maternal mortality has been a burden in settings with low resources and remains alarmingly high (WHO, 2015). Over 295,000 maternal fatalities happened worldwide in 2017, with two-thirds occurring in Sub-Saharan Africa nations (WHO 2019). Every day, around 830 women die from avoidable pregnancy and childbirth complications, whereas 94% of all maternal fatalities occur in low- and middle-income countries (LMICs) (Tunçalp et al., 2017; WHO 2019). Despite a high maternal fatality rate in 2017, Sub-Saharan Africa has reduced maternal mortality by approximately 40% since 2000 (World Health Organization, 2019). Complications related to pregnancy and childbirth that lead to death of expectant women can be prevented or treated during ANC. In some cases complications arise during pregnancy, but if they are not addressed by medical professionals they will worsen during child delivery. Many pregnant women in Sub-Saharan Africa, particularly young mothers, delay going to ANC clinics and thereby miss out on curative and preventative interventions (Gross et al., 2012).

Late and low ANC attendance among women have been a major concern in Nigeria. From 2008 to 2018, there was little or no decline in late prenatal visits and inadequate attendance. Throughout history, the prevalence of late timing was 74.8%. (El-Khatib et al., 2020) . On the other hand, the frequency of women who had not attended at least four ANC visits was 46.7%. Women aged 25 to 29 years old had higher rates of inadequate ANC visits. A research carried out in Ethiopia by (Wolde et al., 2019) demonstrated that there was extremely little coverage. The majority of women (52.5%) began their ANC follow-up later than advised.

ANC clinic visits have increased from 90% to 98 percent in Tanzania (Tanzania Demographic and Health Survey- Malaria Indicator Survey, 2011). Despite increasing ANC clinic attendance, only 24% of expecting women began their prenatal clinic visits within the first three months, as advised (TDHS-MIS, 2016). 94 percent of women in Lushoto District visit antenatal care clinics, while only 16 percent adhere to the recommended schedule (TDHS-MIS, 2016). Seventy-one percent of expectant Tanzanian mothers began prenatal treatment late, with a mean reproductive age of 5.1 months (ranging from 2-9, SD = 1.2).

In Kenya, most pregnant women in Embu County were found to start prenatal care clinics during their third trimester (Joshua et al., 2018). The majority of participants, 97 (88.2%), were aware of the ideal time to schedule prenatal clinics, however this didn't convert into real clinic scheduling. Only 36 of the 97 moms who were aware of the proper timeframe scheduled their prenatal appointments on time.

Based on World Health Organization data, the percentage of expectant women who visit ANC clinic appointments at 10 weeks or less has increased from 48% in April 2015 to 64% in March 2021. The percentage of expectant women who showed up for their 20-week check-up appointment declined from 9.6 percent to 6.9 percent. The decreasing figure of expectant mothers seeking ANC services at twenty weeks and after is concerning, because this is the time when the expectant women should be getting the most out of their antenatal care to ensure a safe delivery. Pregnant women usually relax after their initial antenatal clinic sessions, especially when they are assured that their Pregnancy is risk-free. This shouldn't be the case because there are health risks to expectant mothers and their foetuses throughout the late stages of pregnancy (Ahinkorah, 2021). This study intends to figure out the factors that influence late antenatal clinic attendance as well as treatments to improve reproductive women's pregnancy care and delivery (World Health Organization 2018).

1.2 Problem Statement

The maternal death ratio is the number of expecting mothers who die while delivering to a child in a given period of time out of every 100 000 live births (Wildman, 2004). The MMR is approximated to be 510 maternal mortalities per 100 000 live births in Kenya. Preventable maternal fatalities due to early ANC clinic attendance are still high (Alkema, 2016). Maternal deaths will be reduced dramatically with early and high-quality prenatal treatment.

According to Ragolane (2017), a significant factor contributing to late ANC clinic attendance among expectant women is long wait for antenatal care services. However, other factors impact late ANC clinic visit among expectant mothers who did not have a high waiting time at their prior ANC clinic visit. The other characteristics that were not investigated are critical to be investigated in this research in order to uncover alternative factors that limit pregnant women's early access to antenatal care. It is necessary to comprehend why expectant women visit ANC clinics after 10 weeks of pregnancy, whether or not they are aware of the advantages to the expectant woman and her unborn infant. Maternal mortality in low-income countries can be greatly reduced if women of reproductive age attend their ANC clinics on time. Although early prenatal clinic attendance is clearly important, late ANC clinic attendance among women of reproductive age is a substantial contributor to maternal mortality and morbidity worldwide.

Young women especially adolescent females are at an increased danger of maternal death and difficulties during pregnancy and childbirth. This is related to embarrassment in obtaining antenatal treatment. An expectant mother should contact a midwife or her doctor as soon as she discovers that she is pregnant to begin antenatal care (ANC). The corona virus pandemic impacted negatively on system of health care, notably in the field of ANC (Tadesse, 2020). Expectant women in Kenya, who seek ANC services at Mama Lucy Kibaki hospital ceased attending the clinic due to fear of contracting corona virus (Shikuku, 2021).

Because there is a large gap in data between 2011 and 2022, this study uses current data to show the prevalence of late antenatal clinic attendance. Previous studies found a relationship between late prenatal care clinic attendance and socio-demographic variables, accessibility, and knowledge. However, little has been done to determine the degree to which these characteristics impact late ANC clinic attendance. As a result, these crucial factors impacting late ANC clinic attendance among women of gestation age should be investigated. This study's aim is to investigate what influences late ANC clinic visit among mothers of child

bearing age (15-49) in Mama Lucy Kibaki Hospital. This study's focus is to identify the particular problems preventing expectant women from receiving early antenatal care at Mama Lucy Kibaki Hospital and to provide solutions.

1.3 Research Objectives

The main objective of this study is to establish the determinants of late antenatal clinic attendance among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

The specific objectives are:

1. To determine the accessibility of the antenatal care services among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.
2. To establish the socio-economic determinants for late antenatal clinic attendance among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

1.4 Research Questions

1. What is the accessibility of the antenatal care services among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County?
2. What are the socio-economic determinants for late antenatal clinic attendance among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County?

1.5 Justification of the study

The purpose of this study is to look into the causes that affect women of reproductive age who attend ANC clinics late. These findings will aid policymakers and planners in developing initiatives to promote early prenatal clinic attendance among expectant women. The study's findings will be used by nongovernmental organisations, governmental bodies, and hospitals to formulate and implement maternal policies that encourage pregnant women to seek early ANC services. The policies will also encourage expectant women to seek delivering services from hospitals in order to reduce newborn and maternal death and morbidity.

This research will help the Kenyan government and county of Nairobi to develop and execute policies that would allow expectant women to obtain early ANC care at Mama Lucy Kibaki Hospital. This research will also reveal hospital barriers that hinder expectant mothers from seeking prenatal and maternal attention from the start and propose solutions (Byford-

Richardson, 2013). This study will also identify a certain group of women who begin ANC late and focus more on them in order to lower maternal and new-born fatality rates. Using the data, the government may be able to find weaknesses in the outreach to pregnant women done by the Mama Lucy Kibaki hospital and, as a result, better serve individuals who can't get to the hospital's antenatal clinic.

The outcomes of this study are likely to benefit health personnel at Mama Lucy Kibaki Hospital as well as anyone concerned about the potential causes of late ANC clinic attendance in the research area. Health personnel at Mama Lucy Kibaki Hospital will be able to execute an objective outreach campaign to the community with a thorough understanding of the elements that must be addressed to alleviate the problem of late ANC attendance among expectant women. The results of this research intend to aid in the intervention of the reasons for late ANC attendance and hence promote usage of ANC services in the study region, which is generally allocated by the Kenyan government at the start of the fiscal budget year but is underused.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The first section of this chapter contains the theoretical literature for this study. The empirical literature in section two, which is used in this study, identifies different factors impacting late ANC attendance among reproductive-age women. Part three analyses the literature and outlines the gap that this research fills.

2.2 Theoretical Literature Review

2.2.1 Health Belief Model (HBM)

Hochbaum and Rosenstock, social psychologists, established the health belief model in the 1950s. This approach has been one among the most extensively used psychosocial techniques for discussing medical related behavior. In the 1950s, HBM arose from genuine worries about the limited performance of numerous public health services projects. HBM was developed to describe why so many individuals fail to participate in prevention of a disease or detection effort (Hochbaum, 1958). The inability of eligible adults to participate in free TB screening programs offered by mobile X-rays stationed in numerous community estates was an early example. The program's operators were wary about explaining people's conduct by pointing to elements that aided or hindered positive replies. The HBM was expanded to include individual's reactions to symptoms (Kirscht, 1974) and behavior related to diagnosed sickness, notably agreeing to the proposed medical treatment path (Becker et al., 1974).

The HBM is founded on the concept of expectancy of value. People's desire to avoid sickness (value) and believe that a certain health solution accessible to them would prevent sickness gradually developed into value expectancies (expectation). Expectations were characterized as a personal assessment of their own vulnerability and severity to an illness, with the goal of determining whether or not an individual can lessen that threat by personal action (Rosenstock, 1960). Five key constructs are assumed to influence behavior, according to the concepts in the HBM: perceived severity, perceived susceptibility, perceived advantages, perceived barriers, and modifying influences. In the following five paragraphs, the constructs are discussed.

The perceived susceptibility dimension relates to person's evaluation of the risk of getting a medical condition. The aspect has been formulated in the case of medically approved

sickness to include diagnosis acceptance, disease susceptibility, and subjective estimations of susceptibility. According to this study, expectant women who live in locations with little resources and must travel great distances to the nearest antenatal care clinic may be more susceptible to gestation-related complications. This may prompt such women to seek antenatal care before the 12th week of their pregnancy, as advised by nurses and doctors. However, the Courtenay et al. (2007) study shows that this isn't always the case because, even when some pregnant women are completely aware of their susceptibility, they continue to subject themselves to the hazards. As a consequence this hypothesis describes some of the action.

Perceived severity is about severeness of contracting illness or failure to cure it, taking into account an assessment of clinical and medical repercussions, such as disability, death, pain, and potential social effects (influence of the working conditions, family life and social relations). In this research, expectant women may have witnessed the devastating effect of maternal illness (death and disability) experienced by pregnant neighbors or family members who did not seek ANC services early. With this knowledge, expectant women will seek ANC services as soon as they are able (Baum et al., 1997).

The perceived benefits dimension is the acceptance of individual vulnerability to a medical condition perceived to be severe, which generates a force that causes behavior; the exact plan of action to be implemented is influenced by perceptions about the efficacy of the various accessible actions in minimizing illness threat, as stated in the perceived benefits of choosing health approach (Baum et al., 1997). Individuals with ideal levels of severity and vulnerability beliefs are unlikely to accept any advised health intervention unless it is judged to be potentially practicable. According to Simkhada et al. (2008), the final decision is made once the possible benefits outweigh the anticipated difficulties. According to this study's assumption, expectant women seeks ANC early enough because they are aware of how significant it was in other expectant women's pregnancy experiences. When expecting women recognize the value of early ANC in their fellow women's successful pregnancy and birth, they get to seek early ANC.

The perceived barriers dimension is the perceived unfavourable elements of a given health action or the considered obstacles that prevent the prescribed actions from taking place. Consciously or unconsciously, people assess the expected benefits of a particular action against the perceived costs, dangers (such as negative outcomes), inconveniences, discomforts (such as pain and distress), and time commitments that go along with them.

Action can be spurred by a combination of severity and susceptibility, as well as a perception of rewards (fewer obstacles) (Rosenstock, 1974). Obstacles such as time constraints, lengthy distances, high ANC costs, and subpar care should not be overlooked by expectant mothers despite the promotion of the advantages of timely engagement at an ANC clinic.

According to Baum et al. (1997), Modifying factors are traits in an individual that are believed to alter the primary major perception theories. The Characteristics include, but are not limited to, a person's degree of literacy, level of motivation, and cultural background. When pregnant women in a particular area are aware of the advantages and risks of not attending antenatal clinics on time, they may nevertheless choose to delay their attendance. This is due to the fact that they were born and reared in a community that does not promote the use of early prenatal care.

2.2.2 Socio-ecological Model

Urie Bronfenbrenner, an American psychologist, established the socio-ecological model as a conceptual structure in the 1970s (Kilanowski, 2017). The socio-ecological model depicts the interrelationships between several health determinants. This diagram depicts the variety of factors that impact or obstruct health-seeking behavior. The socio-ecological model emphasis on individual people and their relations with wider social systems that impact health status. This model portrays how humans interact with their environment and are interconnected on several levels. Individual, interpersonal, community, and society are the five layers that impact behavior in the paradigm. In the next five paragraphs, the levels are discussed.

Individual level factors identify the behavioral or biological elements that impact health behaviour of an individual person or community. These characteristics include education, age, and income. The pregnant women who are 30 years and above tend to attend ANC clinics early compared to pregnant teenagers who are scared to attend the ANC clinics because of stigmatisation they face from society.

Interpersonal level aspects explore the interpersonal interactions that influence an individual's or community's health behavior. Partners, family, and a person's closest social circle peers are all variables at this level.

Factors at the community level depict the environment in which people have social ties, such as workplaces and neighbourhoods. The aspects of these settings that influence health behavior are shown at the organizational level. Attendance at ANC clinics is influenced by where you work and what you do for a living (Ragolane, 2017). Depending on the working

conditions and policies, employed expectant mothers are more likely to attend prenatal clinics early or late. Expectant women who work 8 a.m. to 5 p.m. shifts are more likely to arrive late at an ANC clinic since hospitals and ANC clinics are closed by the time they leave work.

The societal level investigates broad societal issues such as cultural, economic, and social policies that encourage or discourage health seeking behavior. Late ANC clinic attendance is highest in societies, particularly in the Sub-Saharan region, where pregnancy is seen as a normal event rather than a health problem. A pregnant woman's financial situation affects her ANC seeking behavior, especially if a fare or user charge is necessary at a public hospital.

2.3 Empirical Literature Review

According to Chewe et al. (2016), marital status significantly influences late antenatal clinic attendance among pregnant women in Zambia. The questionnaire was utilised in the study to obtain primary data. The model that was utilised in this study was multivariate logistic regression analysis. Pregnant women who were married to unsupportive spouses attended antenatal clinics late because they felt uncared for by their partners. Pregnant women who were supported and even accompanied by their spouses to the hospital had a higher tendency to attend prenatal care clinics because they felt cared for during the pregnancy. Married expectant moms who had partners who understood the necessity of ANC, such as physicians and nurses, were urged to attend ANC clinics early.

A research by Okedo et al. (2019) demonstrated unmarried pregnant mothers who were sole breadwinners to the family and didn't have the supportive spouse's attended antenatal clinics late because they were busy supporting the family's needs by going to work or carrying out home duties. Primary data was utilized in this study to recognize elements influencing late antenatal clinic attendance, followed by a multivariate analysis of the same. Pregnant women who were divorced during their early stages of pregnancy felt uncared for by their spouses and hence became stressed and didn't attend antenatal clinics in time. The study aims to find how marital status influences late ANC clinic attendance among mothers of child bearing age at Mama Lucy Kibaki Hospital.

The study by Ochako et al. (2011), Demonstrated how education is a major factor influencing late antenatal clinic attendance in Kenya. The information utilized in this research was obtained from Kenya's 2003 demographic health survey. The multivariate logistic regression model shows that age, place of residence, and education are significant factors influencing

late antenatal clinic attendance. About 80% of pregnant women without primary education attended antenatal clinics late. About 62% of pregnant women with Primary education knowledge attended antenatal clinics Late. Early marriage culture leads to School drop out of girl child before completing their primary education. With no or low level of education, a high percentage of young pregnant women fail to understand the importance of basic Healthcare Services during pregnancy, for example, attending ANC clinic attendance. According to Muhwava et al.(2014), most women who were educated beyond grade 11 were employed, generating income that could assist them in accessing antenatal care clinics in time. The employment pregnant women secured through education enabled them to pay for user fees at the hospital if required and pay for transportation to the facility for ANC clinics. This research plans to identify the influence of education on late antenatal clinic attendance.

Okedo et al. (2019) discovered that medical insurance is a significant factor influencing late antenatal clinic attendance among women of reproductive age. Primary data was Incorporated in this study, while the model used was multivariate logistic regression analysis. The study demonstrated how medical insurance is an important factor influencing antenatal clinic attendance among pregnant women. Pregnant women with health insurance coverage visited the antenatal clinic early because they didn't feel the burden of user fees. Pregnant women with medical insurance had alternatives to facilities to visit without considering the fees they would incur even though they didn't have cash. Pregnant women with no medical insurance and no cash for user fees or out-of-pocket did not have a chance to visit antenatal clinics at that moment hence attending antenatal clinics later when they could access money for payment. A study by Nanda (2002) demonstrates how user fees in antenatal clinics influence late antenatal clinic attendance. Pregnant women who can not afford payment for user fees may ignore going to the hospital until they raise the money for payment. This study intends to identify how medical insurance influences late antenatal clinic attendance in Mama Lucy Kibaki Hospital. This public facility is NHIF accredited and charges low user fees for ANC clinics.

A study by Kawugenzi et al.(2015) demonstrated how ANC awareness influenced the timing of antenatal clinic attendance in Uganda. The study utilized primary cross-sectional data, which was obtained through interviews using questionnaires. Most pregnant women who were aware of antenatal care importance visited the clinic in their first trimester. The expectant women received awareness of the significance of prenatal care clinics through the radio, television, publications, and health workers' outreach services. The awareness of early

antenatal clinic attendance, which promotes healthy pregnancy and delivery, motivated pregnant women to attend the clinic on time.

Singh et al.(2014) demonstrated how pregnant women in India knew the importance of early antenatal clinic attendance. However, they did not attend during their first trimester because of overcrowding in the public hospital. The study utilized primary cross-sectional data obtained through interviews and the filling of the questionnaire. Findings were later analyzed using SPSS and Chi test Applied. Despite being aware of the advantages of early ANC clinic attendance, a high % of expectant mothers who had a prior successful pregnancy period attend ANC clinic late. Second-time pregnant women educated by doctors on the importance of ANC clinics still attend antenatal clinics late or on the day of delivery because of beliefs and customs in their tribe. This study intends to identify why pregnant women who are aware of the value of timely ANC clinic attendance still attend prenatal care services after the first trimester at Mama Lucy Kibaki Hospital.

The timing of ANC clinic visits is influenced by socioeconomic determinants such as age, ethnicity, marital status and education back ground (Muhwava, 2014). Teenage expectant women frequently start antenatal care late; this could be because to a lack of understanding of pregnancy symptoms, which are usually unanticipated. Because of their outstanding obstetric history, older women may also put off going to the ANC clinic. In South Africa, Ethiopia, and Tanzania, studies by (Ragolane, 2017), (Ejeta et al., 2017), and (Gross et al., 2012) demonstrated the correlation between culture, tradition, ethnicity, and the initiation of the ANC.

The age of the pregnant woman was said to have a direct impact on when antenatal care should be started. According to Aduloju et al. (2016), late attendance of ANC clinic was 100 percent among minors (15 years to 19 years), while early attendance of ANC clinic was most common (29 percent) among 20 years to 29 years old women. Gross et al. (2012) discovered no proof of late start of ANC by expectant teenagers in Tanzania when comparing expectant teenagers and adults, though pregnant teenagers started ANC services a little sooner than older mothers, with an average of 5.0 months (SD=1.2, range 2-8). Multiparous expectant teenagers, on the other hand, started ANC 5.5 months later than older expectant women ($t=1.43$, $p=0.157$, SD 1.20). Although 30 to 49 years old women also visit antenatal care clinics late, Gross et al. (2012) and Aduloju et al. (2016) focused on ages 15 to 29 years. The goal of this research is to close a knowledge gap on how age affects late antenatal clinic attendance. According to studies by Aduloju et al. (2016) and Gross et al. (2012), the

percentage of expectant women who attend ANC clinic late as a result of age is varied in each nation. Because no study on the subject has been undertaken in Nairobi, this study must illustrate the diversity of age in late ANC clinic attendance among expecting women. The findings of this study would reveal a comparison of age factors among women who visit ANC late at Mama Lucy Kibaki Hospital.

The study by Muhwava et al. (2014) and Matyukira (2014) used occupation in South Africa as a determinant of early or late antenatal care clinic attendance. According to Muhwava et al. (2014), employed mothers in South Africa were more probable than unemployed women to begin prenatal care earlier (OR=1.6; p=0.024). Another study on utilization and awareness of ANC services conducted by Matyukira (2014) found that employed expectant women at Ekurhuleni clinic in South Africa initiated ANC clinic late. For expectant mothers who had progressed through grade 11 to post-matriculation, 56 percent began ANC late because of the working conditions and the limitation to travel to a clinic because it closed before end of their shift and didn't open on weekends. The findings of a study carried out by Mkhari (2016) to evaluate the determinants impacting late ANC clinic visit in the Thulamahashe local region of South Africa found that the majority of research participants were not employed but mostly house wives (82.7 percent, n=105). Only 7.9 percent had private business, and (9.4 percent, n=12) were government employees. The goal of this study is to establish the sort of employment (formal or informal) that leads women who were expectant to seek ANC late. This study's aim is to find out the percentage of employed and unemployed expectant women visiting ANC clinics late.

Ye et al. (2010) found that expectant mothers who resided far from the prenatal care clinic had the least rate of the clinic attendance in the Kham district of Laos. Other research, like Kawungezi et al. (2015) and Banda et al. (2012), revealed that vast distances restricted access to ANC. This component was prevalent in rural or informal settings. Inaccessible roads or transportation resources is a serious issue, indicating the need for alternate measures to protect health of expectant women while accessing antenatal care services on time. Ye et al. (2010) indicated that one solution is to use mobile clinics to provide ANC services to pregnant women in informal and rural settlements, and nurses and doctors should perform home-care rounds to pregnant women in remote locations. This study looks into the factors that influence pregnant women who live near the hospital to attend late antenatal clinics. With prior research studying pregnant women in rural settings, such as Kawungezi et al.

(2015) and Banda et al. (2012), this research intends to evaluate pregnant women in an urban situation.

According to Olshaker (2009), people seeking hospital treatments were dissatisfied with the delayed registration process during clinic attendance or admission. Patients who had previously sought early antenatal treatment from the hospital are discouraged by long wait times induced by a sluggish registration process in the antenatal clinic. Due to significant patient wait times when seeking antenatal care, pregnant women may choose to postpone their visit until the second or third trimester if they believe they are feeling well. This shouldn't be the case since some maternal health concerns don't develop symptoms until they are irreversible. The doctor or midwife can recognise the maternal illness early enough through the ANC check-up and offer suitable treatment. The intend of this research is to look into the causes that influence late ANC clinic attendance in institutions that use a digital registration system, such as Mama Lucy Kibaki Hospital. In 2019, Mama Lucy Kibaki hospital, in collaboration with Union des Assurances de Paris (UAP) old mutual insurance, launched a queue management solution to address the issue of sluggish registration. Patients who are illiterate and attend the hospital are supported by trained workers to expedite the process. This study explores why expectant women attend ANC clinics late, taking into account the construction of a que management system that minimizes waiting time, with the enhancement of the registration system.

Mannava (2015) found that impolite hospital employees may cause expectant women to fail or seek late ANC services. Medical personnel's harsh handling of expecting women makes their ANC experience stressful therefore discouraging them to access ANC services next time. This type of treatment had an impact on when they went to antenatal care clinics. Because of the high volume of expectant women seeking ANC treatments at public hospitals, medical staffs are overworked and unable to provide appropriate prenatal care to each expectant woman. Majority of pregnant women from informal settlements miss or arrive late at prenatal clinics due to user fees charged by public hospitals in response to their request to provide ANC services (Nanda, 2002). The impact of free ANC services in Kenyan public hospitals is investigated in this study. The impact of late ANC clinic attendance in a county government hospital with enforced customer service norms is examined in this study.

Ejeta et al. (2017) discovered that several illiterate expectant women associated the relevance of early ANC beginning with understanding the fetus's status in a study in West Ethiopia. They saw the early start of antenatal care as a misuse of money and time because the fetus

wasn't completely grown in three months. Illiterate expectant women believed ANC clinic check-up was important for fetus rather than expectant women themselves hence promoted them to visit ANC clinic late in their pregnancy period. Due to the financial considerations, pregnant women who hold this belief postpone antenatal care in order to save money as their unborn child grows. For example, pregnant women were unable to attend an ANC clinic for four to six months because they believed the fetus had not yet formed, preventing them from performing echography and learning how the baby was doing. According to Matyukira (2014), literate mothers in the Ekurhuleni Municipality in South Africa spend the bulk of their time working. Expectant women visit ANC clinics late on the belief that if they maintain good health, the foetus thus develops normally. Expectant women in Ekurhuleni Municipality, South Africa, believe that the revenue they earn through work can help them achieve a good health condition. The research was carried out in rural Cameroon and South Africa, where the rate of illiteracy among pregnant women was higher than in metropolitan regions. This study examines the various attitudes on antenatal care held by expectant women in metropolitan areas.

A study in Cameroon by Warri et al. (2020) demonstrated that majority of expectant women perceived gestation as a usual life experience rather than a health issue that required the medical professionals' attention. Some expecting mothers planned to go to the ANC clinic only if they felt ill. Researchers found that many expectant mothers choose not to seek prenatal care clinic services until later in their pregnancies (2 or 3 months) because they did not feel ill or anything was abnormal with them. Expectant mothers who wait too long to begin ANC do so as a last resort rather than as a routine prophylactic measure. Pregnant women who started ANC later believed it should be used as a preventative measure rather than a curative one. ANC on the other hand, serves as a preventative measure. When pregnant women experienced a health issue that necessitated them to seek prenatal care, they were reluctant to do so because of this impression. Although pregnant women are more vulnerable to infection throughout their pregnancies, Challis (2009) established that pregnancy is a condition that needs medical treatment and should not be considered as a usual life occurrence. Shafqat et al. (2015) study demonstrated that 90.65% of women believed that pregnancy outcome was influenced by attending ANC clinic. This study aims to further investigate why expectant women still attend ANC clinics late with the perception that gestation requires doctors and midwives care.

According to Jinga et al. (2019) of South Africa, women with previous pregnancies are assumed to grasp pregnancy phases and hence fail to initiate ANC early. Pregnant women who started ANC later implied that they were familiar with pregnancy phases and could recognize pregnancy issues if they emerged based on past pregnancy experience, thus they did not see the necessity for early ANC. The decision is based only on the history of expectant women's past pregnancies, which may or may not be similar to the present one. Mulherin (2013) found that bad pregnancy experiences resulted in delayed antenatal care initiation due to a fear; Expectant women dreaded being informed of their gestation-related health issues since they had previously had an abnormal pregnancy experience. This study looks into pregnant women who have never been pregnant before and analyses why they are late to the ANC clinic.

2.4 Overview of the literature

Almost all research conducted throughout the world reveal that late antenatal care is influenced by a variety of determinants. These variables comprise personal woman attributes such as ethnicity, education level, marital status and age, as well as environmental determinants such as a woman's place of residence and the distance she must travel to get prenatal care.

Muhwava (2014) discovered that socioeconomic factors like as ethnicity, marital status, age, and education level impacted the date of the very first prenatal care commencement. According to (Adoluju et al., 2016), the age of the expectant mothers had a direct influence on the date of initiation of prenatal clinic. When pregnant adults and teens were compared, Gross et al. (2012) identified no indication of late commencement of prenatal care by expectant teenagers in Tanzania. According to Muhwava (2014), occupation was a factor in the development of early ANC. Matyukira (2014) found that working women delayed starting antenatal because they lacked time to attend clinics. According to Ye et al. (2010), women who resided distant from antenatal clinics had the least percentage of commencing antenatal visits on time. According to Olshaker (2009), several pregnant women claimed that the registration procedure in public hospitals was long, deterring them from visiting an ANC clinic early. Mannava (2015) proposed in the other research that women did not seek prenatal care on time due to the rudeness of clinic workers. Warri et al. (2020), Jinga et al. (2019), and Ejeta et al. (2017) clearly demonstrated that pregnant women's attitudes had a major role in their late seeking behavior for ANC. Some people believed that ANC was used to check the baby's health and that it could not be done until the fetus had developed for five months in the

womb. Others saw gestation as a natural part of life rather than a health issue that needed medical care.

In its study, the factors recorded by the cited authors included age, among other characteristics. Because no equivalent research has been completed in Kenya, the results from other countries cannot be utilized to inform policy to enhance prenatal care visits by expectant mothers at Mama Lucy Kibaki Hospital. Previous investigations in rural settings have been conducted by Ragolane (2017) in South Africa, Ejeta et al. (2017) in Ethiopia, and Gross et al. (2012) in Tanzania. Gross et al. (2012) calculated the results without using a formal sample size. Warri et al. (2020). Sample size on perception comprised only pregnant women with prior pregnancy experience. Ye et al. (2010) found that the distance between homes and clinics was the most important factor influencing late ANC clinic attendance in rural regions. As a result, the emphasis of this research is on Mama Lucy Kibaki Hospital, with characteristics such as ethnicity, marital status, age, profession, beliefs, and education level being examined. Other writers, such as Haftu et al. (2018) and Kitsantas et al. (2012), claim that late ANC clinic enrollment differs by geography, therefore a research in Nairobi, Kenya, is needed. In contrast to Gross et al. (2012), this research utilizes a purposeful sample strategy to evaluate women attending ANC clinics at the hospital throughout the study period. In contrast to past research in African nations, this study is conducted in an urban hospital. This research may also look at women who come to antenatal appointments late despite living close to the hospital. Unlike Warri et al. (2020), this research looks at both pregnant women who had a comparable experience and those who did not. This study will advise health professionals and relevant health officials on aspects to concentrate on for improved ANC, in regards to researching the sequence of late antenatal clinic visitation at Mama Lucy Kibaki hospital.

CHAPTER THREE
RESEARCH METHODOLOGY

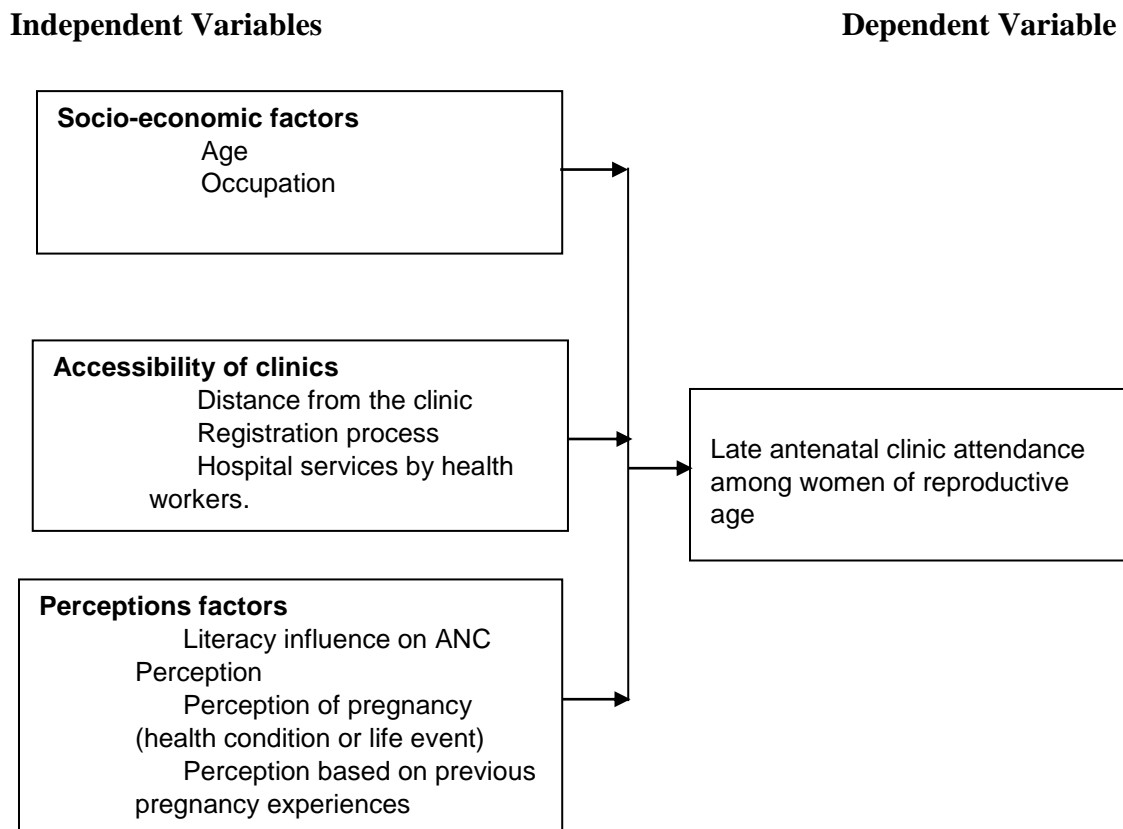
3.1 Introduction

This chapter presents the technique utilised in this research. The chapter is divided into five sections: conceptual framework, estimable model, variable definitions, data type and diagnostic tests.

3.2 Conceptual Framework

A conceptual framework, according to Jabareen (2009), is a network of interrelated ideas that together give a wide knowledge of an event or occurrences. According to Rocco and Plakhotnik (2009), a conceptual framework strives to base the study on relevant knowledge in order to provide a basis for the relevance of the issue statement and research questions. Figure 1 depicts the suggested conceptual framework for this research. The notions described in Figure 1 are subsequently be operationalized one by one.

Figure 3.1: Conceptual framework



Source: Author's (2022)

3.3 Estimation model

Based on earlier research that assumed the data had a normal distribution, this study uses the probit model. The primary goal of this study is to make an interpretation of the dependent/response variable (probability of late ANC clinic attendance or normal ANC clinic attendance among women of reproductive age) given other predictor/explanatory variables.

The assumption is that the dependent latent variable Y^* and predictor variables (x_i) have a linear relationship. The study intends to use this assumption to analyze how various factors i.e., socioeconomic factors, accessibility of clinics, and perceptions factors influence late ANC clinic attendance among women of child bearing age. Predictor /independent/explanatory variables (Socioeconomic factors, Accessibility of clinics, and Perceptions factors) influence late antenatal clinic attendance (dependent variables) hence the assumption that the relationship is linear, thus;

If predictor/explanatory variables = X and, Dependent/response variables = Y then the resultant structural model would be expressed as follows;

$$Y^* = X_i\beta + \epsilon \dots\dots\dots 1$$

Where ϵ . represents the error term and β refers to a vector of parameters to be estimated. to determine the influence of explanatory or independent variables (X) on late antenatal clinic attendance among women of reproductive age, we regress the average characteristics against (Y) which is the dependent/response variable.

Since the dependent/response/latent variable is equivalent to either late antenatal clinic attendance (1) or no a late antenatal clinic attendance (0), then the binary variable and dependent variable link are stated in the following manner:

$$Y = \{ 1 \text{ if } Y^* > K \quad 0 \text{ if } Y^* \leq K \dots\dots\dots 2$$

In this case, Y is referring to the probability of late antenatal clinic attendance whereas K stands for the threshold or otherwise the critical point of Y^* (latent variable) which refers to beyond late ANC clinic attendance among women of reproductive age.

3.4 Model Specification

The dependent variable is a binary variable for either late attendance or timely attendance for ANC clinic services. The study assumed that the probability of a woman of reproductive age

attending late or in time for ANC clinic services is determined by some identified factors (independent variables), which are the predisposing factors such as the woman's demographic and socioeconomic characteristics, health system characteristics, health factors, and enabling factors.

Therefore, the estimable model was specified as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \varepsilon \dots \dots \dots 3.4$$

Where Y is the dependent variable Late ANC clinic attendance, X₁ = age, X₂=age squared, X₃=marital status, X₄= education levels, X₅ = employment, X₆=medical insurance, X₈=Antenatal Care (awareness) and ε = is the error term.

Late ANC clinic attendance among women of child bearing age was presented as a function of several variables like the accessibility of clinics as well as the socioeconomic factors.

3.5 Description of Variables, Measurement and the Expected Signs

The variables utilized in the model are as shown in the table 1

Table 3.1: Definition, Measurement, and Expected Signs of variables

| Variables | Measurement of Description | Expected Signs |
|----------------------------|--|-----------------------|
| Late ANC clinic attendance | 1 Late ANC clinic attendance 0 no Late ANC clinic attendance | |
| Independent variables | | |
| Age | Age in complete years | Negative |
| Age Squared | This measures efficiency based on experience of a woman using ANC services This is computed by squaring age of the woman | Positive |
| Employment | Employed =1 Unemployed = 2 | Negative |

| | | |
|-------------------|--|----------|
| Education Level | No education =0 Primary=1 Secondary=2 Tertiary =3 | Negative |
| Marital status | Married=1 Otherwise =0 | Negative |
| Medical Insurance | Health Insurance Present=1 No health Insurance =0 | Negative |
| ANC awareness | Aware of ANC =1 Not aware of ANC =0 | Negative |

3.6 Data type and sources

Data was retrieved from the ANC registers for the period of one year (June 2021-June 2022), from the Kenya Health Information System (KHIS) via District Health Information Software (DHIS 2). Appropriate data only on antenatal clinic attendance was obtained, and the corresponding characteristics. This data was cleaned and coded accordingly. This study is obtained abstract data from expectant mothers aged 15-49 years attending the ANC clinic at Mama Lucy Kibaki Hospital

3.7 Diagnostic tests

Multicollinearity arises when independent parameters in a regression model have a correlation. In this research, multicollinearity was found using correlation matrices, in which strongly correlated variables with absolute values larger than 0.5 were deleted to enable for the creation of more valid findings. As a consequence, such findings may be utilised in policymaking without concern about exaggerated coefficients.

Heteroscedasticity arises when there is a disparity between the variability of a dependent variable and the variability of its predictors. The probit model residual test in STATA was used to verify these results.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter summarises the empirical results from a study of determinants of late ANC clinic visit among mothers of reproductive age (15-49) at Mama Lucy Kibaki Hospital. The study concentrates on the availability of antenatal care services among mothers of child bearing age (15-49) at Mama Lucy Kibaki Hospital in Nairobi County. The second goal is to look at the socioeconomic factors that influence late antenatal clinic attendance among women of reproductive age (15-49) at Mama Lucy Kibaki Hospital in Nairobi County. Tables and figures are used to show the empirical findings.

4.2 Demographic and Socio-Economic Characteristics of women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

According to the descriptive data reported in Table 4.1, only 3,303 women of reproductive age out of 6948 visited an ANC clinic late. The age distribution where most respondents out 6948 were approximately aged 33 years old on average. When the youngest and oldest mothers were considered, the youngest was 15 years old and the oldest was 45 years old. The study looked at women's marital status, comparing married to unmarried women. According to the data, 47.1 percent of respondents were married.

Table 4.1: Demographic and Socioeconomic Characteristics of Women

| Variables | Observations | Mean | Std | Min | Max |
|----------------------------|---------------------|-------------|------------|------------|------------|
| Late ANC clinic attendance | 6948 | 3303 | .4963 | 0 | 1 |
| Age | 6948 | 32.94 | 9.39 | 15 | 45 |
| Marital Status (Married=1) | 6948 | 47.12 | .4949 | 0 | 1 |
| Education Levels | | | | | |
| No education | 6948 | .1346 | .3413 | 0 | 1 |
| Primary education | 6948 | .5024 | .5000 | 0 | 1 |
| Secondary education | 6948 | 2766 | .4473 | 0 | 1 |
| Higher education | 6948 | .0865 | .2811 | 0 | 1 |

| | | | | | |
|-------------------|------|-------|-------|---|---|
| Employment Status | 6872 | .5740 | .4945 | 0 | 1 |
| Medical Insurance | 6948 | .1520 | .3591 | 0 | 1 |
| ANC Awareness | 6948 | .6238 | .2724 | 0 | 1 |

Source: Computed and Compiled from DHIS II Database

On educational attainment, findings revealed that most of the respondents (50.2%) had completed elementary school, with 27.7 percent having completed high school. In contrast, around 13.5 % had no schooling, while 8.7 % had a tertiary or higher education degree. In terms of source of income, around 57.4 percent of women worked, whereas only 15.2 percent reported having medical insurance coverage. Lastly the findings revealed that 62.4 percent were aware of services offered in ANC clinics.

4.3 Access to antenatal care services among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

The study's first specific objective was to identify the accessibility of antenatal care services among mothers of child bearing age (15-49) at Mama Lucy Kibaki Hospital in Nairobi County. The study findings in table 4.2 reveal that 3,303 women representing 47.74 percent attended the ANC clinic between second and third trimester (4–9 months). Accessibility of ANC services among reproductive age women was measured by the distance from the ANC clinic. Table 4.2 indicate that 5072 (73 percent) of the women felt that the antenatal care services were accessible while 1876 (27 percent) felt services were not accessible. The government should thus encourage pregnant women to seek antenatal care from midwives and doctors at health facilities as soon as possible. According to Ng'ang'a (2019), most expectant women were informed of the significance to seek ANC services. Despite the fact that most expectant mothers were aware of the necessity of prenatal care, most were unsure when the best time to begin was, hence initiated ANC after three months.

Table 4.2: Distance to the nearest antenatal clinic or medical facility

| Are the antenatal care services accessible | Frequency | Percentage |
|---|------------------|-------------------|
| Attended the ANC clinic between (4 - 9) months | 3303 | 47.54 |
| Resides near the clinic (< 5km) | 5072 | 73 |

| | | |
|------------------------------------|--------------|------------|
| Resides far from the clinic (>5km) | 1876 | 27 |
| Total | 6,948 | 100 |

4.4 Diagnostic Tests

4.4.1 Multicollinearity Test

To establish the existence or absence of Multicollinearity, the research generated correlation coefficients as illustrated in the correlation matrix (table 4.2). The analysis indicated that all pairs of variables were moderately associated based on the correlation coefficients obtained. In absolute terms, the majority of correlations were less than 0.5. According to Mukras (1993), the variation is minor, thus the pair was kept for maintained for future investigation. Most correlations were however positive. The following pairs were negatively correlated: Age and education; age and ANC awareness; employment and ANC awareness. Also, the other negative correlations were marital status and education. The rest of the pairs had positive correlation. Table 4.2 has further information.

Table 4.3: Correlation Matrix

| Variables | Age | Marital Status | Educati on | Employme nt | ANC awareness | Medical Insurance |
|--------------------------|------------|-----------------------|-------------------|--------------------|----------------------|--------------------------|
| Age | 1.0000 | | | | | |
| Marital status | 0.3435 | 1.0000 | | | | |
| Education | -0.1101 | -0.1523 | 1.0000 | | | |
| Employment | 0.3885 | 0.1790 | 0.1157 | 1.0000 | | |
| ANC awareness | -0.1290 | 0.0984 | 0.3443 | -0.1652 | 1.0000 | |
| Medical Insurance | -0.0471 | 0.6158 | 0.2009 | 0.0944 | 0.2929 | 1.0000 |

4.4.2 Heteroscedasticity Test

This refers to the error terms' lack of consistent variance across all observations. The outcome is shown in Figure 4.1.

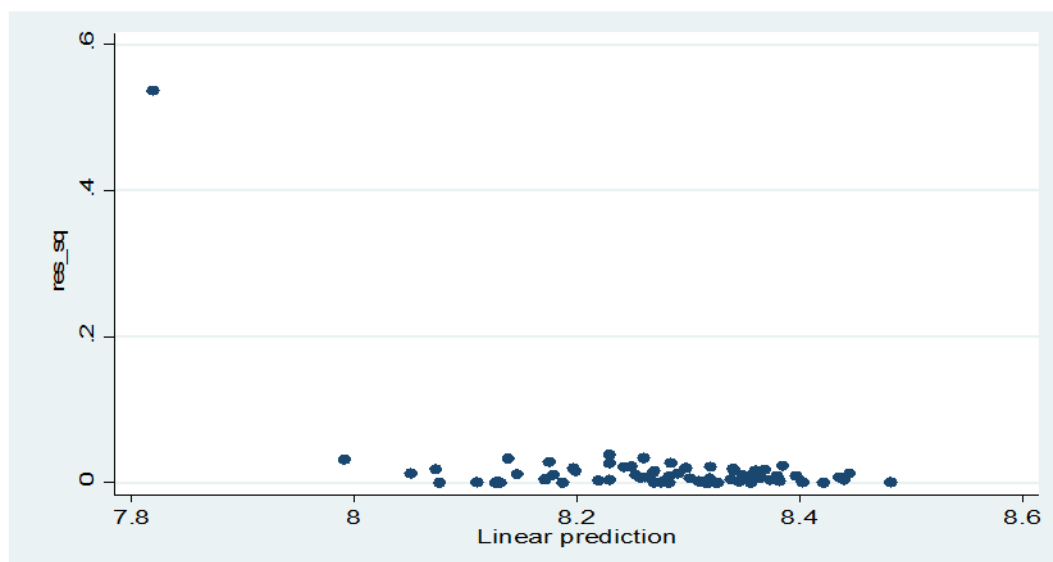


Figure 4.1: Residual Squared against Fitted Values Plot

The residual plot method was used to test for heteroscedasticity. As shown in figure 4.1, the plots exhibit a non-systematic pattern implying absence of heteroscedasticity.

4.5 Socio-economic determinants for late ANC clinic attendance among women of reproductive age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

In the second objective, the study was designed to estimate the effect of respective variables on late antenatal clinic attendance among women in Mama Lucy Kibaki hospital. The suggested probit model for this investigation, together with the associated values, was examined, and the findings are shown in Table 4.4. According to the model estimate, the total p-value was less than 5% (Prob > chi2 was 0.0000), showing that the discovered predictors explained substantially the dependent variable (late antenatal clinic attendance among women). Furthermore, the pseudo R2 of 0.1501 (15 %) shows the proportion of dependent parameters that explained late antenatal clinic attendance.

Table 4.4: Probit Regression Results (late ANC attendance among women of reproductive age)

| Late ANC clinic attendance | Coefficients | Std. Err. | z | P>z | [95% Conf. Interval] | |
|--|--------------|-----------|--------|-------|----------------------|--------|
| Age | -.1939 | .0162 | 11.97 | 0.000 | .1622 | .2258 |
| Age Squared | .0031 | .0002 | 15.50 | 0.000 | .0025 | .0035 |
| Marital Status (Married=1) | -.4107 | .0384 | -10.69 | 0.000 | -.4862 | -.3357 |
| Education levels no education- (reference variable) | | | | | | |
| Primary | -.4790 | .0840 | -5.70 | 0.000 | -.6437 | -.3143 |
| Secondary | -.4863 | .0907 | -5.36 | 0.000 | -.6241 | -.2685 |
| Higher education | -.5778 | .1016 | -5.69 | 0.000 | -.7770 | -.3786 |
| Employment | -.0918 | .0388 | -2.37 | 0.018 | -.1678 | -.0159 |
| Medical Insurance | -.00534 | .0448 | -1.29 | 0.098 | -.0401 | .0142 |
| ANC awareness | -.0608 | .0599 | -10.16 | 0.049 | -.2264 | .0088 |
| _cons | 5.2618 | .3032 | 17.35 | 0.000 | 4.6674 | 5.8561 |
| Number of obs = 6,872 Prob > chi2 = 0.0000 | | | | | | |
| Log likelihood = -3649.2551 | | | | | | |
| LR chi2(9) = 884.26 Pseudo R2 = 0.1501 | | | | | | |

Table 4.4 shows the regression results. The coefficient on age ($\beta = -0.1939$, p value=0.000) was shown to be both negative and statistically significant at the 5 percent level while the

coefficient on age squared ($\beta = 0.0031$, p value = 0.000). These findings show that increasing the respondent's age decreases the likelihood of late prenatal clinic attendance by 0.1939 points while maintaining other variables constant. However, the age squared coefficient ($\beta = .0031$, $p = 0.000$) was shown to have a positive and statistically significant impact at the 5 percent level. This implies that age had a nonlinear relationship with late antenatal clinic attendance. The non-linearity in the age distribution of the mothers studied suggested that the impact of the late prenatal clinic increased with increasing maternal age. In other words, it increases. At a 5% level, it was shown to be positive and statistically significant. My results support the findings of Aduloju et al. (2016), This implies that with advanced age comes with experience and confidence on benefits of initiating ANC clinic early.

Marital status revealed a significant negative coefficient ($\beta = -0.4107$, p value = 0.000). This implied that respondents who were married had reduced likelihood of late antenatal clinic attendance by 0.4107 points in comparison to those who were not married. The results of Chewe et al. (2016) in Zambia conform with our findings. The results could be due to financial assistance from partners, which encourages women to seek early prenatal care treatments.

The coefficient on basic education was 0.4790 with a p -value of 0.000, suggesting that individuals with a primary level of education had a 0.479 point lower risk of late ANC attendance than those with no education. The coefficient on secondary education was -0.4863 with a p value of 0.000, indicating that participants with a secondary level of education had a 0.4463 lower likelihood of late ANC attendance than their peers with no education. Furthermore, the data revealed that the tertiary education coefficient ($\beta = -0.5778$, p value = 0.000) was negative and statistically significant. This implies that respondents who have tertiary level of education had decreased probability of late ANC visit by 0.4847 points in comparison to women with no formal education. The results are in line with those of Ejeta et al (2017). The findings show that educated women had stronger understanding and awareness about ANC services and the advantages of utilising the services.

The coefficient on employment ($\beta = -0.0918$, p value = 0.018) was negative and statistically relevant at 5 percent. The findings show that being employed decreased the probability of using of late ANC attendance significantly by 0.0918 points holding other factors constant. Furthermore, the Medical Insurance coefficient was negative and statistically insignificant at 5% ($= -0.0534$, p value = 0.098). This conclusion might be linked to the fact that working women are higher likely to pay the cost of ANC services as well as other associated expenses

than jobless women who are unable to acquire ANC treatments early. Muhwava et al. (2014) supports my findings while on the other hand, Matyukira (2014) found that employed expectant women at Ekurhuleni clinic in South Africa initiated ANC clinic late.

The results show that possessing a medical insurance had a negative effect on late prenatal care clinic attendance by 0.053 points. In contrast, women who were aware of ANC and services offered in the clinic had lower chances of late ANC attendance by 0.0608. This chance was significant. This may be due to the fact that medical insurance cushions an individual from out of pocket, health expenditure. Okedo et al. (2019) studies concur with the current study.

In order to understand the probit findings for policy considerations, the study conducted marginal impacts of factors used in the late ANC attendance model. The results for marginal impacts are as shown in table 4.5.

Table 4.5: Average Marginal Effects (Late ANC attendance)

| Late ANC attendance | Marginal Effects | Std. Err. | z | P>z | [95% Conf. Interval] | |
|-----------------------------------|-------------------------|------------------|----------|---------------|-----------------------------|--------|
| Age | -.0275 | .0023 | 11.89 | 0.000 | .0230 | .0321 |
| Age Squared | .0004 | .00004 | -10.01 | 0.000 | -.0005 | -.0004 |
| Marital Status (Married=1) | -.0584 | .0054 | -10.81 | 0.000 | -.0691 | -.0476 |
| Education Level | | | | | | |
| Primary | -.0528 | .007 | -7.54 | 0.000 | -.0666 | .0390 |
| Secondary | -.0480 | .0082 | -5.85 | 0.000 | -.0640 | .0320 |
| Higher | -.0684 | .0114 | -6.00 | 0.000 | -.0908 | .0461 |
| Employment Status | -.0130 | .0055 | -2.37 | 0.018 | -.0238 | .0022 |

| | | | | | | |
|--------------------------|---------|-------|-------|-------|--------|-------|
| Medical Insurance | -0.0076 | .0064 | -1.19 | 0.233 | -.0200 | .0049 |
| ANC awareness | -.0305 | .0153 | -1.99 | 0.045 | -.0086 | .0463 |

The findings in Table 4.5 show the marginal impacts. At the 5% level, the coefficient on age ($\beta = -0.0275$, $p = 0.000$) was shown to be negatively and statistically important. This implies that a rise in participant age reduces the likelihood of a person visiting an ANC clinic late by 2.75% when other variables remain constant. However, at the 5percent level, the coefficient on age squared ($\beta = 0.0004$, $p = 0.000$) demonstrated to have a positive and statistically significant impact. This implies that age had a non linear relationship with late ANC attendance. The fact that women's ages were not linear meant that as they become older, the influence on late ANC attendance becomes greater, in other words, it rises.

The marital status coefficient showed a negative and significant influence on late attendance to ANC at Mama Lucy Kibaki hospital among women of reproductive age ($\beta = -0.0584$, p value= 0.000). Keeping other things equal, this implies that married women were 5.84 percent less likely to arrive at an ANC clinic late. This shows that married women may have utilised ANC services more than unmarried women to avoid maternal and neonatal issues.

Individuals with primary education, secondary education, and higher education were compared to those with no education on educational levels. The coefficient on basic education was ($\beta = -0.0528$, p value= 0.000), showing that women with a primary education level had a 5.28% lower risk of late ANC attendance than those with no education. The secondary education coefficient was ($\beta = -0.0480$, p value= 0.000), indicating that participants with a secondary education level reduced late ANC attendance by 4.8 percent in comparison to their peers with no education. Furthermore, the data revealed that the coefficient on higher education ($\beta = -0.0684$, p value= 0.000) was statistically significant and negative. This indicates that women with a greater education level had a 6.84 percent lower rate of late ANC attendance than those with no education. The findings indicate that educated women are more likely than uneducated women to recognise the wider benefits of attending ANC early and at the WHO-recommended number of ANC appointments.

At 5 percent, the employment coefficient ($\beta = -0.0130$, $p = 0.018$) was negative and statistically relevant. Holding other characteristics constant, the data suggest that being employed reduced the chance of late ANC visit by 1.3 percent. According to this research, working women are more likely to pay the cost of ANC services as well as other connected costs than jobless women who tend to postpone receiving ANC treatments.

At 5%, the coefficient medical insurance was determined to be negative and not statistically significant ($\beta = -0.0076$, $p \text{ value} = 0.233$). Keeping other characteristics constant, the data revealed that women with medical insurance were less likely to visit ANC clinic late. Lastly the findings revealed that women who were aware of ANC services and clinics had a lesser likelihood of visiting ANC clinics late in comparison to those who weren't aware of the services by 3.05 percent. The coefficient was statistically significant ($\beta = -0.0351$, $p \text{ value} = 0.045$).

4.6 Discussion of the Probit Regression Results

The coefficient on age was confirmed to be negative and statistically significant in the estimated model, indicating that each extra age of the lady reduces the likelihood of a person entering the antenatal clinic late. The age squared coefficient was likewise shown to have a positive and statistically significant influence. This means that age had a nonlinear relationship with late attendance to ANC among women of reproductive age. The fact that age of women explored was not linear indicated that as the women become older, the impact late ANC attendance is stronger (in other words it increases). Our results support those of Aduloju et al. (2016), whose findings revealed that late attendance of ANC clinic was 100 percent among minors (15 years to 19 years), while early attendance of ANC clinic was most common (29 percent) among 20 years to 29 years old women. Their findings indicated that late ANC attendance by women of child bearing age was negatively influenced by age of the woman as they advance. This implies that with advanced age comes with previous experience and confidence on benefits of initiating ANC clinic early.

The marital status coefficient showed a negative and significant influence on late attendance to ANC among women of reproductive age at Mama Lucy Kibaki hospital. This shows that married women were much less likely to arrive at ANC late. This might be linked to partner support, which motivates women to seek early ANC services. This indicates that married women might have embraced the ANC services in order to have a health pregnancy and avoid maternal and neonatal complications thereafter. The findings of Chewe et al. (2016) in

Zambia conform with our findings. They discovered that married pregnant women who had husbands who understood the value of prenatal care were urged by their spouses to visit ANC clinics early in order to have a good pregnancy and healthy baby. Further, pregnant women who were supported and even accompanied by their spouses to the hospital had a higher tendency to attend ANC clinics since they felt cared for during the gestation. The findings suggest that social norms regarding marriage have a role at least as relevant as ANC attendance.

Individuals with primary, secondary, and tertiary education were compared to those with no education on educational levels. The coefficients for primary, secondary, and higher education levels suggested that women with these education levels had a reduced risk of late ANC attendance than those with no education. According to these findings, women who have received a higher education level are more likely to recognise the necessity of visiting ANC early and the advantages of basic healthcare services throughout pregnancy than those who have not had a higher education level. The findings concur with Ejeta et al. (2017) who discovered that several illiterate expectant women associated the relevance of early ANC beginning with understanding the fetus's status in a study in West Ethiopia. They saw the early start of antenatal care as a misuse of money and time because the fetus wasn't completely grown in three months. This prompted them to visit ANC clinic late in their pregnancy period.

The employment coefficient was negative and statistically significant, indicating that women in any occupation are more likely than their jobless counterparts to pay the cost of ANC services as well as other associated expenses. According to Grossman and Andersen (1995), greater money permits a person to seek out more health-care services. ANC services were offered to ladies at Mama Lucy Kibaki Hospital in this case. Women's empowerment is thought to predict reproductive health outcomes. Muhwava et al. (2014) agree with our results, concluding that employed women in South Africa were less likely than jobless women to initiate prenatal care late. On the other hand, Matyukira (2014) revealed that employed expectant women at Ekurhuleni clinic in South Africa initiated ANC clinic late.

The coefficient for medical insurance was shown to be adversely and statistically insignificant. Women who had a medical insurance were less probable to attend ANC clinic late while keeping all other variables constant. This may be due to the fact that medical insurance cushions an individual from out of pocket, health expenditure. The findings concur with Okedo et al. (2019) who discovered that medical insurance is a significant factor

influencing late antenatal clinic attendance among women of reproductive age. They discovered that pregnant women with health insurance coverage visited the antenatal clinic early because they didn't feel the burden of user fees. However pregnant women with no medical insurance and no cash for user fees or out-of-pocket did not have a chance to visit antenatal clinics at that moment hence attending antenatal clinics later when they could access money for payment

Lastly, the coefficient of ANC awareness was shown to be negative and statistically important. Women who have been sensitized on attendance to ANC services are less likely to initiate their ANC clinics late. This finding agrees with the results of Kawugenzi et al.(2015) who demonstrated how ANC awareness influenced the timing of ANC clinic attendance in Uganda. Most pregnant women who were aware of the necessity of prenatal care attended the clinic during their first trimester. The awareness of early antenatal clinic attendance, which promotes healthy pregnancy and delivery, motivated pregnant women to avoid initiating their AN attendance clinic late.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the study's results before drawing conclusions based on the established link between identified factors and late ANC attendance among women of reproductive age in Mama Lucy Kibaki hospital. There are suggestions for future policy recommendations and areas of research.

5.2 Summary of the study findings

Attendance at ANC is critical to the health of both the unborn and the born, as well as pregnant mothers. Most maternal fatalities may be avoided by guaranteeing access to basic maternal well-being services from pregnancy through delivery and into the postnatal period. According to the research, as part of reproductive health care, ANC attendance promotes health, disease prevention, early identification, and treatment of diseases. The purpose of this study was to determine the variables of late ANC clinic visits among mothers of reproductive age (15-49) at Mama Lucy Kibaki hospital. The research specifically looked at the accessibility of prenatal care in Mama Lucy Kibaki Hospital among mothers of child bearing age (15-49). Furthermore, the research looked at the socioeconomic factors that influence late prenatal care visit among mothers of child bearing age (15-49) at Mama Lucy Kibaki Hospital in Nairobi County. The study employed DHIS II dataset.

The research employed a probit regression model to determine the impact of several determinants on late prenatal care visit among mothers of reproductive age (15-49) at Mama Lucy Kibaki Hospital. The research looked for significance at the 5% level. Late prenatal clinic attendance among mothers of child bearing age was the outcome variable. The key characteristics included in this research were the woman's age, age squared, education levels, marital status (primary, secondary, and post-secondary), job status, medical insurance, and ANC knowledge.

5.3 Conclusions

The study concludes that ANC care is readily accessible and thus available for use among the mothers of child bearing age in Mama Lucy Kibaki hospital. From the findings, it is evident that although the current research indicates an increase in ANC attendance, lateness among

women in Mama Lucy Kibaki hospital, about 73 percent of women visiting Mama Lucy Kibaki hospital concurred that the distance from their home was less than 5 kilometers. This means that they have an increased probability of using the ANC services. In addition, age of the woman, education levels, marital status(primary, secondary and post-secondary levels), and employment status were found to have a negative as well as significantly linked to late attendance of among mothers of child bearing age (15-49) in Mama Lucy Kibaki Hospital. Furthermore, age squared and marital status were shown to be significant but adversely linked with late ANC use for the latter while the former had a positive effect measuring experience among women of child bearing age in Mama Lucy Kibaki hospital.

5.4 Policy Recommendations

To moderate increased late attendance for ANC at Mama Lucy Kibaki hospital, the research recommends the following;

Ideally, ANC clinic services need to be customized so as to provide a comprehensive variety of maternal health services, so that women in different age categories can have access to quality information and early follow-up ANC services. This is because age of the woman came out as a strong determinant associated with late ANC clinic attendance.

In terms of education, better educated women are more likely to be working in the contemporary sector and, as a result, are more likely to be at the forefront of ensuring that they attend the ANC clinic early and at suggested time intervals throughout their visits. As a result, the government must reform curriculum and include training on the utilisation of maternal and neonatal health care services. The Ministry of Education needs to come up with policies and programs such sponsorship, encouraging access to affordable education especially for women all through from primary to tertiary level. The government needs to also come up with strategies that empower the girl child and institute protective laws and policies preventing early marriages.

The study recommends empowering women economically through investing and equipping them with skills, investing in women's businesses and ensuring protection by law towards access to other financial services like loans savings and insurance. Increased awareness through chief's barazas, in addition health can be integrated with ANC services.

The study notes that medical insurance is an important component in ensuring that women do not delay in seeking ANC services. This study recommends that government, county governments and health insurance authorities in Kenya actively implement health insurance

policies that favour and target women as well as roll out health educational programmes that enable and assure higher health insurance coverage among women. The study recognizes that the government at national and county levels should expand provision of prenatal care services to be closer to its population especially women of reproductive age. This ensures that the services are accessible hence reducing geographical as well as indirect costs associated with ANC attendance. On marital status, partners are encouraged to offer their support emotionally, encouragements, financially and ensuring their women attend ANC clinic in a timely manner. They should also accompany them to the appointments.

5.5 Areas for Further Studies

The research has mainly concentrated at determining factors behind late attendance of ANC services or care. The research looked specifically at the factors that influence late prenatal care visit among mothers of child bearing age (15-49) at Mama Lucy Kibaki Hospital. Specifically, the study examined the accessibility of the prenatal care among mothers of child bearing age (15-49) in Mama Lucy Kibaki Hospital as well as investigated the socio-economic factors for late prenatal care clinic visit among mothers of child bearing age (15-49) in Mama Lucy Kibaki Hospital, Nairobi County.

The data set used only focused on the women of child bearing age in Mama Lucy Kibaki hospital and the results could be different if the different age categories could have been explored given the fact that young women and older women have different behaviours in consumption of the reproductive health services. A multivariate linear regression model with several assumptions was employed for estimate. As a result, the research advises that comparable studies be conducted to compare late ANC attendance in different health institutions (primary healthcare facilities) in Kenya.

More research is needed to explain how indicators of women's empowerment combine with cultural norms and health-care system elements to impact women's late attendance at ANC. It also advised that sophisticated estimation methods, such as multinomial logit or logit regression models, should be investigated (apart from probit model). More empirical investigations including various societal, political, and other confounding elements are needed.

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